Introduction to MS Excel

Relevel
by Unacademy

Datasets for Class Practice

Please find below the link for the data set that will be used in the class for practice.

- Instructions to download the file-

  Click on the link→ File → Download → Microsoft Excel(.xlsx)

1. https://docs.google.com/spreadsheets/d/1c6nUnEhUr2SS-SLBWNyw7wSuKzYX7_ov/edit?usp=sharing&ouid=107266068801601122977&rtpof=true&sd=true

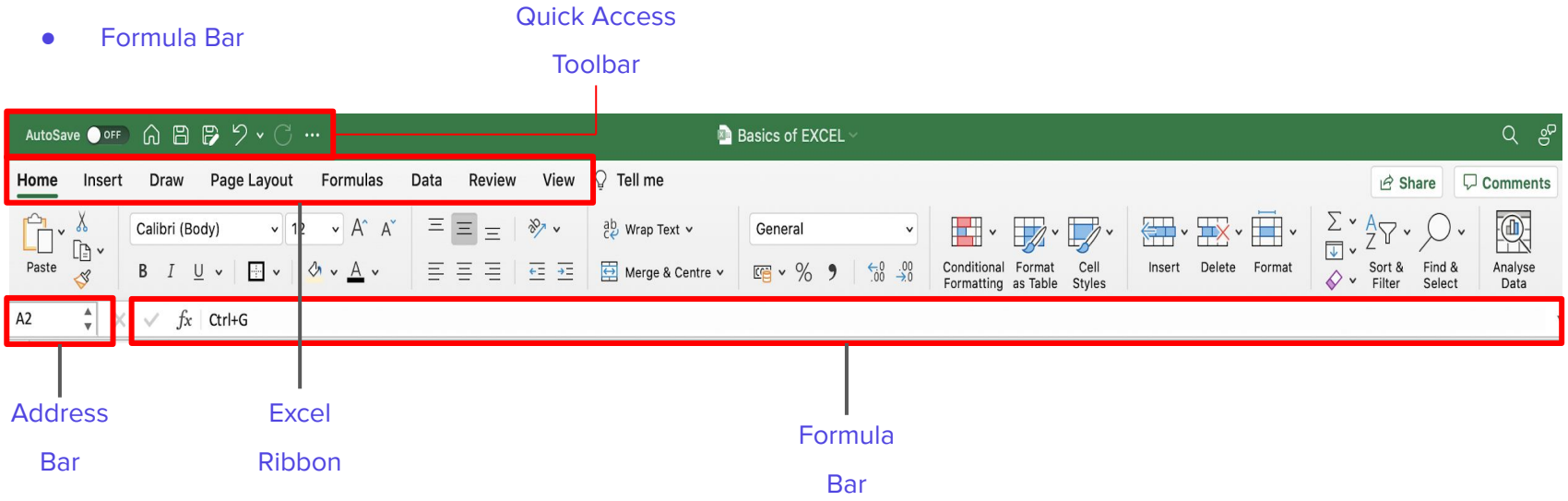
Introduction to MS OFFICE SUITE

Microsoft Office is a suite of office-related programs. Each application serves a distinct purpose and provides exceptional service to its users. As an example,

- Microsoft Word is used to create documents.
- Microsoft PowerPoint is used to create presentations.
- Microsoft Outlook is used to manage email and calendars.
- Microsoft Excel is a spreadsheet program that features calculation, graphic tools, pivot tables, and macro programming language support for Windows and Mac
- Microsoft OneNote is a free-form note-taking program for Windows and Mac operating systems.

BASICS OF EXCEL

- Quick Access Toolbar
- Excel Ribbon
- Address Bar
- Formula Bar



USE CELL REFERENCES

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

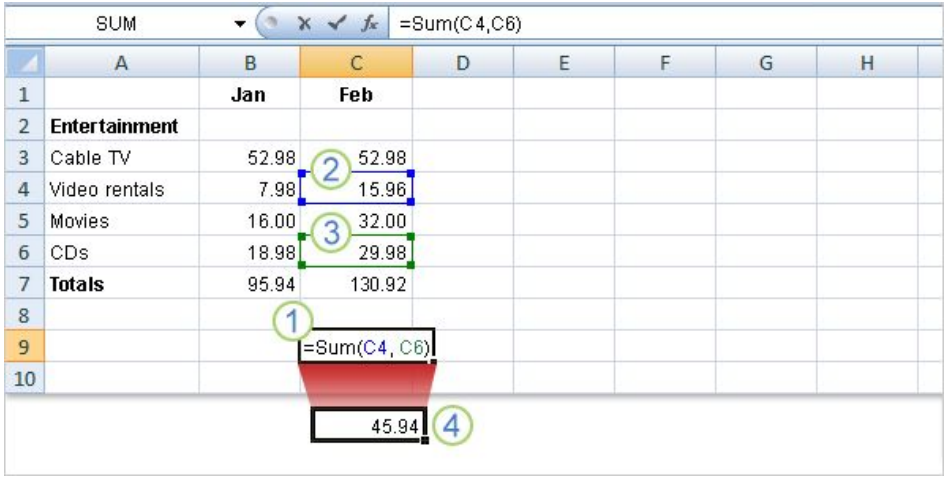
Cell references identify individual cells or cell ranges in columns and rows.

Cell references tell Excel where to look for values to use in a formula.

Excel uses a reference style called A1, which refers to columns with letters and to rows with numbers. The numbers and letters are called row and column **headings.**

This lesson shows how Excel can automatically update the results of formulas that use cell references, and how cell references work when you copy formulas.

Other Ways to Enter Cell References



You can type cell references directly into cells, or you can enter cell references by clicking cells, which avoids typing errors.

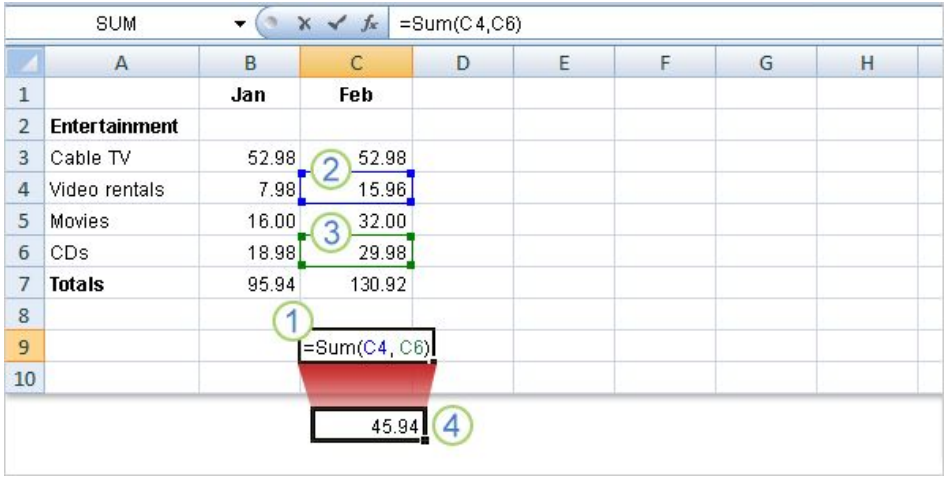
Imagine that you want to know the combined cost for video rentals and CDs in February

The example shows you how to enter a formula into cell C9 by clicking cells.

1. In cell C9, type the equal sign, type **SUM**, and type an opening parenthesis.

2. Click cell C4. The cell reference for cell C4 appears in cell C9. Type a comma after it in cell C9.

Other Ways to Enter Cell References



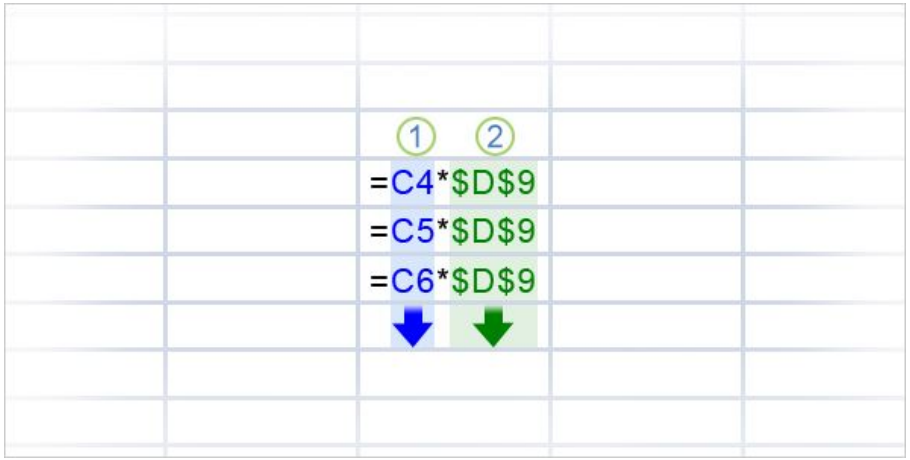
Here's a little more information about how this formula works.

The arguments C4 and C6 tell the SUM* function what values to calculate with. The parentheses are required to separate the arguments from the function.

The comma, which is also required, separates the arguments

(*SUM function will be covered later in the class).

REFERENCE TYPES



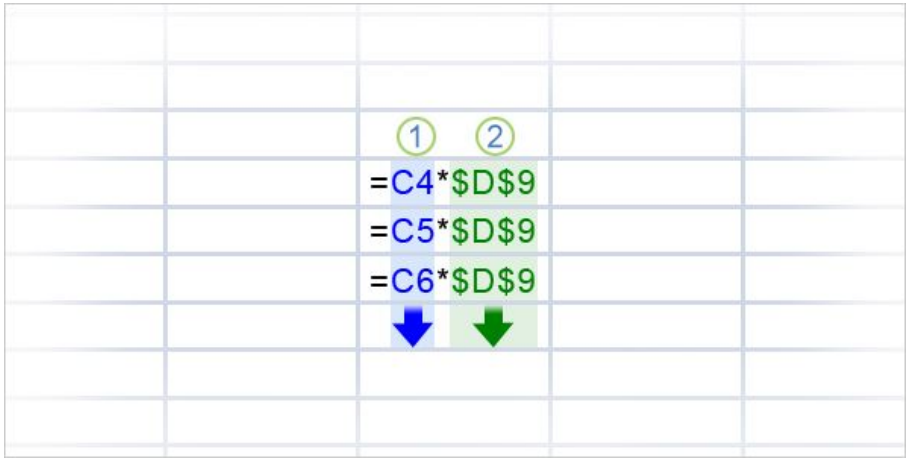
Now that you've learned about using cell references, it's time to talk about the different types.

The picture shows two types, **relative** and **absolute.**

1. Relative references automatically change as they're copied down a column or across a row.

When the formula =C4*D9 is copied from row to row in the picture, the relative cell references change from C4 to C5 to C6.

REFERENCE TYPES



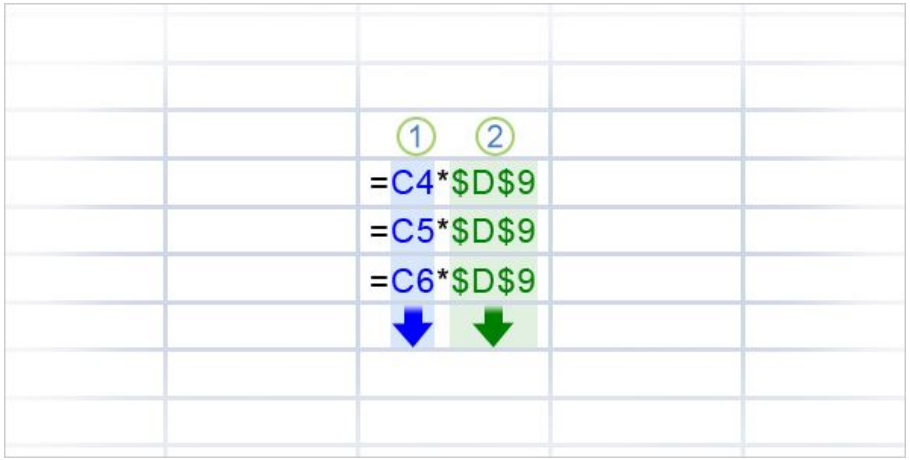
Now that you've learned about using cell references, it's time to talk about the different types.

The picture shows two types, **relative** and **absolute.**

2. Absolute references are fixed. They don't change if you copy a formula from one cell to another. Absolute references have dollar signs ($) like this: D9.

As the picture shows, when the formula =C4*D9 is copied from row to row, the absolute cell reference remains as D9.

REFERENCE TYPES



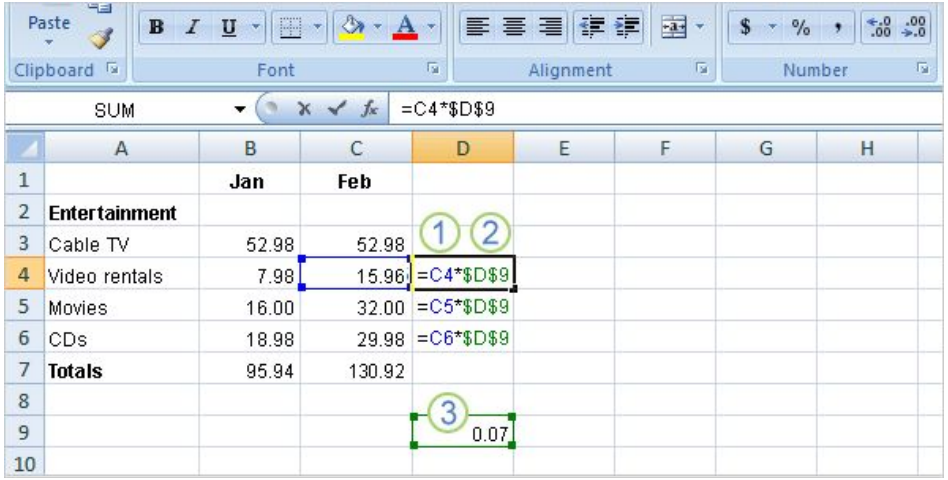
There's one more type of cell reference.

The **mixed reference** has either an absolute column and a relative row, or an absolute row and a relative column.

For example, $A1 is an absolute reference to column A and a relative reference to row 1.

As a mixed reference is copied from one cell to another, the absolute reference stays the same but the relative reference changes.

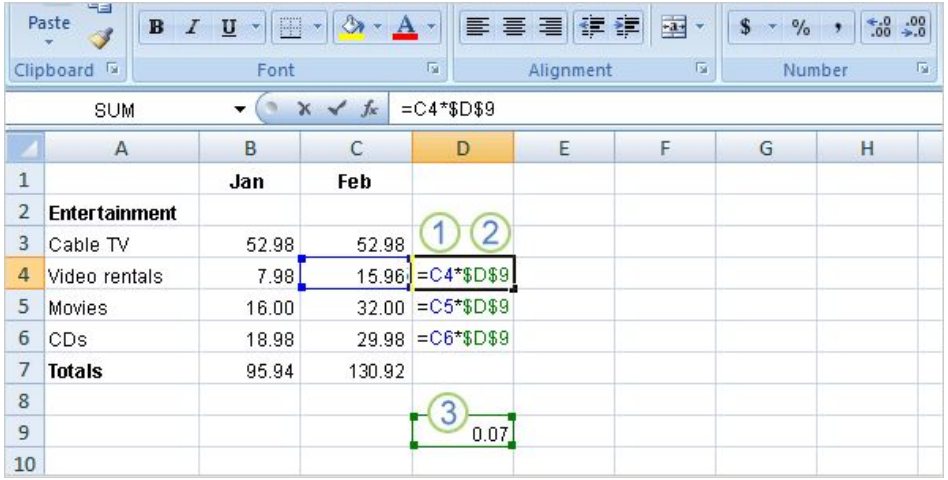
USING AN ABSOLUTE CELL REFERENCE



You use absolute cell references to refer to cells that you don't want to change as the formula is copied.

References are relative by default, so you would have to type dollar signs, as shown by callout 2 in the picture, to change the reference type to absolute.

USING AN ABSOLUTE CELL REFERENCE



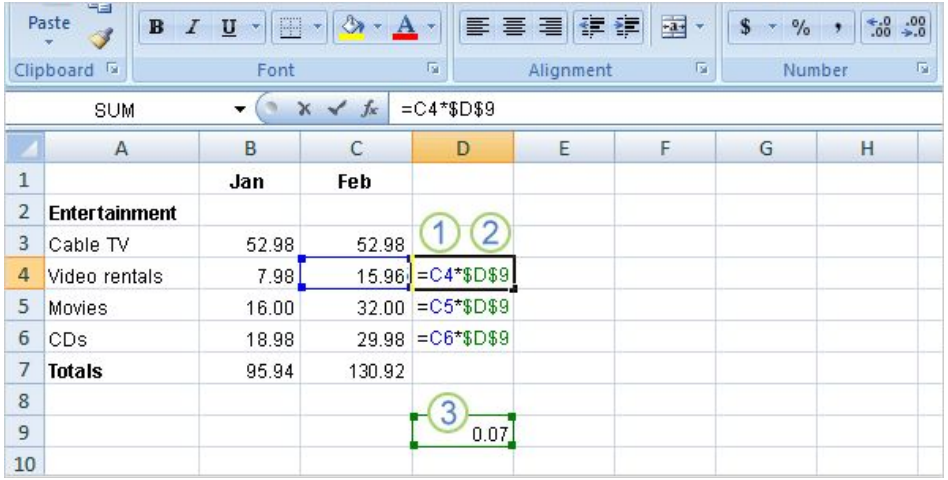
	A	B	C	D	E	F	G	H
1		Jan	Feb					
2	**Entertainment**							
3	Cable TV	52.98	52.98					
4	Video rentals	7.98	15.96	=C4*D9				
5	Movies	16.00	32.00	=C5*D9				
6	CDs	18.98	29.98	=C6*D9				
7	**Totals**	95.94	130.92					
8								
9								
10								

Say you receive some entertainment coupons offering a 7 percent discount for video rentals, movies, and CDs. How much could you save in a month by using the discounts?

You could use a formula to multiply those February expenses by 7 percent.

So start by typing the discount rate **.07** in the empty cell D9, and then type the formula in cell D4.

USING AN ABSOLUTE CELL REFERENCE



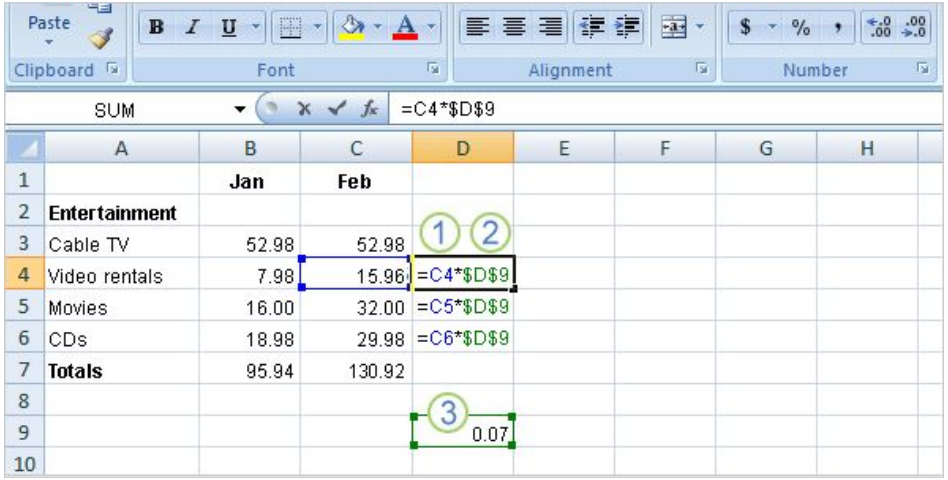
	A	B	C	D	E	F	G	H
1		Jan	Feb					
2	**Entertainment**							
3	Cable TV	52.98	52.98					
4	Video rentals	7.98	15.96	=C4*D9				
5	Movies	16.00	32.00	=C5*D9				
6	CDs	18.98	29.98	=C6*D9				
7	**Totals**	95.94	130.92					
8								
9								
10								

Say you receive some entertainment coupons offering a 7 percent discount for video rentals, movies, and CDs. How much could you save in a month by using the discounts?

1. Then in cell D4, type =**C4***. Remember that this relative cell reference will change from row to row.

2. Enter a dollar sign (**$**) and **D** to make an absolute reference to column D, and **$9** to make an absolute reference to row 9. Your formula will multiply the value in cell C4 by the value in cell D9.

USING AN ABSOLUTE CELL REFERENCE



	A	B	C	D	E	F	G	H
1		Jan	Feb					
2	Entertainment							
3	Cable TV	52.98	52.98					
4	Video rentals	7.98	15.96	=C4*D9				
5	Movies	16.00	32.00	=C5*D9				
6	CDs	18.98	29.98	=C6*D9				
7	Totals	95.94	130.92					
8								
9								
10								

Say you receive some entertainment coupons offering a 7 percent discount for video rentals, movies, and CDs. How much could you save in a month by using the discounts?

3. Cell D9 contains the value for the 7 percent discount.

You can copy the formula from cell D4 to D5 by using the fill handle. As the formula is copied, the relative cell reference changes from C4 to C5, while the absolute reference to the discount in D9 does not change; it remains as D9 in each row it is copied to.

Basic Shortcuts in Excel.

Ctr + G	Goto
Ctrl + H	Replace
Ctr + K	Insert Hyperlink
Ctr + R	Fill Right
Ctr + W	Close
Ctr + D	Fill Down
Ctr + :	Insert Current Time
Ctr + ;	Insert Current Date
Ctr + “	Copy Value from Cell Above
Ctrl + ’	Copy Formula from Cell Above

Class Practice 1

Basic Shortcuts in Excel.

Shift + F11	New worksheet
Ctrl + Page down	Next worksheet
Ctrl + Page up	Previous Worksheet
Ctrl + Down	Go to last cell of the dataset in the same column
Ctrl + Up	Go to first cell of the dataset in the same column
Ctrl + Home	Go to first cell of the dataset
Ctrl + A	Select entire worksheet
Ctrl + Shift + Down	Select all data in a column from a specific cell to the end of the set
Ctrl + Shift + Up	Select all data in a column from a specific cell to the beginning of the set

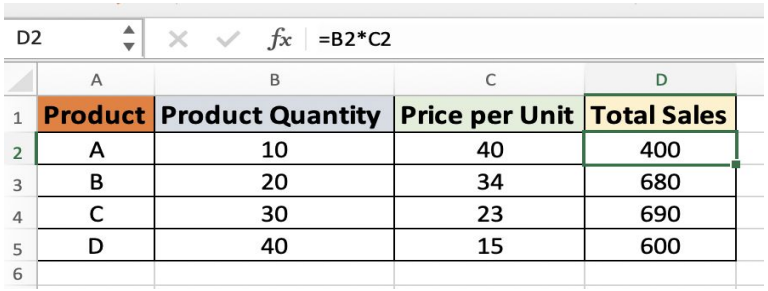
Class Practice 1

Basic Formulas in Excel.

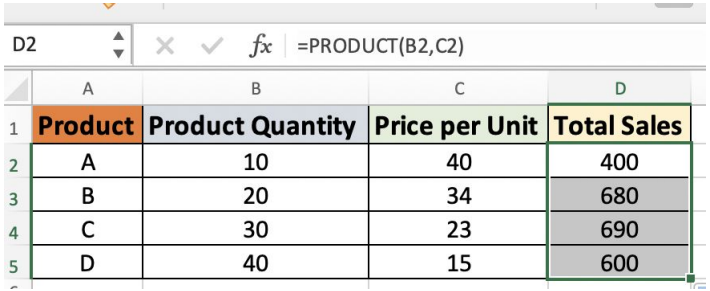
Formulas & Functions –

A formula is a mathematical expression that operates on values in a set of cells. Even if the result is an error, these formulas return a result. Excel formulas allow you to perform addition, subtraction, multiplication, and division calculations. In addition to these, you can use Excel to find averages and percentages for a range of cells, manipulate date and time values, and much more.

Functions are used to perform complex calculations that are difficult to achieve manually. Excel functions have names that reflect their intended use.



	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	B	20	34	680
4	C	30	23	690
5	D	40	15	600
6				



	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	B	20	34	680
4	C	30	23	690
5	D	40	15	600

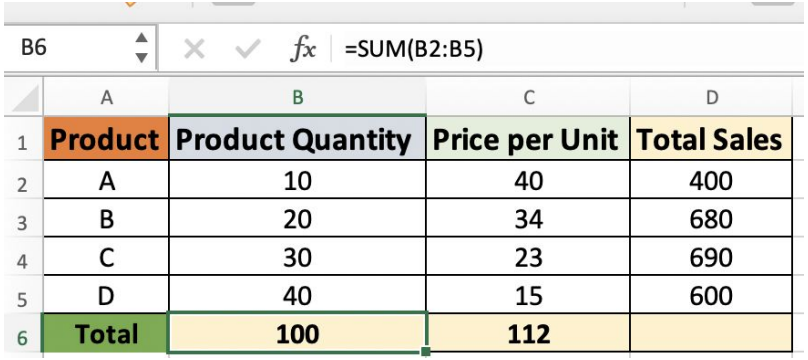
BASIC FUNCTIONS

1. SUM

Syntax -> =SUM(Number1, Number2..)

The SUM() function, as the name suggests, gives the total of the selected range of cell values. It performs the mathematical operation which is addition. Here's an example of it below:

- Sum with Range (Start Cell : End Cell)
- Sum with Shortcut – Alt + =
- Sum of a Range with Texts in some cells

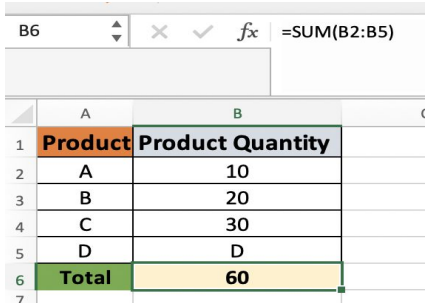


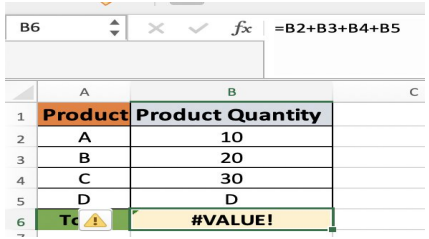
	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	B	20	34	680
4	C	30	23	690
5	D	40	15	600
6	Total	100	112	

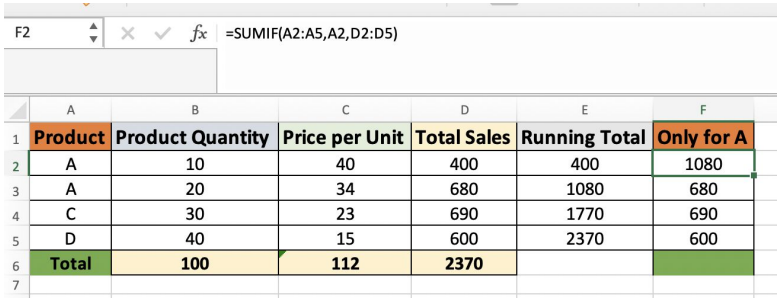
BASIC FUNCTIONS

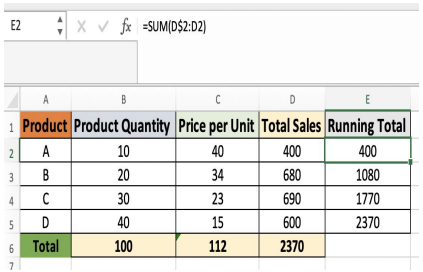
1. **SUM**

- Running Total – Sum(A$1:A1)
- Sum Specific Items – SUMIF







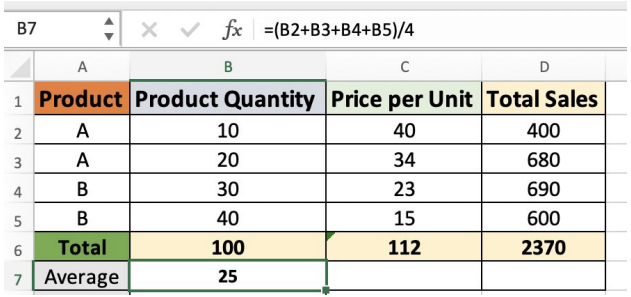


BASIC FUNCTIONS

2. Average

Syntax-> =AVERAGE(Number1,number2,number3...)

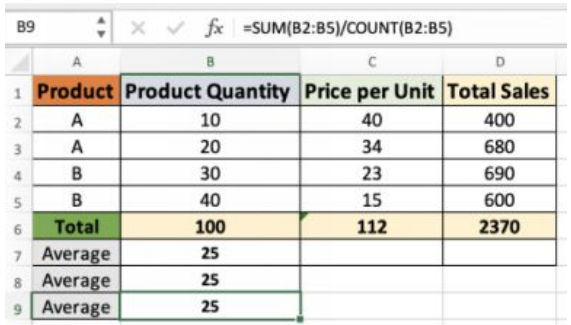
The AVERAGE() function focuses on calculating the average of the selected range of cell values. As seen from the below example, to find the avg of the total sales, you have to simply type in "AVERAGE(C2, C3, C4)".



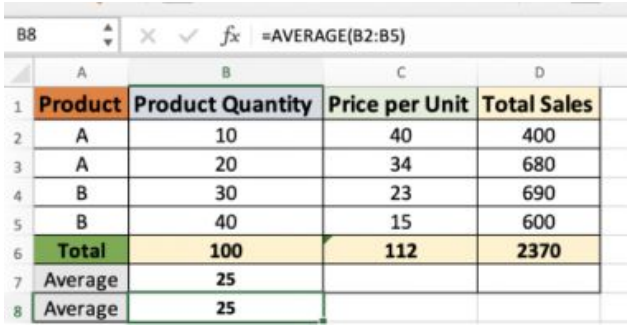
	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	A	20	34	680
4	B	30	23	690
5	B	40	15	600
6	Total	100	112	2370
7	Average	25		

Multiple Ways to Use Average-

- Formula
- Function
- Sum & Count



	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	A	20	34	680
4	B	30	23	690
5	B	40	15	600
6	Total	100	112	2370
7	Average	25		
8	Average	25		
9	Average	25		



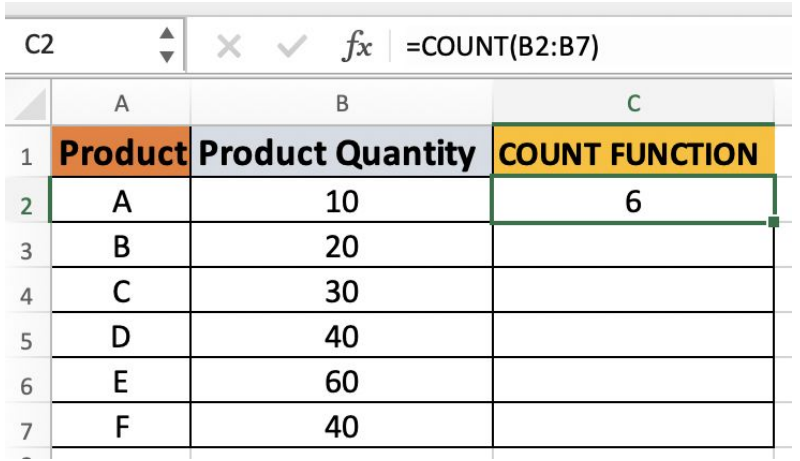
	A	B	C	D
1	Product	Product Quantity	Price per Unit	Total Sales
2	A	10	40	400
3	A	20	34	680
4	B	30	23	690
5	B	40	15	600
6	Total	100	112	2370
7	Average	25		
8	Average	25		

BASIC FUNCTIONS

3. Count

Syntax -> =COUNT(Number1,Number2...)

The function COUNT() counts the total number of cells in a range that contains a number. It does not include the cell, which is blank, and the ones that hold data in any other format apart from numeric.



	A	B	C
1	Product	Product Quantity	COUNT FUNCTION
2	A	10	6
3	B	20	
4	C	30	
5	D	40	
6	E	60	
7	F	40	

Various Usage of Count functions are –

- Count with Numbers
- CountA
- CountBlank

BASIC FUNCTIONS

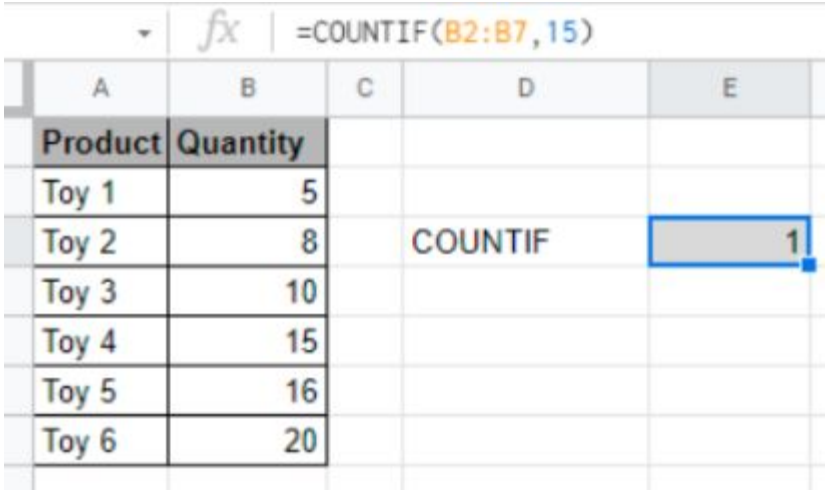
COUNTIF

Syntax -> =COUNTIF(range, criteria)

This function is used to count cells in a range that meet a single condition. This function can be used to count cells that contain dates, numbers, and text.

As seen above, in E3, we are counting the number of cells from range B2:B7 that are equal to 20.

Same can be done for dates and text. Also, keep in mind that the function is not case- sensitive in case of texts. Text strings in criteria must be enclosed in double quotes(“”).



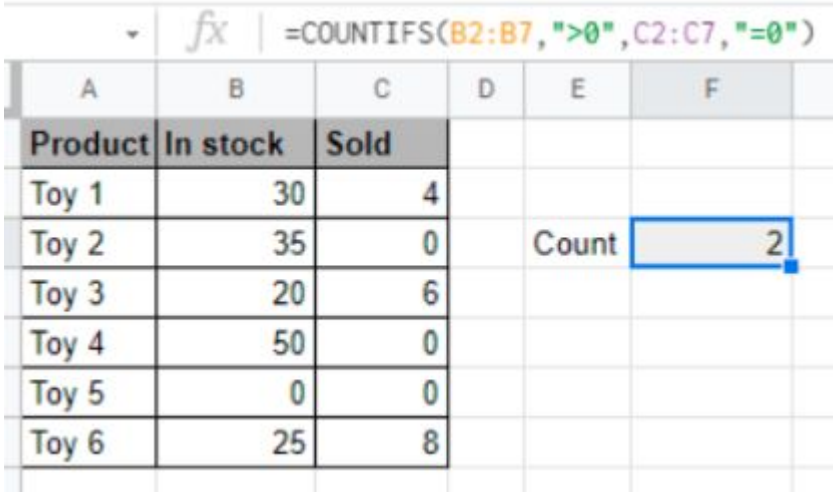
BASIC FUNCTIONS

COUNTIFS

Syntax -> =COUNTIFS (range1, criteria1, [range2], [criteria2], ...)

This function is used to count cells that meet one or more criteria. It can be used with criteria based on dates, numbers, text, and other conditions.

As seen above, we are counting items that are in stock (value in column b>0) but have not been sold yet (value in column C =0) and the count is 2 (“Toy 2 and Toy 4”)



	A	B	C	D	E	F
1	Product	In stock	Sold			
2	Toy 1	30	4			
3	Toy 2	35	0		Count	2
4	Toy 3	20	6			
5	Toy 4	50	0			
6	Toy 5	0	0			
7	Toy 6	25	8			

BASIC FUNCTIONS

4. Subtotal

Syntax-> =SUBTOTAL(Function num, ref1, ref2..)

Moving ahead, let's now understand how the subtotal function works. The SUBTOTAL() function returns the subtotal in a database. Depending on what you want, you can select either average, count, sum, min, max, min, and others.

SUBTOTAL Function Numbers-

1 - Average

2 - Count

3 - COUNTA

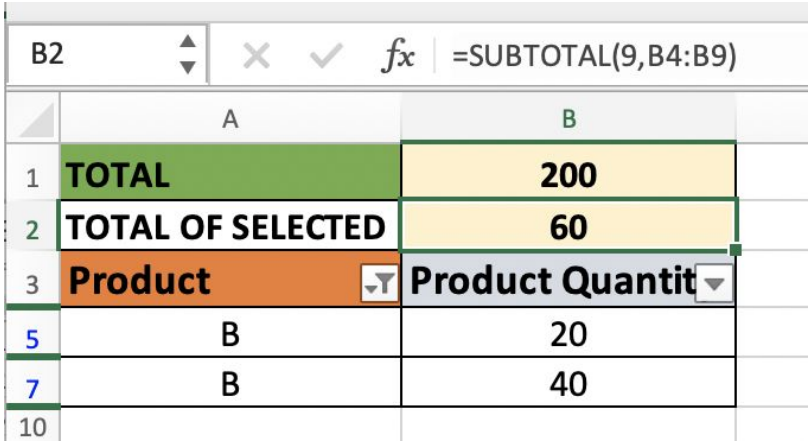
4 - MAX

5 - MIN

7 - STDEV

9 - SUM

10 - VAR



BASIC FUNCTIONS

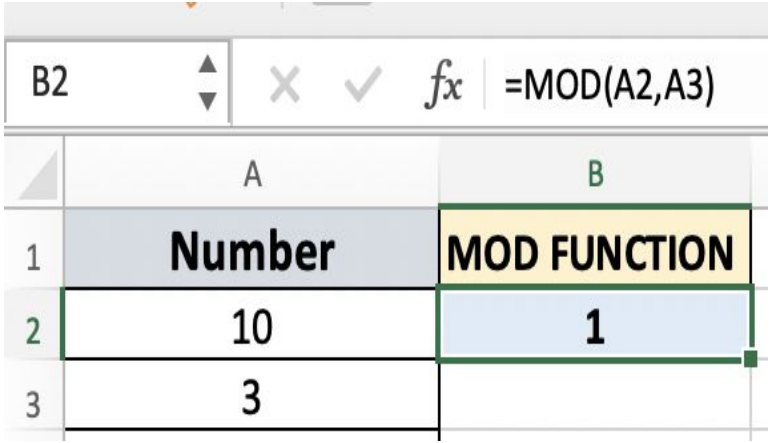
5. MODULUS

Syntax -> =MOD(Number,Divisor)

The MOD() function returns the remainder when a particular number is divided by a divisor. Let's now look at the examples below for a better understanding.

In the first example, we have divided ten by 3. The remainder is calculated using "=MOD(A2, A3)". The result is stored in B2. We can also directly type "=MOD(10,3)" to give the same answer.

Similarly, if we have divided 12 by 4, the remainder is 0.



BASIC FUNCTIONS

6. SUMPRODUCT

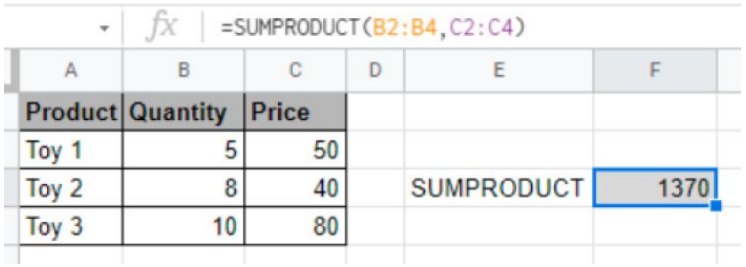
Syntax -> =SUMPRODUCT(array1, [array2], [array3]...)

This function multiplies the numbers in the specified arrays, and returns the sum of those products.

As seen above, suppose you have quantity in cells B2:B4, prices in cells C2:C4, and you wish to find out the total. If you were doing a school math test, you would multiply the quantity by price for each item, and then add up the subtotals. In Excel, you can get the result with a single SUMPRODUCT.

In actual, SUMPRODUCT performs the following mathematical operations (B2*C2 + B3*C3 + B4*C4)

Please keep in mind that SUMPRODUCT treats non-numeric items in arrays as zeros and array arguments must be the same size, otherwise SUMPRODUCT will generate a #VALUE! error value.



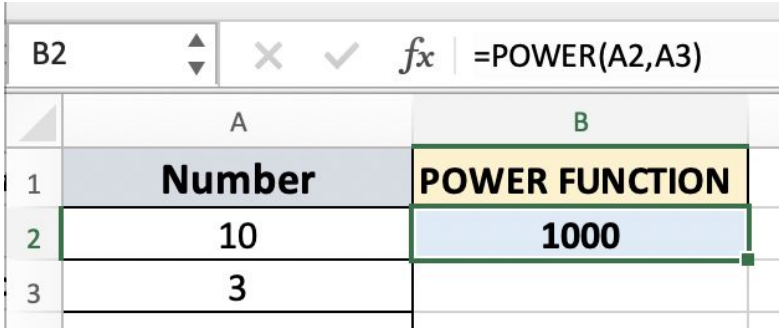
BASIC FUNCTIONS

7. POWER

Syntax-> =POWER(Number, Power)

The "Power()" function returns the result of a number raised to a specific power. Take a look at the following examples:

As shown above, we must type "= POWER (A2, A3)" to find the power of 10 stored in A2 raised to 3. This is how Excel's power function works.

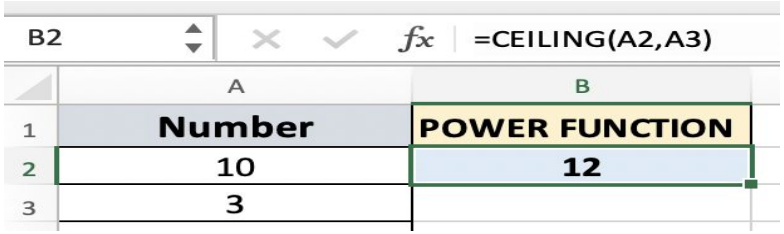


BASIC FUNCTIONS

8. .Ceiling

Syntax-> =CEILING(Number, Significance)

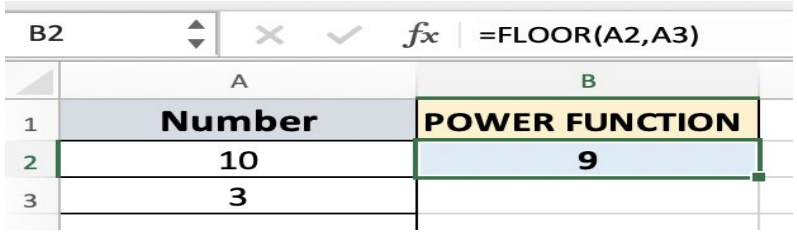
The CEILING() function rounds a number up to its nearest multiple of significance.



9. Floor

Syntax-> =FLOOR(Number, Significance)

Contrary to the Ceiling function, the floor function rounds a number down to the nearest multiple of significance.



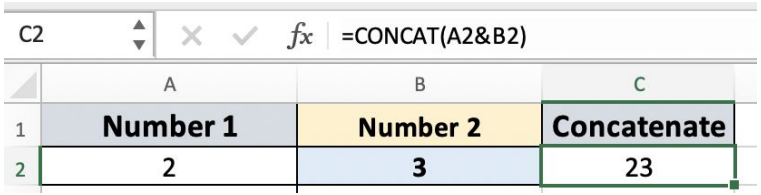
BASIC FUNCTIONS

10. Concatenate

Syntax-> =CONCATENATE(Text1, Text2)

This function merges or joins several text strings into one text string. Given below are the different ways to perform this function.

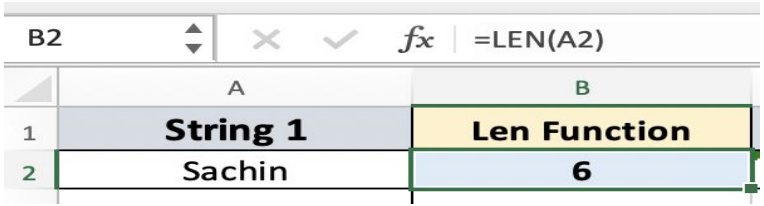
In this example, we have operated with the syntax =CONCATENATE(A2&B2)



10. Len

Syntax-> =LEN(Text)

The function LEN() returns the total number of characters in a string. So, it will count the overall characters, including spaces and special characters. Given below is an example of the Len function.



BASIC FUNCTIONS

11. REPLACE

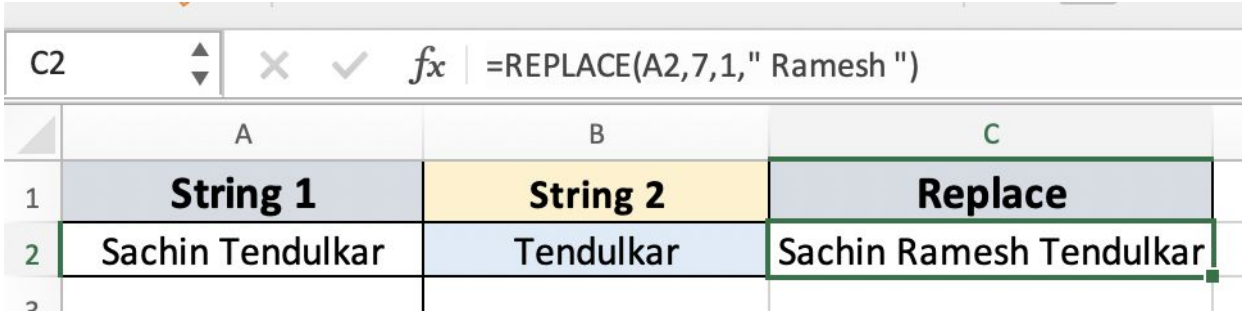
Syntax-> REPLACE(old_text, start_num, num_chars, new_text)

As the name suggests, the REPLACE() function works on replacing the part of a text string with a different text string.

The syntax is “=REPLACE(old_text, start_num, num_chars, new_text)”. Here, start_num refers to the index position you want to start replacing the characters with. Next, num_chars indicate the number of characters you want to replace.

Let’s have a look at the ways we can use this function.

Here, we are replacing by typing “=REPLACE(A2,7,1," Ramesh ")”



BASIC FUNCTIONS

12. SUBSTITUTE

Syntax-> =SUBSTITUTE(text, old_text, new_text, [instance_num])

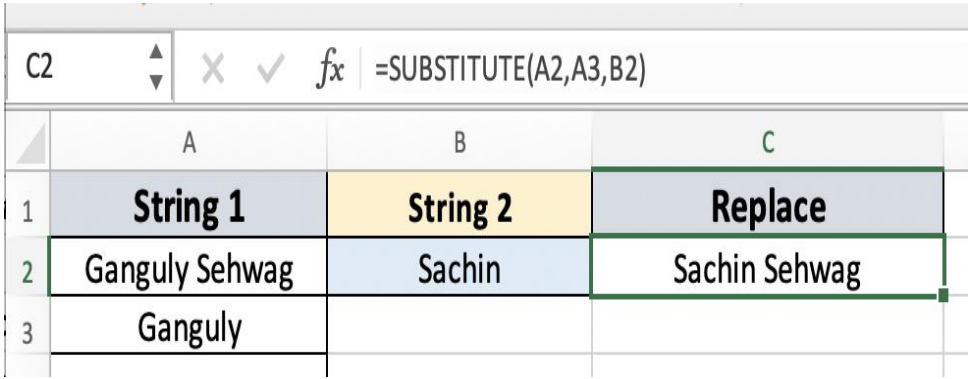
The SUBSTITUTE() function replaces the existing text with a new text in a text string.

The syntax is “=SUBSTITUTE(text, old_text, new_text, [instance_num])”.

Here, [instance_num] refers to the index position of the present texts more than once.

Given below are a few examples of this function:

Here, we are substituting “Ganguly” with “Sachin” by typing =SUBSTITUTE(A2,A3,B2)”.



BASIC FUNCTIONS

13. LEFT, RIGHT, MID

Syntax

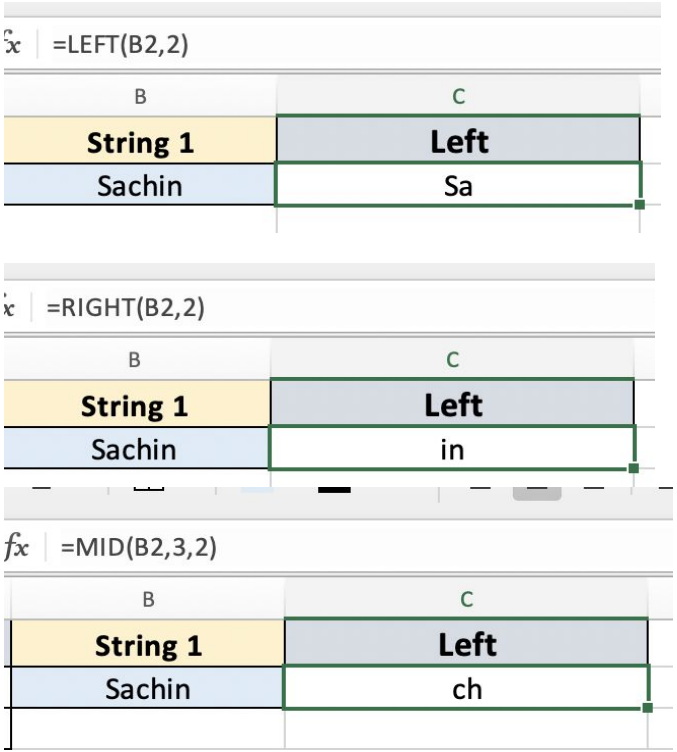
= LEFT(text, [num_chars])

=RIGHT(text,[num_chars])

=MID(text, start_num, num_chars)

The LEFT() function returns the number of characters left from the beginning of a text string. Meanwhile, the MID() function, given a starting position and length, returns the characters from the middle of a text string. Finally, the right() function returns the number of characters between the beginning and end of a text string.

Let's understand these functions with a few examples.



BASIC FUNCTIONS

14. UPPER, LOWER, PROPER

Syntax

=UPPER(text)

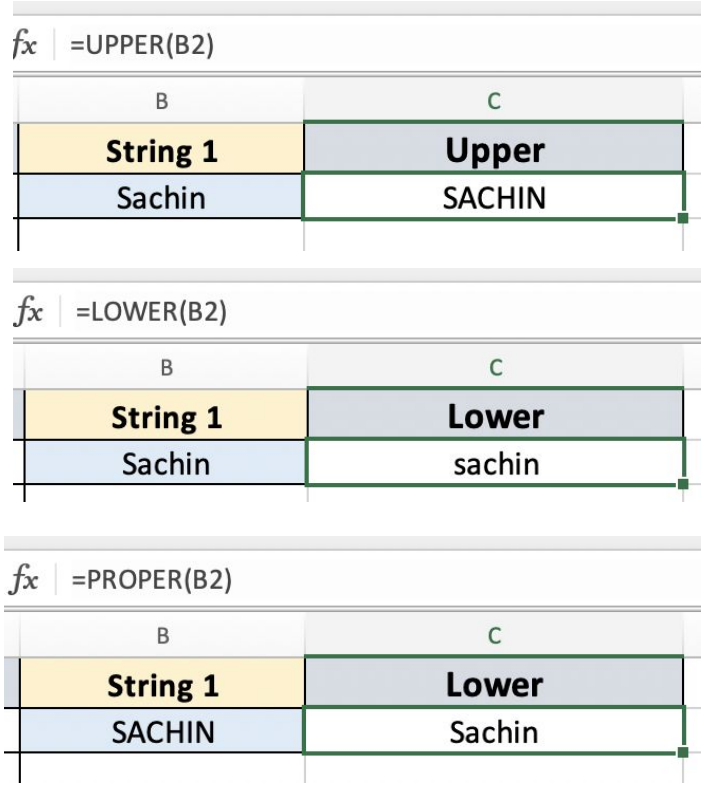
=LOWER(text)

=PROPER(text)

Using the UPPER () function, any text string can be converted to uppercase using the UPPER() function. The LOWER() function, on the other hand, converts any text string to lowercase. The PROPER() function converts any text string to proper case, which means that the first letter in each word is in uppercase and the rest are in lowercase.

Let's understand this better with the following examples:

Here, we have converted the text in B2 to a full uppercase one in C2.



BASIC FUNCTIONS

15. NOW()

The NOW() function in Excel gives the current system date and time.

16. TODAY()

The TODAY() function in Excel provides the current system date.

17. DAY()

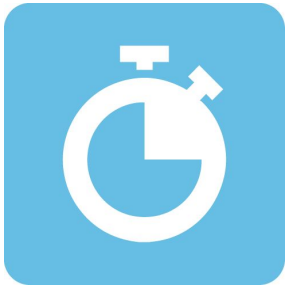
The function DAY() is used to return the day of the month. It will be a number between 1 to 31. 1 is the first day of the month, 31 is the last day of the month.

The MONTH() function returns the month, a number from 1 to 12, where 1 is January and 12 is December.

Fig: Month function in Excel

The YEAR() function, as the name suggests, returns the year from a date value.

BASIC FUNCTIONS



17. TIME()

The TIME() function converts numbers representing hours, minutes, and seconds to an Excel serial number formatted with a time format.

18. HOUR, MINUTE, SECOND

The HOUR() function returns the hour as a number ranging from 0 to 23 from a time value. In this context, 0 denotes 12 a.m. and 23 denotes 11 p.m.

MINUTE() returns the minute from a time value as a number ranging from 0 to 59.

The SECOND() function returns the second as a number ranging from 0 to 59 from a time value.

FORMATTING BASICS IN EXCEL

CONDITIONAL FORMATTING

Use conditional formatting to explore and analyse data visually, detect critical issues, and identify patterns and trends.

Conditional formatting allows you to easily highlight interesting cells or ranges of cells, highlight unusual values, and visualise data by using data bars, colour scales, and icon sets that correspond to specific variations in the data.

The appearance of cells in a conditional format is determined by the conditions you specify. If the conditions are met, the cell range is formatted; otherwise, the cell range is not formatted. There are many pre-existing conditions, and you can also add your own (including by using a formula that evaluates to True or False).

(Class Assignment)

FORMATTING BASICS IN EXCEL

Conditional formatting of monthly high-temperature data for different locations, with colors that intuitively correspond to the values (hotter values are more orange/red, while cooler values are more yellow/green).

	A	B	C	D	E	F	G
1	City	Jan	Feb	Mar	Apr	May	Jun
2	Barstow	80	84	84	97	95	98
3	California City	78	86	84	96	98	102
4	Cinco	83	86	86	97	95	103
5	Hesperia	78	85	87	98	97	102
6	Lancaster	78	85	86	99	95	101
7	Mojave	82	85	86	98	96	99
8	Palmdale	81	84	85	97	95	101
9	Ridgecrest	81	87	87	97	96	98
10	Rosamond	82	86	88	99	97	101
11	Santa Clarita	79	85	87	95	96	103

THANK YOU

In the next class we will study:

- Logical and Reference Functions