

$Ctrl + D \Rightarrow$  Fill downwards

double click 2118  
shortcut

- 1) Select ~~DATE~~
- 2)  $Ctrl + D$

Replace

$Ctrl + H$

Alt + A

Replace all

Remove duplicates in the data tab.

Remove duplicates can be used to find only the unique values in a column.

Average If (<sup>range to be evaluated</sup> Range, criteria, <sup>Averaging range</sup> Data <sup>condition</sup>)

one condition

condition to compute average

(① criteria) → Based on (③)  
 (② range)      condition

\$ sign :- The row or column after the dollar sign is "fixed"

= CONCATENATE (Select cell, - , Select cell)

= Select cell & Select cell

Join two cells  
columns

= LEFT (text, num-chars)

Select word      Total letters  
                  100123456789

Text field

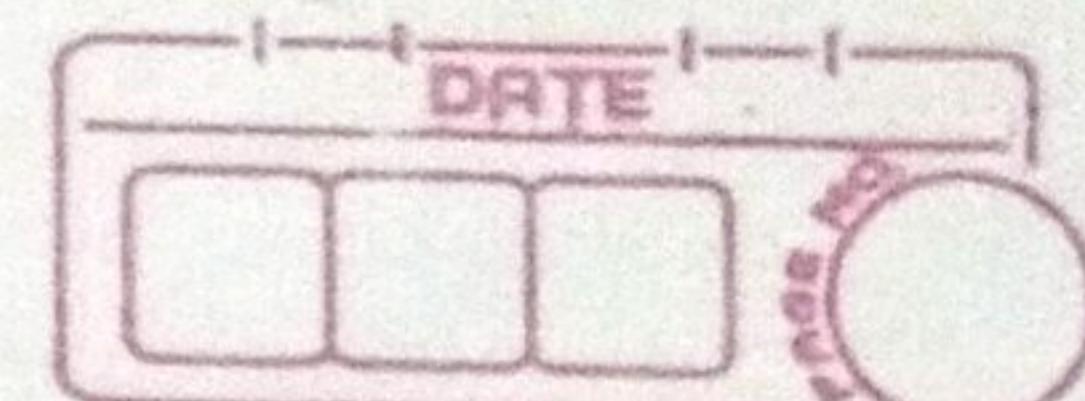
first letter

write appropriate

= UPPER (text)

text capital field  
convert PROZESS187

Alt + V  $\Rightarrow$  Paste special shortcut



= IF (logical-test, value if true, value if false)

cell > num

=

x

N

\* Bar chart used when 1 variable is categorical and 1 is numeric.

Stacked bar charts are used when there are more than one categorical variables.

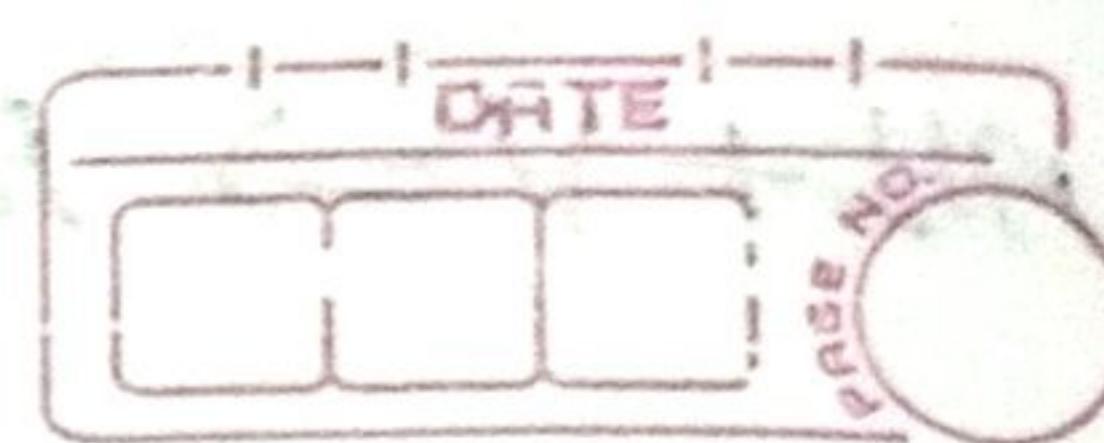
Line chart 1 categorical 1 numeric

Scatter plots are used when you want to plot two numeric variables.

e.g. age income

\* Anecdotes -II

## Slicer



### \* Pivot Table

Analyze → Slicer

multiple scenario

साथी at a time

filter करता होता  
पाहेजे करता.

Shift Alt Tab

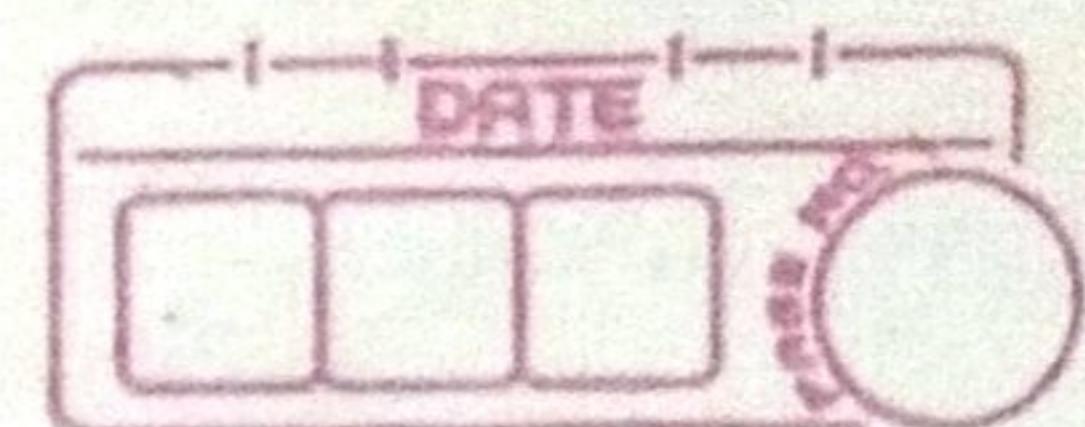
Select करता रहता. Control.

Slicers present a visual interface to select multiple parameters. Try and use Ctrl to select multiple parameters and observe how the in the pivot table change automatically.

Slicers should be used when preparing a visual interface.

Filters should be used when preparing a report.

Slicers like Dashboard.



\*  $=VLOOKUP(\text{Lookup value}, \text{Table array}, \text{Col index number}, \text{Range})$

Value to be found or <u>first column of</u> <u>Search table</u>	Table to be searched new Data Table	Column number for which matching index must be returned
only first column	attach data 02/12/21 31/12/21 new Data table 48171 column number	approximate or exact match if Exact match=False approximate=True FALSE used
Direct assistance of M2 CONCATENATE direct to 02/12/21	EDIT	

### VLOOKUP - Linking Data from multiple files and tables

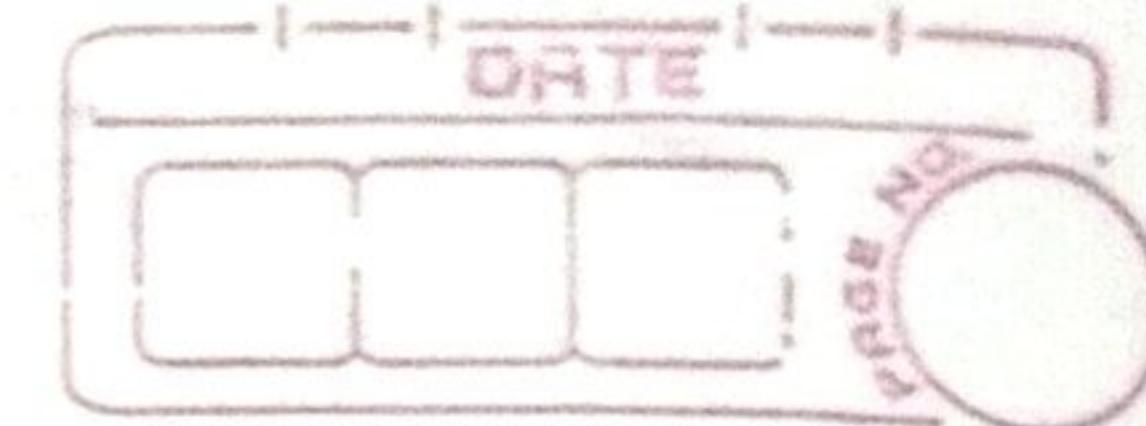
- 1) Combine the data in two different tables
- 2) The basic idea of VLOOKUP is to merge two tables using a common column.  
(Without common column merging not possible)

VLOOKUP → Left joint

Remember:-

- 1) The value that we're searching should be the 1st column in the target table.
- 2) When looking up a value from another excel file, the target file should be in the same directory as the present file.

Different workbook having Data 24/10/2019  
VLOOKUP direct 21/11/2019).



\* Top 3 mistake we're most likely to commit while using VLOOKUP are:-

- 1) The key (column to be searched) should be the first column in the target table
- 2) #N/A errors due to missing Dollar Signs
- 3) The last argument in VLOOKUP is mostly False.

## COMMON ERRORS IN EXCEL

Looking  
for  
error  
#NAME?

- 1) #NAME?  
name in formulae does not exist  
One mistake in defining check formulae.
- 2) #N/A  
not applicable  
define appropriate match #N/A
- 3) #REF!  
Reference data deleted  
#REF! / DK  
Reference value missing
- 4) #VALUE!  
~~eg = 3~~  
empty cell eg =  $\frac{3}{Y}$

Formulas → Evaluate formulae

Error checker → evaluate formulae  
Test check #REF!.

Formulas → Error checking  
errors sheet test #REF!  
#REF! → #NAME!

## Formulae (Tab),

Formulas (Tab) → Trace Precedents

cell को देखा को प्राप्त करने वाली आवृत्ति affected  
आवृत्ति देखा को प्राप्त करने वाली आवृत्ति.

Trace Dependence gives arrow.

Show formula gives formula

(Formula change प्रदर्शित करने का रिकॉर्ड)

## Watch

Watch window # select cells  
दिखाएं.

परिवर्तन करका  
observe करें.

## \* Substrings

Learning objective

Data cleaning



concatenate

left & Right

mid & Trim

Uppercase & Lowercase

Find & Search

Substitute & Replace

Len & Char

And & OR

Round

Floor

Conditional Formatting

### 1) Concatenate Joining the strings

=CONCATENATE(B8, " ", C8, " ", D8)

" " is used to add space in bet"

### ② Using '&' operator

= B8 & " " & C8 & " " & D8

### ③ Concatenate string and numerical

= "Your bill is" & B16

### 2) Left, Right in Excel

① Left function returns the number of characters defined from the string from left.

= LEFT (Text, number of characters)

② Right function returns the number of characters defined from the string from Right.

= RIGHT (Text, number of characters)

eg. = LEFT ("Bangalore", 3)  
⇒ Ban

### ① MID :-

= MID (text, start num, num chars)  
eg. = MID ("bangalore", 2, 4)  
⇒ anga

Text बंगलोर को प्राप्ति करता है तो इसके word write  
down अब 2021/27/81.

### ② TRIM :- Unnecessary spaces removed

TRIM function removes a text value with the leading and trailing spaces removed. It is also used to remove unnecessary spaces bet" words in a string.

= TRIM ("Text")

### ③ LOWER & UPPER and PROPER case in Excel.

i) LOWER Function converts string in lower case

yntax:-  
= LOWER ("Text")

eg. = LOWER ("GANESH") ⇒ ganesh

ii) UPPER Function converts string in upper case

= UPPER ("Text")

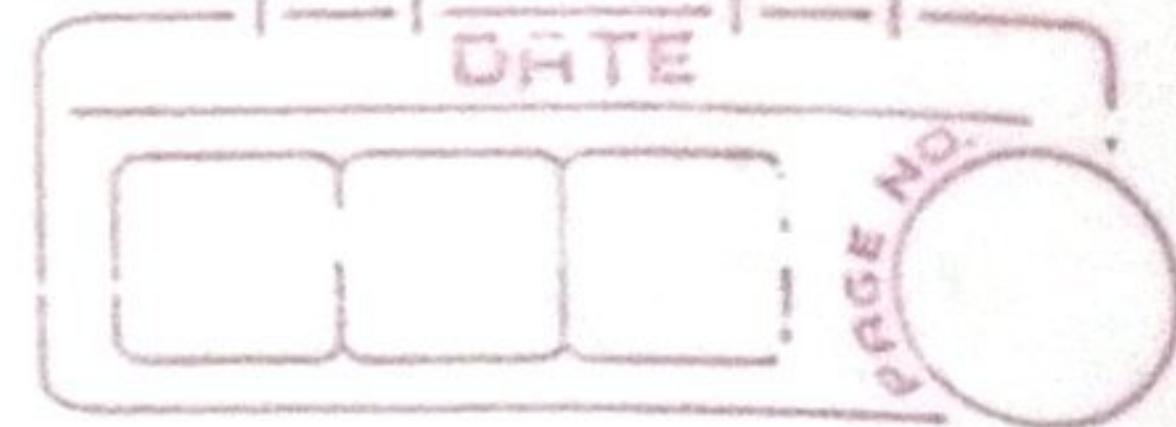
eg. = UPPER ("Ganesh") ⇒ GANESH

iii) PROPER function converts string in proper case.

= PROPER ("Text")

eg. = PROPER (" hi! ganesh ") ⇒ Hi! Ganesh

## Search insensitive



### ① Find & Search in Excel

- Find function is used to find position of the particular substring within a string.

= FIND ("Find text", "Within text")

e.g. = FIND ("Hello", "Hello Ganesh") → 1  
Show number if hello → Error  
location sensitive

- Search function is used to find substring with in the string.

= SEARCH ("Find text", "Within text")

e.g. = SEARCH ("hello", "Hello! Ganesh") → 1

= SEARCH ("good", "I am Good")

↳ single character you don't know

= SEARCH ("go\*", "I am Good")

↳ multiple character you don't know

### ② Substitute & Replace

- When we know the text to be replaced we use substitute function

= SUBSTITUTE (cell name, "old tex", "New text", [start, end])

e.g. = SUBSTITUTE (C1, "Hello", "Hi") → Hello Replace by Hi

= SUBSTITUTE (C1, "Hello", "Hi", 2) → 2<sup>nd</sup> Hello

Substitute is CASE SENSITIVE. Replaced by Hi

- When we know the position of the text to be replace we use Replace function.

= REPLACE (cell name, start number, number characters, "New text")

e.g. = REPLACE (C1, 4, 3, "Hi") → starting from 4<sup>th</sup> position & length 3 will be replaced by Hi.

## ① Len & Char

i) Len function is used to calculate the length of the string.

= LEN ("text")

eg. = LEN ("GANESH")  $\Rightarrow$  6 spaces counted

ii) We can retrieve the characters from its ASCII value using char function.

= CHAR (ASCII code)

eg. = CHAR (65)  $\Rightarrow$  A

= CHAR (64)  $\Rightarrow$  @

## ② Round

It returns a number rounded to a given number of digit. The ROUND function can round to either left or right of the decimal point.

= ROUND (number, number digit).

eg. = ROUND (6.7845, 1)  $\rightarrow$  6.8 Rounding to nearest 1 decimal point.

= ROUND (6.7845, 0)  $\rightarrow$  7 Rounding to nearest whole number.

= ROUND (9518.5, -1)  $\rightarrow$  9520 Rounding to nearest 10

= ROUND (9518.5, -2)  $\rightarrow$  9500 Rounding to nearest 100

= ROUND (9518.5, -3)  $\rightarrow$  10000 Rounding to nearest 1000

## ③ Floor

It rounds a given number down to the nearest specified multiple.

= FLOOR (number, multiple)

eg. = FLOOR (232, 3)  $\Rightarrow$  231 Rounding the nearest multiple of 3

= FLOOR (441, 5)  $\Rightarrow$  440 Rounding to the nearest multiple of 5

= FLOOR (-7.8, -2)  $\Rightarrow$  -6 Rounding to largest nearest multiple of 2

= FLOOR (-7.8, 2)  $\Rightarrow$  -8 Rounding to smallest multiple of 2.

NOTE: This works only with the -ve numbers.

(multiple smaller numbers of particular numbers)

## ① AND & OR:- (operators)

- 1) AND means when both of the conditions are True then only it is True otherwise it is False
- 2) OR means when any one of the condition is True then its True or when both of them are False then its False.

### 1) AND example operators

= IF (AND ([@maths]>40, [@Physics]>40), "Pass", "Fail")

### 2) OR operators

= IF (OR ([@maths]>40, [@Physics]>40), "Pass", "Fail")

## \* Conditional Formatting

It enables you to highlight cells with a certain color, depending on the cell's value.

- With Highlight Cells Rules we can highlight cells greater / less / equal / not equal than certain value.

- With Top / Bottom Rules we can highlight top / bottom 10% cells, etc.

Conditional Formatting button is present in home tab of excel.

## \* Data Mapping :-

1) Vlookup

2) H lookup

3) Index and Match

4) Offset

5) Dropdown

## ① V LOOKUP :-

It is used to make a exact match or approximate match and find values from leftmost column.

=VLOOKUP(<sup>Look up value</sup>, <sup>Table Array</sup>, <sup>Column number</sup> Column Index number, <sup>Exact</sup> <sup>Approximate</sup> Range lookup bool value)

False → Exact value

True → Approximate value

#NA → Value not found  
→ Exact match not found

~~Lookup Sensitive~~

② VLOOKUP function always looks up a value in the leftmost column of a table and returns the corresponding value from a column to the right.

- 2) It is case-insensitive
- 3) In case of multiple matches it will take first match.
- 4) If no value is matched it returns null.

## ① H LOOKUP :-

It is used to make a exact match or approximate match and find values from topmost row.

=HLOOKUP(<sup>Look up value</sup>, <sup>Table Array</sup>, <sup>Row number</sup> Row Index number, <sup>Exact</sup> <sup>Approximate</sup> Range lookup bool value)

1) HLOOKUP function always looks up a value in the topmost row of a table and returns the corresponding value from a row to below.

2) It is case-insensitive

3) In case of multiple matches it will take first match.

4) If no value is matched it returns null.

Example :- Clesans form at the end of the year

### ○ Match :-

It returns the position of a value in a given range.

= MATCH (value, lookup range)

e.g. = MATCH (104, A3:A9)  $\Rightarrow$  Here it the function would return us the position of the matched value from the range.

$\Rightarrow$  Value at first start at 3rd gives range from 3rd to match function result.

### ○ Index :-

It returns a specific value in a one-dimensional range with reference to index.

= INDEX (lookup range, lookup index)

e.g. = INDEX (A3:A9, F19)  $\Rightarrow$  Here it would look for value of F19 index in range from A3 to A9.

जहाँ से तीसरा विकल्प (index) value write down करें।

### ○ Index & match :-

1) To perform advance lookups we can use INDEX and MATCH function together.

2) We can get the index value from MATCH function and then use this value in INDEX function for getting the value.

e.g. :- = INDEX (D3:D9, MATCH (103, A3:A9))  
 $\Rightarrow$  Here, match function will return value of 5th row with respect to 103 in range A3 to A9 then this 5 will be used by index function to lookup in 5th row of range D3 to D9.

## ① Offset :-

It returns a cell or range of cells that is a specified number of rows and columns from a cell or range of cells.

= OFFSET (reference, row, column, height, width).

e.g. = OFFSET (A2, 3, 3, 1, 1)  $\Rightarrow$  Reference point will be A2, It will move 3 rows below and 3 columns right, Fetch 1 value in height and 1 width reference value.

Reference ~~कोड़ी~~ cell तक त्रैती बाट रहे

location का value ~~प्रदर्शित करती~~

Reference ~~कोड़ी~~ Row/ column count दर्तया.

## ② Dropdown :-

- 1) Instead of typing you can take values from user as a list of data in the form of Dropdown menu.
- 2) Steps to add a Dropdown
  - Select a cell where you want to make a dropdown in sheet 1
  - Make a list of cities in different cells in sheet 2 which you want as options in dropdown.
  - These we want create dropdown as below  
DATA  $\rightarrow$  Data Validation  $\rightarrow$  Allow (List)  $\rightarrow$  SOURCE  
(select range which create in sheet 2)  $\rightarrow$  OK

## \* Data Aggregation:-

### ① Pivot Table:-

A pivot table allows you to extract the significance from a large, detailed data set.

- It can be used as a data aggregating function.
- We can create new table using pivot table.

Steps to make a pivot table:-

- select any data cell from the table
- In Insert tab hit pivot table
- By default you will get a blank pivot table in new sheet
- Drag fields in rows, columns, values and filters area. (columns for 2d pivot).
- To sort the table right click any cell and hit sort button.
- Click the filters drop-down for filtering.

Value Field setting → sum, count, Average, max, min, std, var, etc.

Pivot table ~~analyze~~ ~~select~~ ~~insert~~ ~~format~~ ~~formula~~  
apply ~~drop~~ ~~drag~~ column ~~different~~ ~~sort~~ ~~filter~~

Analyze → Fields, Items and Sets → ~~Fill information~~  
~~(calculations)~~ → ~~OK~~

Calculated fields →

## ① Slices:- (Filter for pivot table).

It is used to quickly and easily filter pivot tables.

## ② Steps to make Slices

- In analyse tab hit slices

- select the parameters on the basis of which you want to slice:

## \* Data Visualization:-

1) Bar plot  $\Rightarrow$  1 categorical and 1 numerical data  
 $x\text{-axis}$   $y\text{-axis}$   
(Frequency gives for categories).

2) Pie chart  $\Rightarrow$  1 categorical and 1 numerical  
(circular form) (% gives for categories).

3) Line chart  $\Rightarrow$   $x\text{-axis} \rightarrow$  categories  $y\text{-axis} \rightarrow$  value  
(comparative study) (Study trend).

4) Combination chart  $\Rightarrow$  Bar chart + line chart.

5) Scatter plot  $\Rightarrow$  Used to show the relationship  
btwn two numerical parameters.

## \* Charts:-

Pivot charts are use to analyse the data with in pivot table.

6) Radar chart:- 1 categorical multiple numerical variable.  
Radar chart is one of the chart use to have clear picture when you want to analyze multiple numerical parameters with respect to categorical feature.

Radar chart has single <sup>(or more)</sup> categorical variable and multiple numerical variable.

Add chart Elements option contains title for axis



In Design

