



# Excel for Analytics





# Excel - Reading Data

Reading Data into Excel using various format

- Regular Excel Format(.xlsx,.xls)
- Text Format(.txt)

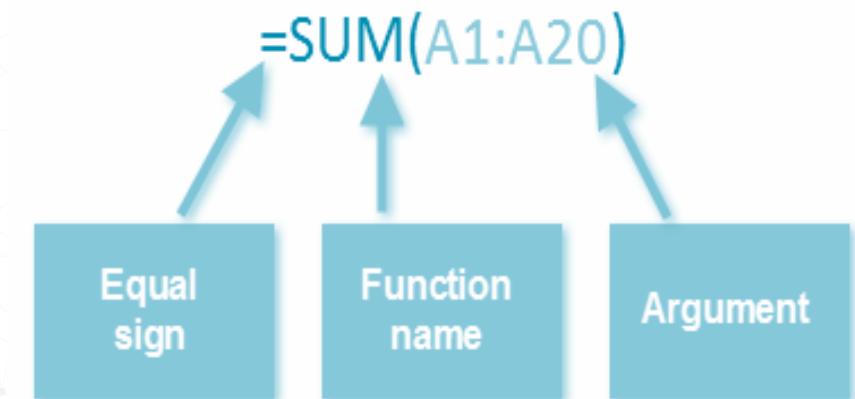


Select Get Data  
From Other Sources  
From Web



# Excel- Predefined Functions

- ROUND(): returns a number rounded to a specified number of digits
- SQRT(): returns square root of a number
- MIN()/MAX(): returns the smallest/largest numeric value in a range of values
- SUM(): returns the sum of a range of values
- AVERAGE(): returns the average or mean value of a range of values
- MEDIAN(): returns the median value of a range of values
- RANK(): used to find the rank of a number in a list of numbers
- LEFT()/RIGHT(): extracts a given number of characters from the left side/right side of a supplied text string
- LEN(): used to find the length of a text string





# Excel- Advanced Functions

## DateTime

- `DATE()`: creates a valid date from individual year, month, and day components
- `EOMONTH()`: Returns the serial number for the last day of the month that is the indicated number of months before or after start date
- `NETWORKDAYS()`: calculates the number of workdays between two dates in Excel
- `WEEKDAY()`: returns a number between 1-7 representing the day of week.

DATE()

WEEKDAY()

EOMONTH()

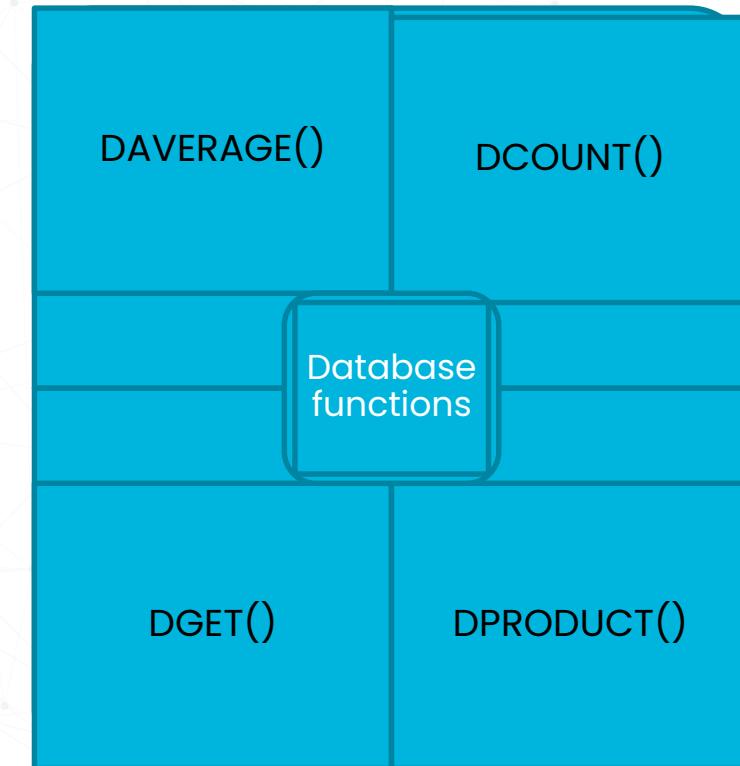
NETWORKDAYS()



# Database Functions

## Database Functions

- DAVERAGE(): calculates an average for values in an Excel list
- DCOUNT(): counts matching records in a database using criteria and an optional field
- DGET(): extracts a single value from a column of a list or database that matches specified conditions
- DPRDUCT(): returns the product of values from a set of records that match criteria





# Excel- Advanced Functions

## Text Functions

- FIND(): returns the location of a substring in a string
- REPLACE(): replaces characters specified by location in a given text string with another text string
- SUBSTITUTE(): replaces text in a given string by matching
- MID(): extracts a given number of characters from the middle of a supplied text string
- SEARCH(): used to find the position of a character inside a text string
- CONCAT(): used to join two or more text strings into one string

FIND()

REPLACE()

SUBSTITUTE()

MID()

SEARCH()

CONCATENATE()



# Excel- Advanced Functions

## Mathematical Functions

- **PRODUCT()**: returns the product of numbers provided as arguments  
=PRODUCT (number1, [number2], ...)
- **MOD()**: returns the remainder of two numbers after division  
=MOD (number, divisor)
- **SQRT()**: returns the square root of a positive number  
=SQRT (number)
- **FACT()**: returns the factorial of a given number
- **ROUNDUP() / ROUNDDOWN()**: round the number upward/downward to the specified number of digits  
=ROUNDUP (number, num\_digits)
- **SUMIFS()**: adds all of its arguments that meet multiple criteria  
=SUMIFS (sum\_range, range1, criteria1, [range2], [criteria2], ...)

PRODUCT()

MOD()

SQRT()

FACT()

ROUNDUP()

ROUNDDOWN()

SUMIFS()



# Excel- Advanced Functions

## Lookup Functions

HLOOKUP and VLOOKUP are functions in Microsoft Excel that allow you to use a section of your spreadsheet as a *lookup table*.

When the VLOOKUP function is called, Excel searches for a lookup value in the leftmost column of a section of your spreadsheet called the table array. The function returns another value in the same row, defined by the column index number.

HLOOKUP is similar to VLOOKUP, but searches a row instead of a column, and the result is offset by a row index number. The V in VLOOKUP stands for *vertical* search (in a single *column*), while the H in HLOOKUP stands for *horizontal* search (within a single *row*).

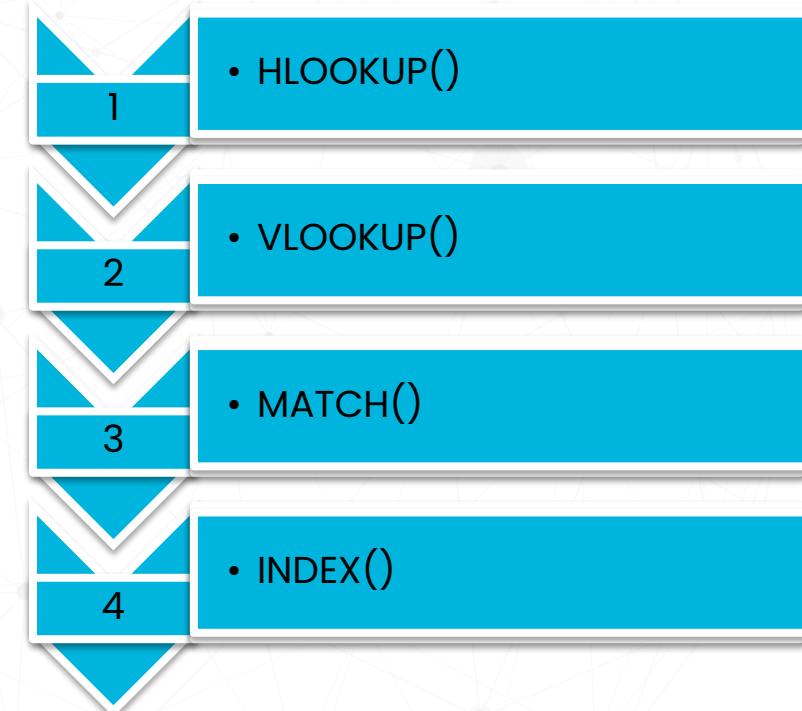




# Excel- Advanced Functions

## Lookup Functions

- HLOOKUP(): makes Excel search for a certain value in a row (the so called 'table array')  
=HLOOKUP("Axles", A1:C4, 2, TRUE)  
Looks up "Axles" in row 1, and returns the value from row 2 that's in the same column  
(column A) Result: 4
- VLOOKUP(): =VLOOKUP(What you want to look up, where you want to look for it, the column number in the range containing the value to return, Approximate or Exact match – indicated as 1/TRUE, or 0/FALSE)
- MATCH(): used to locate the position of a lookup value in a row, column, or table  
=MATCH (lookup\_value, lookup\_array, [match\_type])
- INDEX(): returns the value at a given location in a range or array  
=INDEX (array, row\_num, [col\_num], [area\_num])

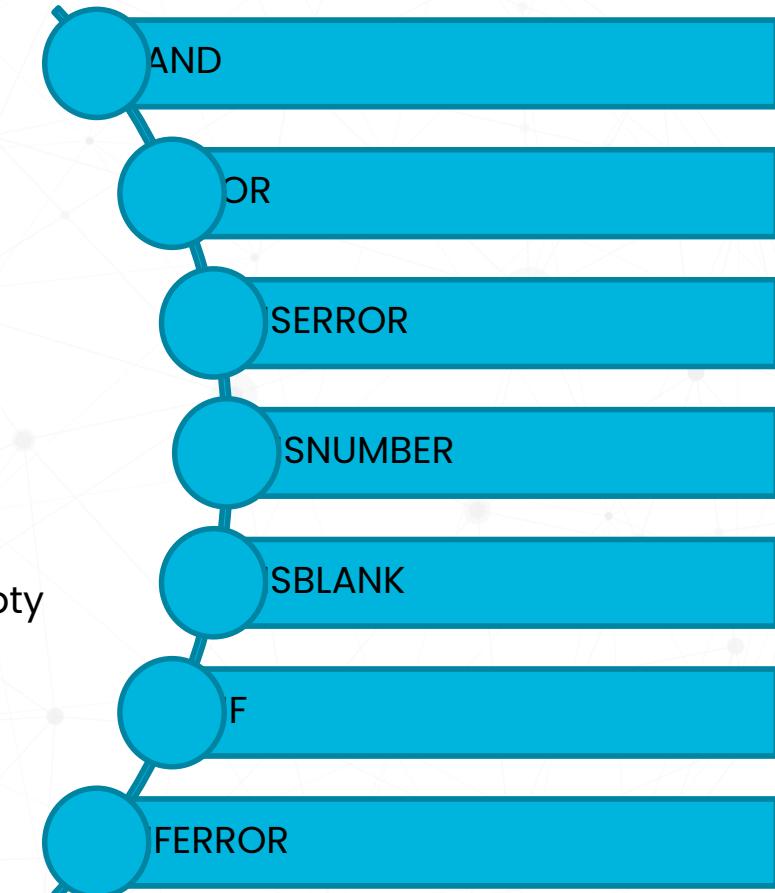




# Excel- Advanced Functions

## Logical and Error Functions

- AND: used to require more than one condition at the same time
- OR: a logical function to test multiple conditions at the same time
- NOT: The function helps check if one value is not equal to another
- ISERROR: returns TRUE for any error type excel generates, including #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME?, or #NULL
- ISNUMBER: The function checks if a cell in Excel contains a number or not. It will return TRUE if the value is a number and if not, a FALSE value
- ISBLANK: returns TRUE when a cell contains is empty, and FALSE when a cell is not empty
- IF: Test for a specific condition. =IF (logical\_test, [value\_if\_true], [value\_if\_false])
- IFERROR: returns a custom result when a formula generates an error, and a standard result when no error is detected

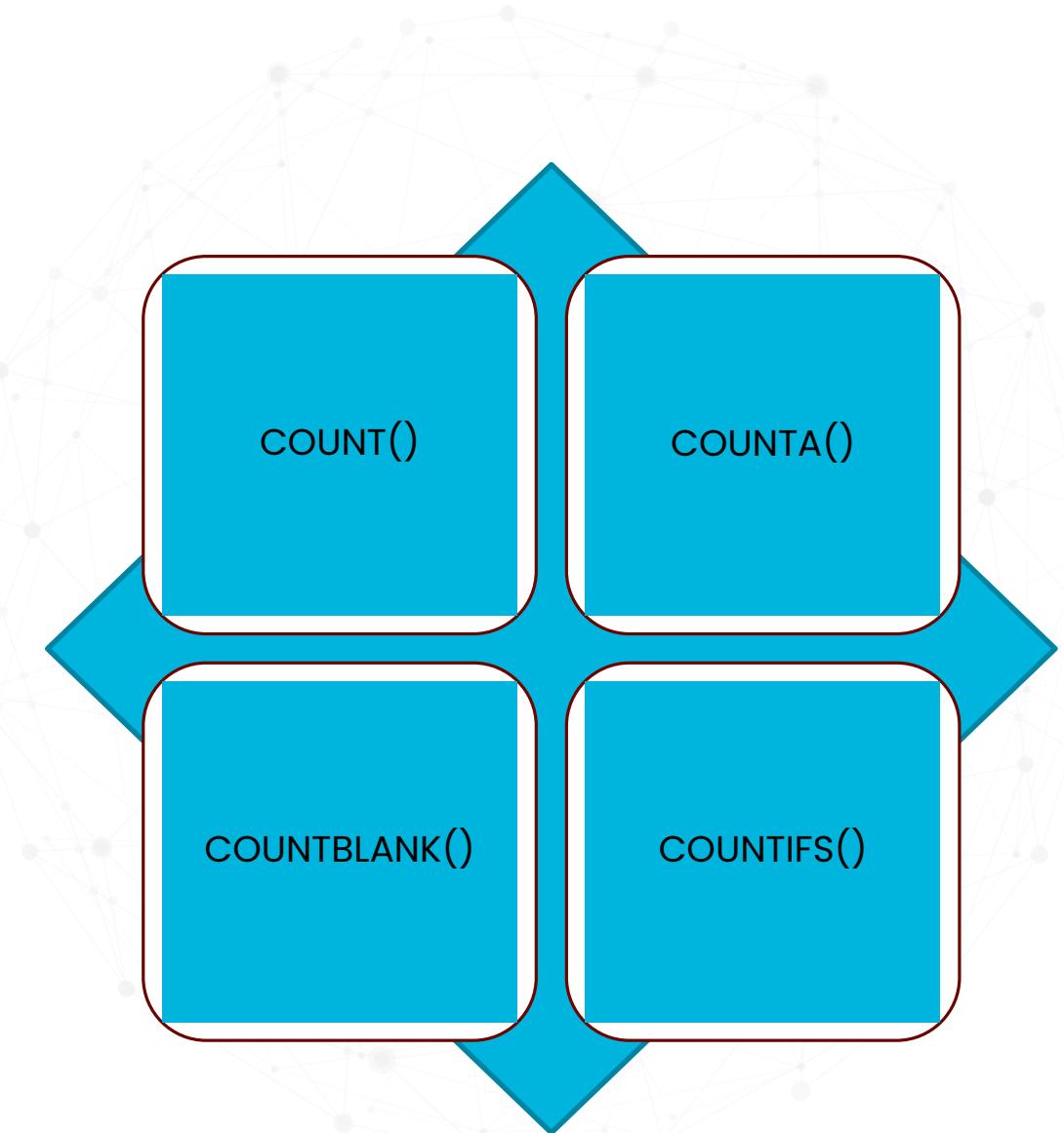




# Excel- Advanced Functions

## Statistical Functions

- COUNT(): to get the number of entries in a number field that is in a range or array of numbers
- COUNTA(): returns the count of cells that contain numbers, text, logical values, error values, and empty text (""). COUNTA does not count empty cells
- COUNTBLANK(): returns a count of empty cells in a range
- COUNTIFS(): counts the number of cells in a range that match one supplied criteria





# Statistical Functions

- MEAN: Get the average of a group of numbers. Syntax =  
`AVERAGE (number1, [number2], ...)`
- MEDIAN(): Get the median of a group of numbers.  
Syntax = `AVERAGE (number1, [number2], ...)`
- MODE(): returns the most frequently occurring number in a numeric data set.
- CORREL: used to find out the correlation coefficient between two variables. `CORREL(array1, array2)`
- STDEV: returns the statistical rank of a given value within a supplied array of values

MEAN

MEDIAN()

MODE()

CORREL()

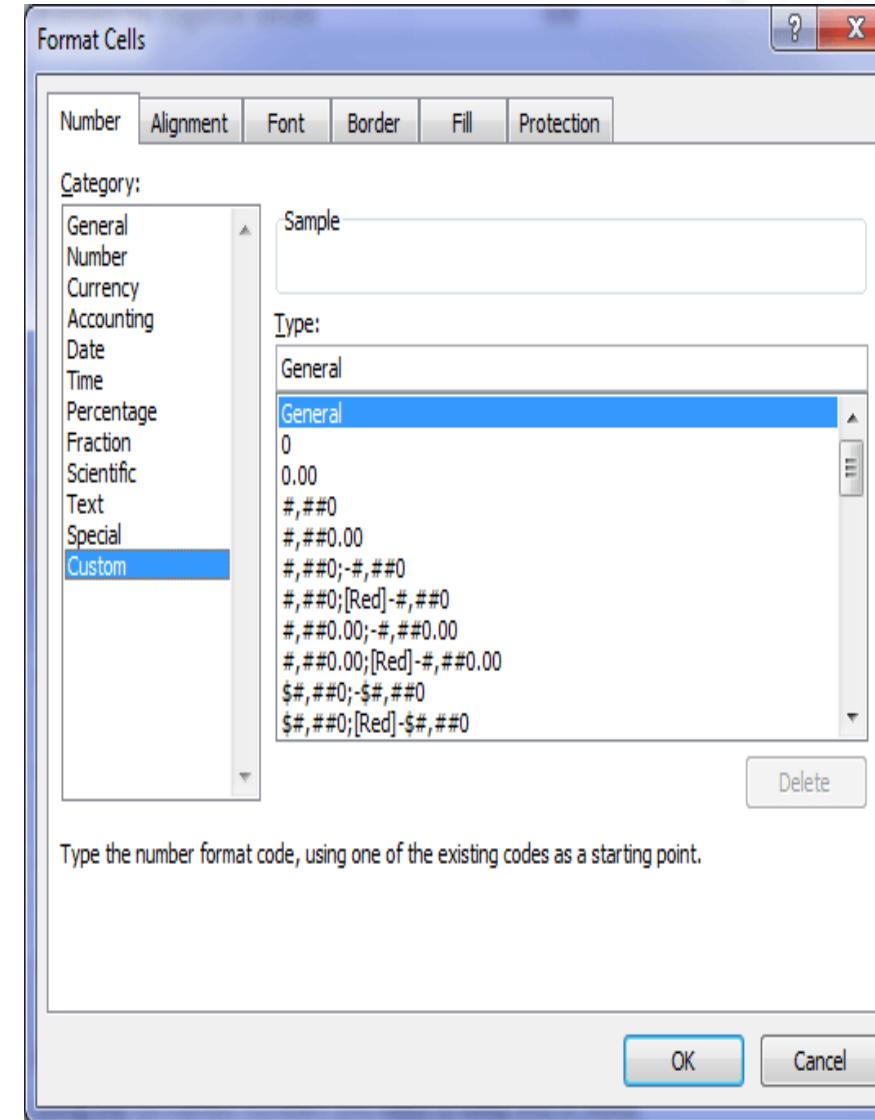
STDEV



# Formatting

Excel formatting is an optional step following data preparation, or all of the data cleansing, enriching, structuring, and standardizing that is required in order to prepare data for analysis.

For example, adding \$ to cells that contain values pertaining to prices or configuring cells that represent dates to a standard display of xx/xx/yyyy



## Components of Format Cells

- Number
- Alignment
- Font
- Border
- Fill
- Protection



# Formatting

## Data Formatting

The screenshot shows the Microsoft Excel ribbon with the "Home" tab selected. In the font section of the ribbon, there is a "Borders" icon. A red arrow points to this icon, and a red box highlights the "Borders" dropdown menu that has opened. The menu contains various options for applying borders to selected cells, such as "Bottom Border", "Top Border", "Left Border", "Right Border", "No Border", "All Borders", "Outside Borders", and several "Thick" border options. At the bottom of the menu, there are additional options: "Draw Borders", "Erase Border", "Line Color", "Line Style", and "More Borders...".

The screenshot shows the Microsoft Excel ribbon with the "Font" tab selected. Below the ribbon, a "Format Cells" dialog box is open, specifically showing the "Font" tab. This tab displays a list of available fonts, with "Calibri" selected. Other font options listed include "Calibri Light (Headings)", "Agency FB", "Algerian", and "Arial". The "Font style" section shows "Regular" selected, with other options like "Italic", "Bold", and "Bold Italic". The "Color" section shows "Automatic". A red arrow points to the "Font" tab in the dialog box.

City	Monday	Tuesday	Wednesday
Banglore	31	38	
Delhi	39	43	
Nainital	44	31	
Pune	45	27	
Mumbai	39	41	

# Formatting

## Custom Formatting

Understand how to use Custom Formatting to format number and date values



The screenshot shows a Microsoft Excel spreadsheet with a table of financial data. The table has columns for the years 2014, 2015, and 2016, and rows for names: Yoda, Luck, Leila, Han, and a total row. The table is selected, and the 'Format' tab of the ribbon is active. The ribbon also shows other tabs like 'Home', 'Insert', 'Delete', and 'Format'. The table data is as follows:

	2014	2015	2016
Yoda	\$ 43 005	\$ 30 011	\$ 24 925
Luck	\$ 45 339	\$ 26 942	\$ 26 734
Leila	\$ 35 442	\$ 29 171	\$ 11 065
Han	\$ 34 772	\$ 12 695	\$ 17 581
Total	\$ 158 558	\$ 98 819	\$ 80 305



# Formatting

## Conditional Formatting

Illustrate the use of conditional formatting in Excel

- Conditional formatting helps us visualize data and make worksheets easier to understand
- It quickly highlights important information in a spreadsheet by using colors, icons, and data bars
- It changes the appearance of one or more cells when cell values meet certain conditions

	A	B	C
1	Agent ID	First	Last
2	1	Joel	Nelson
3	2	Louis	Hay
4	3	Anton	Baril
5	4	Caroline	Jolie
6	5	Daniel	Ruiz
7	6	Gina	Cuellar
8	7	Joseph	Voyer
9	8	Nena	Moran
10	9	Robin	Banks
11	10	Sofia	Valles
12	11	Kerry	Oki
13	12	Javier	Solis

Conditional Formatting Rules Manager

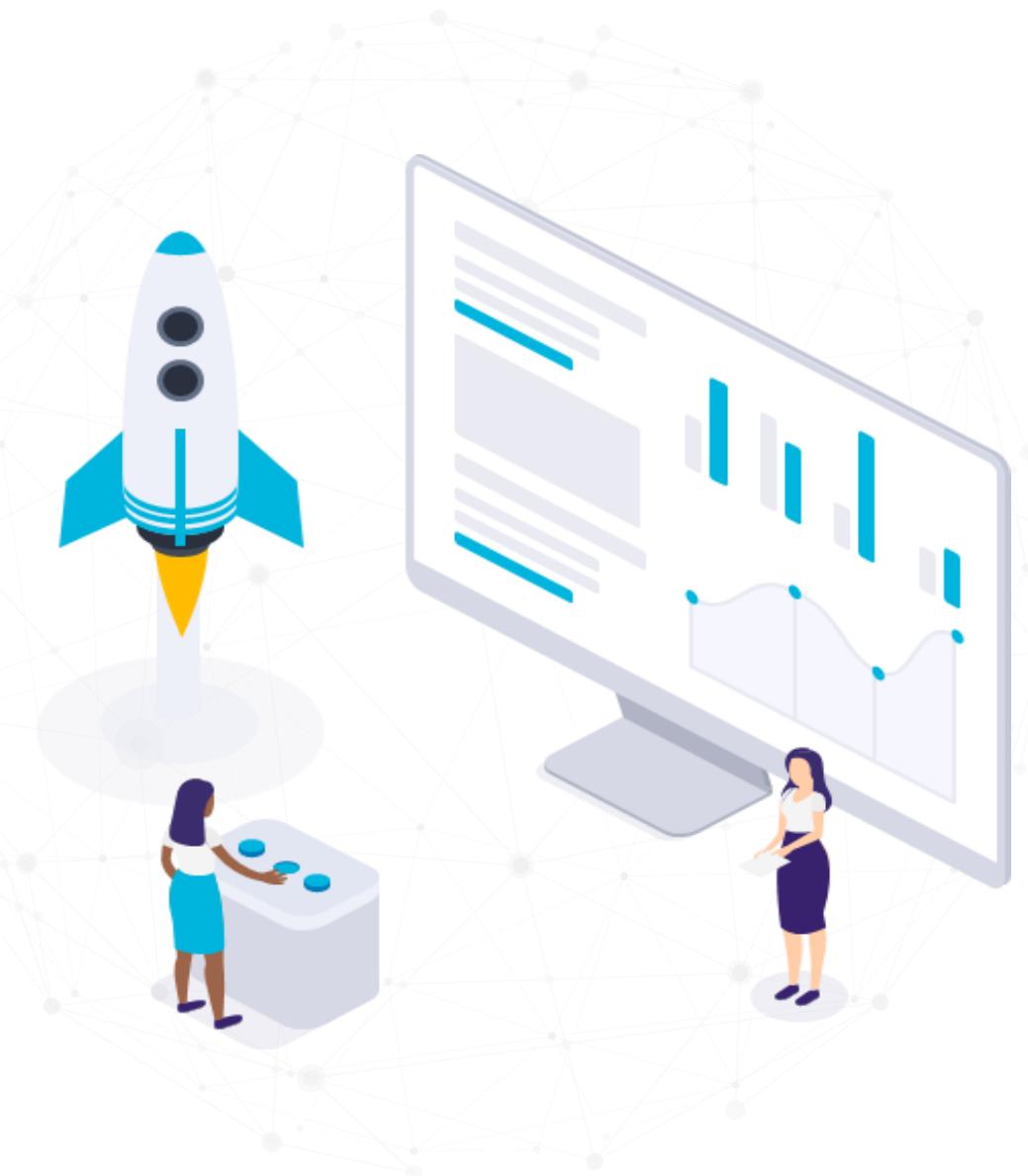
- New Rule...
- Clear Rules
- Manage Rules...



# Formatting

## Conditional Formatting

The screenshot shows the Microsoft Excel ribbon with the 'Editing' tab selected. In the 'Cells' group, the 'Conditional Format As Table' button is highlighted. A dropdown menu titled 'Conditional Formatting' is open, showing options like 'Highlight Cell Rules', 'Top/Bottom Rules', 'Data Bars', 'Color Scales', 'Icon Sets', 'Clear Rules', and 'Manage Rules'. Below this, a preview window shows a color scale from green to red applied to a range of cells. The formula bar at the bottom indicates 'Cell Value between 9 and 10'.





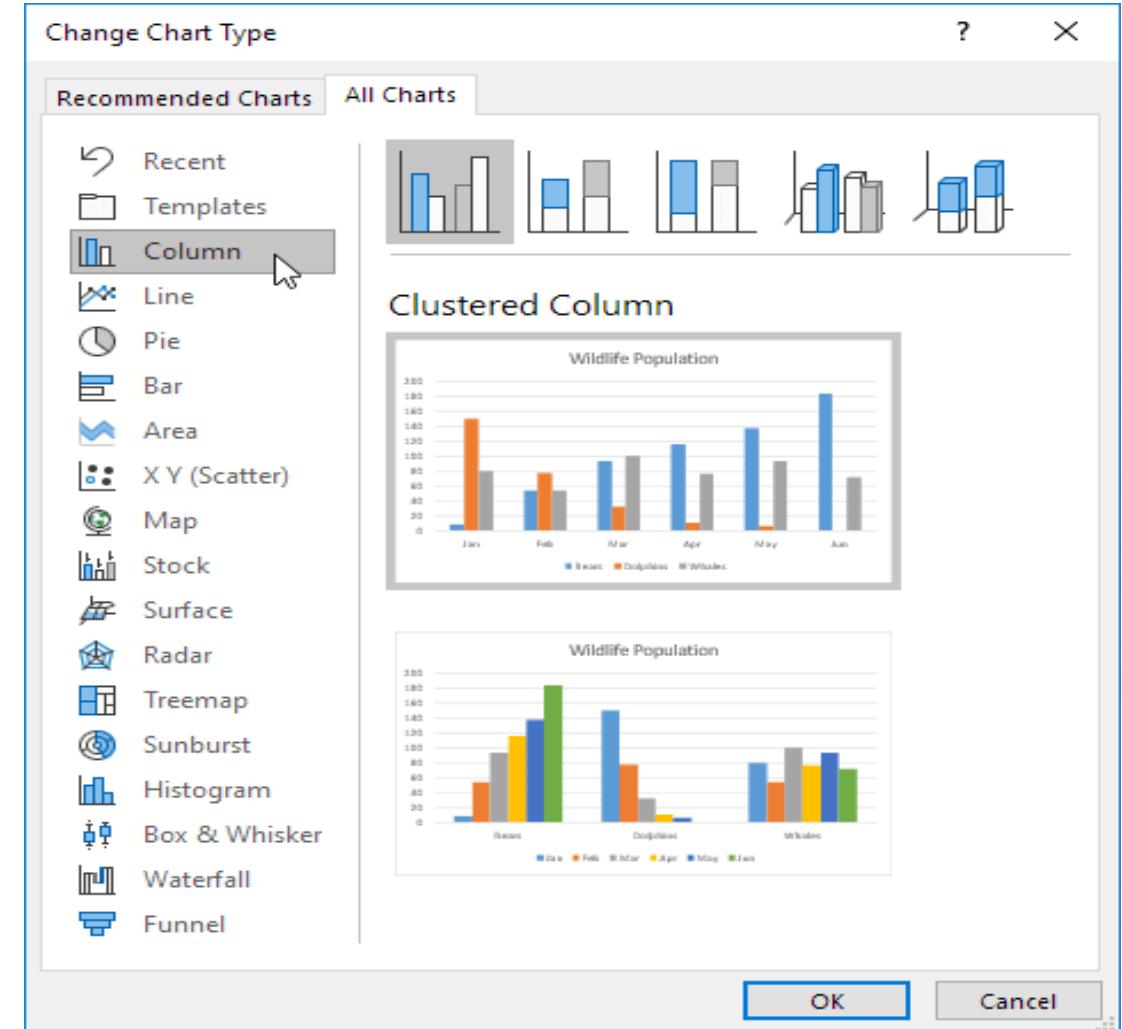
# Charts in Excel

You'll learn these things:

- Inserting a Chart
- Adjusting a Chart
- Improving a Chart
- Add series to a chart
- Create Combination Charts

MS Excel  
Excel Online  
Google Sheets

All are in a way similar in nature



# Charts in Excel

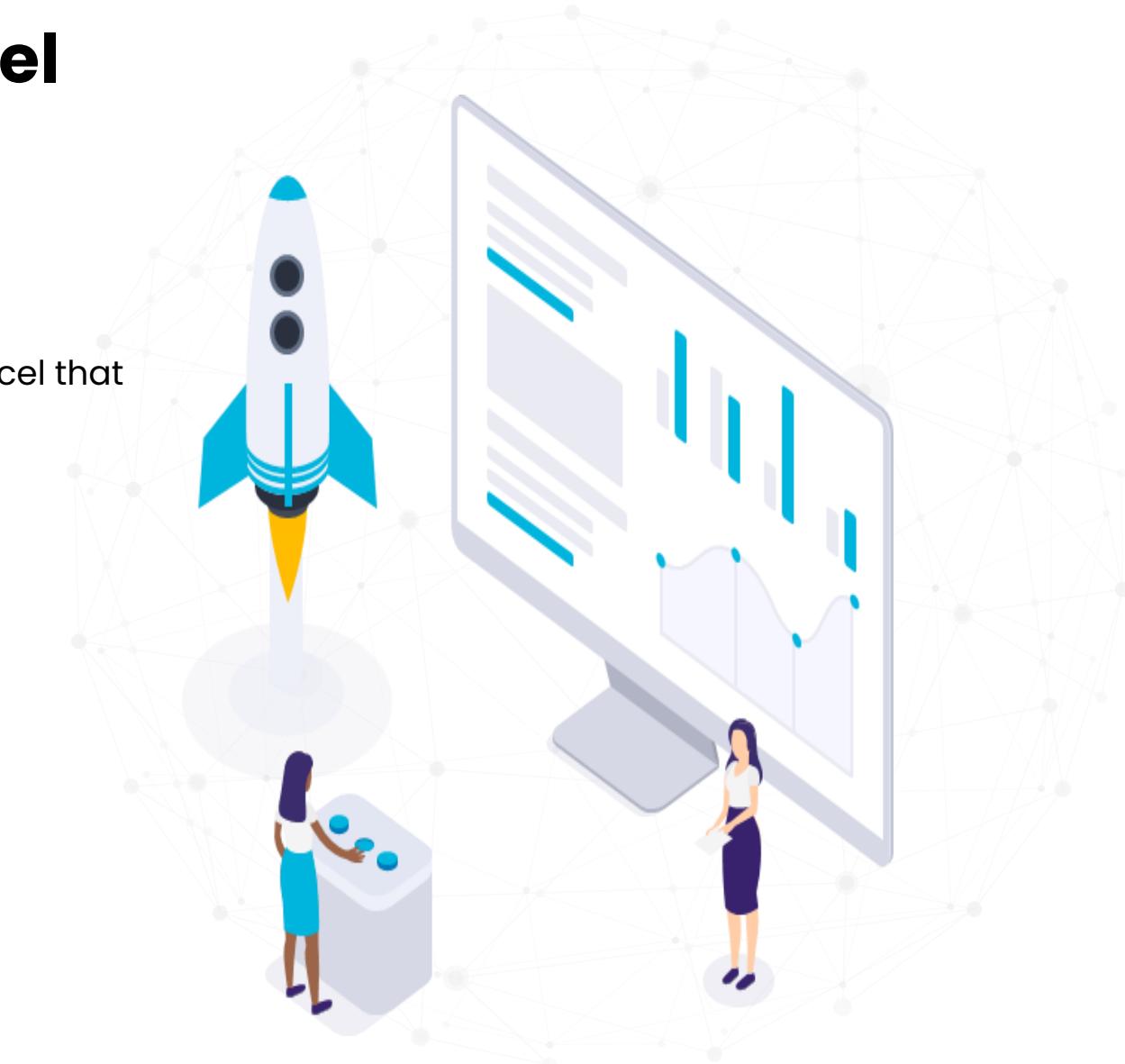


# Statistical Analysis using Excel

Let's see how do we perform various statistical tests in Excel

First of all, is it possible to perform the same Statistical tests in Excel that we usually perform in Python

The answer is YES!!





# Data Analysis using Excel

Flights and Airports Report - Excel

Carlos Otero

File Home Insert Draw Formulas Data View Power BI Power Pivot Tell me what you want to do

From Text/CSV From Web Existing Connections Refresh All Sort Filter Reapply Advanced Text to Flash Remove Data Consolidate Relationships Manage What-if Forecast Group Ungroup Subtotal Columns Fill Duplicates Validation Data Model Analysis Sheet

Get & Transform Data

U1

WORLDWIDE PASSENGER ARRIVALS REPORT

METRIC Absolute Growth

REGION Asia Europe North America Rest of World

REGION PATTERNS | Worldwide

Top Airports Rank Airport State / City Country Code Code Passengers Year

Passengers Country Name Country Code Year Passengers

Airline Codes Airline Airline String for Map... Country Code

Data for Analysis PASSENGERS FREIGHT UNIQUE\_CARRIER\_... YEAR

Slicers Metric

Geo Mappings Country Country Code Continent Regions Bing Continent

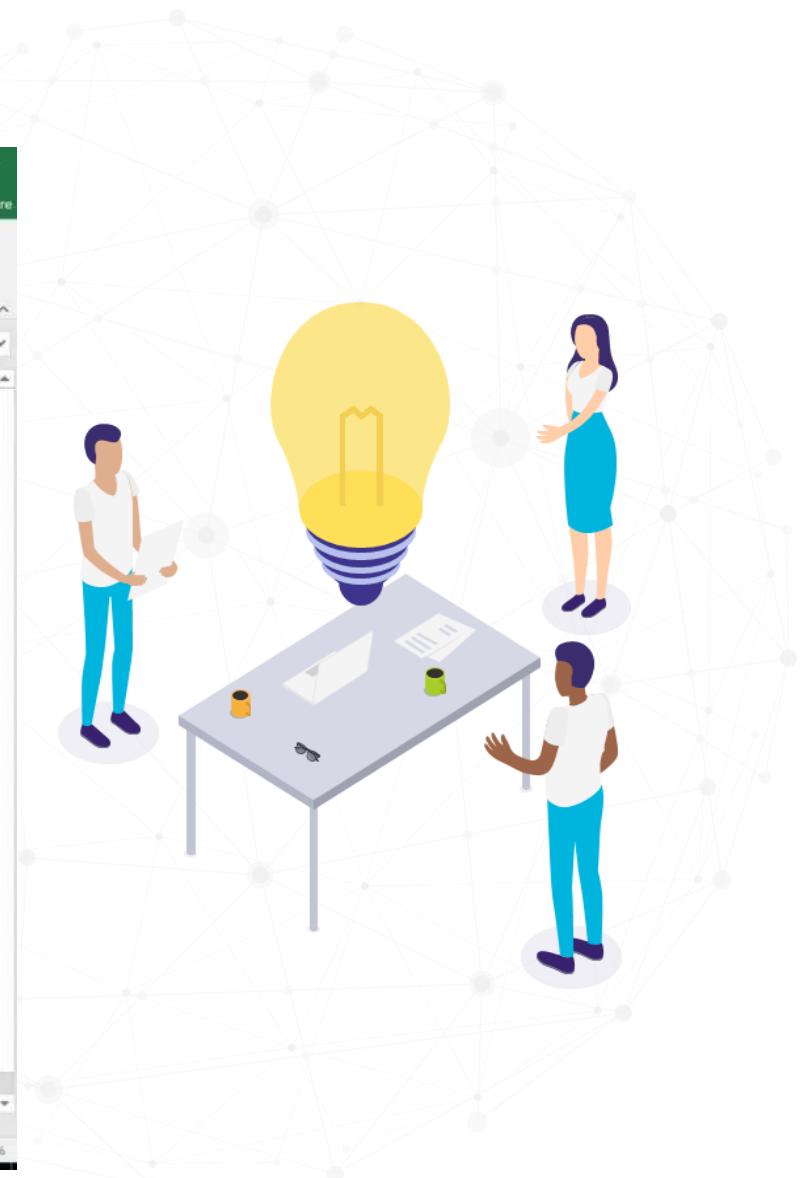
TOP AIRPORTS | Worldwide

Atlanta Beijing Capital Dubai O'Hare Tokyo Haneda

■ Asia ■ Europe

Report

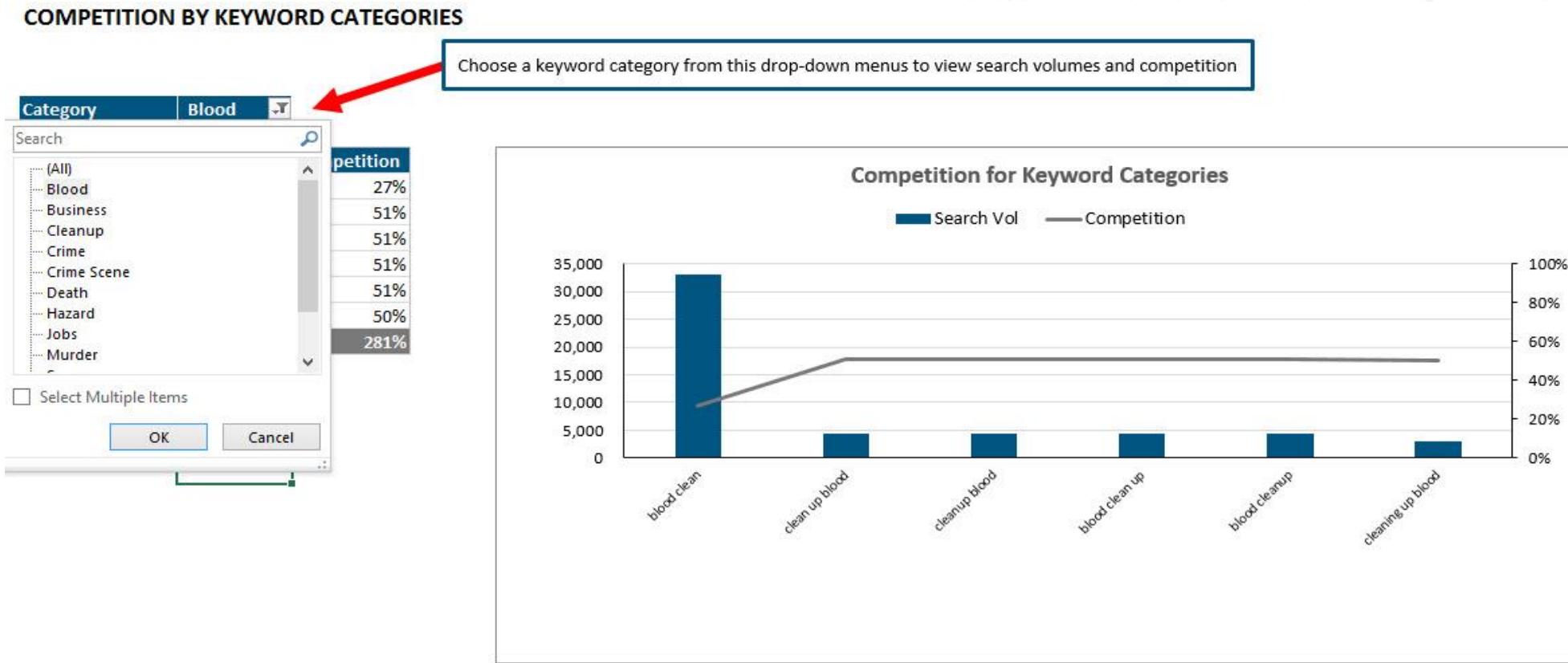
Ready





# Analysing Data with Pivot Tables

Doing a proper analysis of the available data helps companies make critical business decisions. But sometimes it's difficult to understand where to start, especially when the data is huge



# Analysing Data with Pivot Tables

## How it works...

One can design a PivotTable by simply, dragging and dropping relevant information into the appropriate boxes. This tool quickly pivots or reorganizes data allowing us to answer different questions and even experiment with the data to discover new trends and patterns



	B	C	D	E	F	G	H	I
1	Fruit	Price	Weight			Row Labels	Sum of Price	Sum of Weight
2	Apple	7.9	93			Apple		
3	Orange	2.9	57			11/1/2017	7.9	93
4	Plum	6.2	75			11/2/2017	1.9	78
5	Lychee	7.1	76			11/3/2017	6.7	98
6	Longan	8.4	73			11/4/2017	3.2	96
7	Apple	1.9	78			11/5/2017	6.3	95
8	Orange	6.1	59			Apple Total	26	460
9	Plum	7.6	73			Longan		
10	Lychee	5	54			11/1/2017	8.4	73
11	Longan	4.5	62			11/2/2017	4.5	62
12	Apple	6.7	98			11/3/2017	7	62
13	Orange	2.6	68			11/4/2017	8.3	79
14	Plum	7.1	93			11/5/2017	8.5	90
15	Lychee	0.4	81			Longan Total	36.7	366
16	Longan	7	62			Lychee		
17	Apple	3.2	96			11/1/2017	7.1	76



# Analysing Data with Pivot Tables

## Filters

A PivotTable helps to extract the important information from a large, detailed dataset.

Sometimes, the focus is required on just a certain section of our data. Filters help us narrow down the data in the PivotTable, extracting the required information

The screenshot shows a PivotTable with columns: BA, BF, BG, BH. The rows contain various property details like room\_type, bed\_type, amenities, square\_feet, price, and monthly\_price. A context menu is open over the 'amenities' column, showing options like 'Sort A to Z', 'Sort Z to A', 'Sort by Color', 'Clear Filter From "amenities"', and 'Filter by Color'. A sub-menu for 'Text Filters' is also open, listing conditions such as 'Contains...', 'Does Not Contain...', and 'Custom Filter...'. An orange callout bubble with the text 'Create macro buttons to quickly apply multiple filters.' points to the filter icons in the context menu.

	BA	BF	BG	BH		
1						
2	Filter Table Macro	Comfy Rental Filter				
3						
4	room_type ▾	bed_type ▾	amenities ▾	square_feet ▾	price ▾	monthly_price ▾
5	A Z Sort A to Z		Wifi, "Air condit	\$295.00		
5	Z A Sort Z to A		Wifi, Kitchen, "Fr	\$160.00	\$1,060.00	
6	Sort by Color		"/, Internet, Wifi,	\$250.00	\$1,750.00	\$5,500
7	Clear Filter From "amenities"		Kitchen, "Free	\$150.00	\$750.00	
8	Filter by Color		"/, Internet, Wifi,	\$209.00		
9			"/, Internet, Wifi,	\$178.00	\$1,100.00	\$3,000
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# Analysing Data with Pivot Tables

## Slicers

Another important tool of Excel, Slicers, makes filtering data in PivotTables even easier. Slicers contain a set of buttons which make filtering data in PivotTables easier and quicker. We do not have to open the drop-down lists to find the items we want to filter. We can create slicers for any field and can filter a Pivot Table by selecting the type of data we want.

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable and two Slicers. The PivotTable is located in the range A1:I21. The first column contains labels from A to I, and the first row contains numbers from 1 to 21. The PivotTable displays data for 'Category' (Drinks, Fruit, Vegetables) and 'Subcategory' (Coffee, Tea, Water, Apples, Bananas, Berries). The 'Sum of Revenue' is calculated for each category and subcategory. Two Slicers are positioned to the right of the PivotTable. The top slicer is for 'Category' and has buttons for 'Drinks' (highlighted in yellow), 'Fruit', and 'Vegetables'. The bottom slicer is for 'Subcategory' and has buttons for 'Coffee', 'Tea', 'Water', 'Apples', 'Bananas', and 'Berries'. A blue arrow points from the text 'These are slicers.' in the PivotTable's guide to the 'Category' slicer. Another blue arrow points from the text 'The pivottable to the right contains two slicers; one for the Category field and one for the Subcategory field of the pivottable.' in the guide to the 'Subcategory' slicer. A green button labeled 'Go to Step 1' with a downward arrow is at the bottom of the guide. Below the guide, there are four buttons: 'Intro' (green), 'Step 1', 'Step 2', and 'Step 3'. The 'Slicer Guide' tab is selected at the bottom of the ribbon.

Category	Subcategory	Sum of Revenue
Drinks	Coffee	100
Drinks	Tea	80
Drinks	Water	120
Fruit	Apples	50
Fruit	Bananas	40
Fruit	Berries	30
Vegetables		20
		Drinks Total
		Grand Total



# Analysing Data with Pivot Tables

## Grouping

It is often useful to group the fields in a PivotTable by the header values. Grouping data in a PivotTable allows us to group the data for any field added as a row or a column. Excel can do this automatically for numeric values (including dates and time).

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable. The PivotTable has four columns: Region, Item, Sales, and Profit. The data is grouped by Region. The 'Region' column contains 'East', 'North', and 'Grand total'. The 'Item' column contains 'Apples' and 'Oranges'. Subtotals are shown for 'Apples Subtotal', 'Oranges Subtotal', 'East Total', 'North Total', and 'Grand total'. The 'Sales' and 'Profit' columns show monetary values.

	A	B	C	D
1	Region	Item	Sales	Profit
2	East	Apples	\$285	\$240
3	East	Apples	\$320	\$290
4		<b>Apples Subtotal</b>	<b>\$605</b>	<b>\$530</b>
5	East	Oranges	\$280	\$260
6	East	Oranges	\$335	\$320
7	East	Oranges	\$250	\$215
8		<b>Oranges Subtotal</b>	<b>\$865</b>	<b>\$795</b>
9	<b>East Total</b>		<b>\$1,470</b>	<b>\$1,325</b>
10	North	Apples	\$260	\$205
11	North	Apples	\$285	\$265
12	North	Apples	\$255	\$230
13		<b>Apples Subtotal</b>	<b>\$800</b>	<b>\$700</b>
14	North	Oranges	\$250	\$215
15	North	Oranges	\$255	\$240
16		<b>Oranges Subtotal</b>	<b>\$505</b>	<b>\$455</b>
17	<b>North Total</b>		<b>\$1,305</b>	<b>\$1,155</b>
18	<b>Grand total</b>		<b>\$2,775</b>	<b>\$2,480</b>

# Analysing Data with Pivot Tables

## Custom Calculation

Sometimes, there is a need to change the way the values are displayed in the PivotTable.

The value can be displayed in terms of a percentage instead of a total or an average of the values instead of summing them



A screenshot of a 'PivotTable Fields' dialog box with an 'Insert Calculated Field' overlay. The main table shows data with columns 'Total', 'RepBonus', and 'Be'. A calculated field 'RepBonus' is being created with the formula '=Total\* 3%'. The 'Fields' list on the right includes Date, Rep, Region, Order Status, Product, Cost, Units, and Total, with 'Date' currently selected.

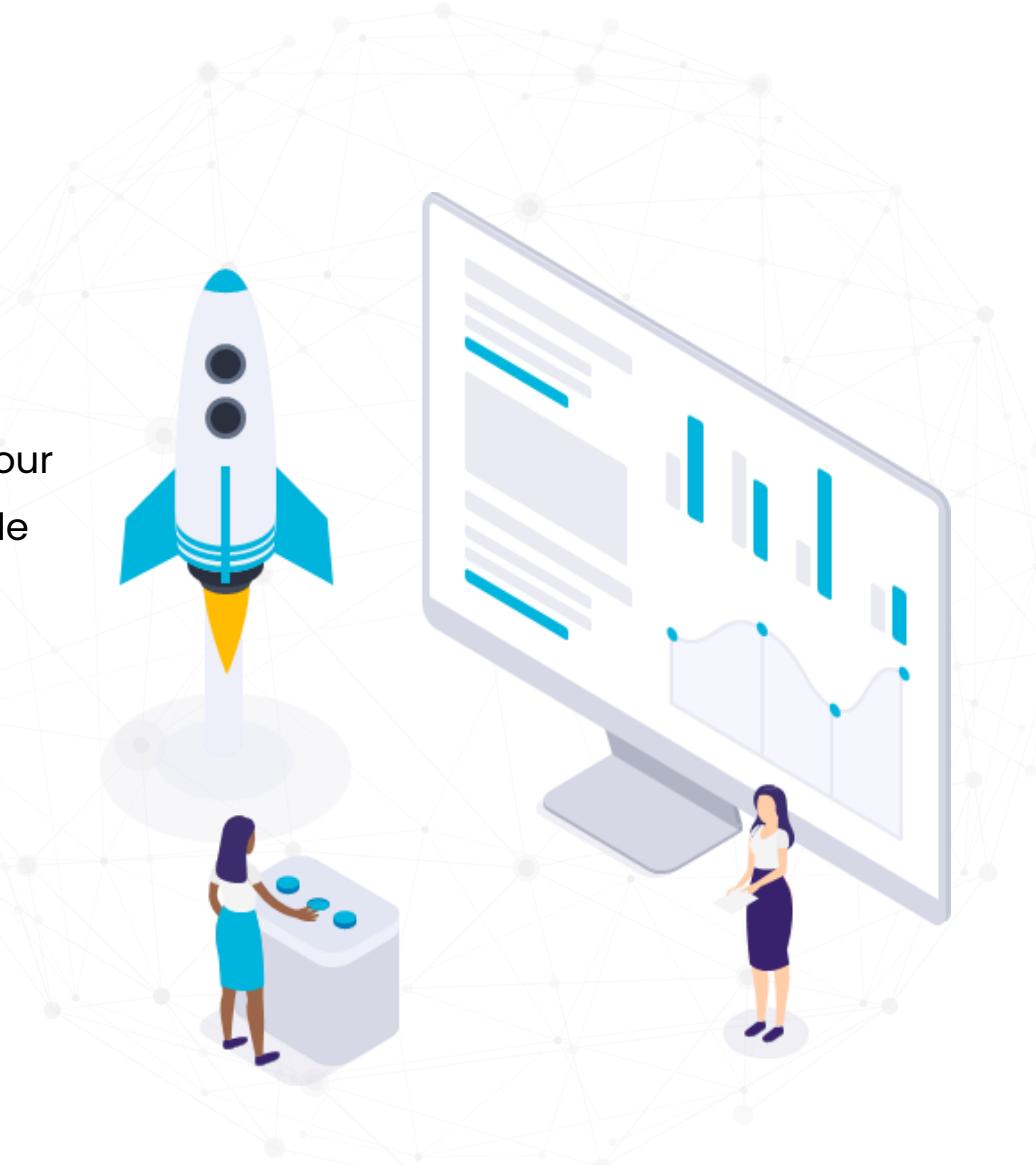
Total	RepBonus	Be
1.19	164.23	1
1.42	23.65	
.00	90.75	
.44	3.34	
.74	33.83	
.59	12.65	
.60	68.03	
.87	31.89	
.00	24.75	
.73	11.39	
.06	90.75	

# Analysing Data with Pivot Tables

## Calculated Field and Calculated Item

Once we have created a PivotTable, we can add calculated fields and calculated items in it

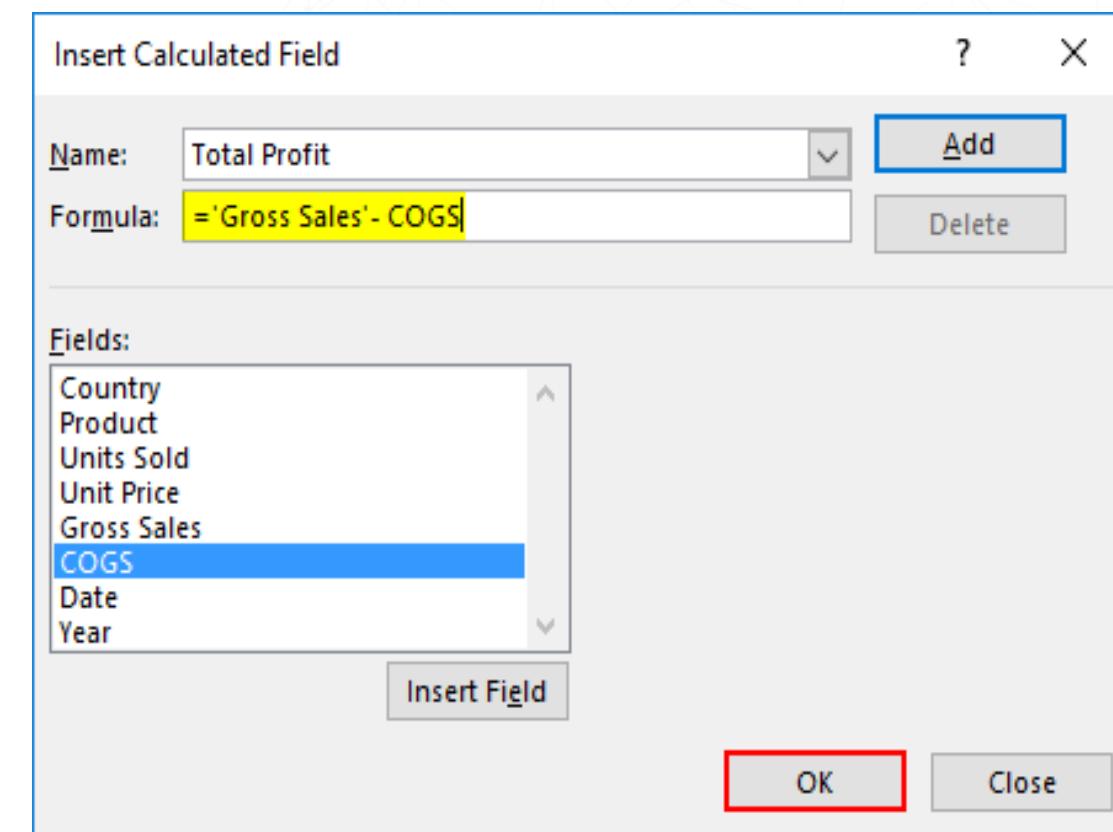
- Calculated fields help us enhance the results by allowing us to write our own formulas. This functionality helps to create a new field in the table that performs the calculations based on other pivot fields. Let us understand how to use these fields with the help of an example..
- We can also add one or more calculated items in a PivotTable field apart from the existing items. Calculated items are used to perform calculations between items within the fields





# Analysing Data with Pivot Tables

## Calculated Field and Calculated Item



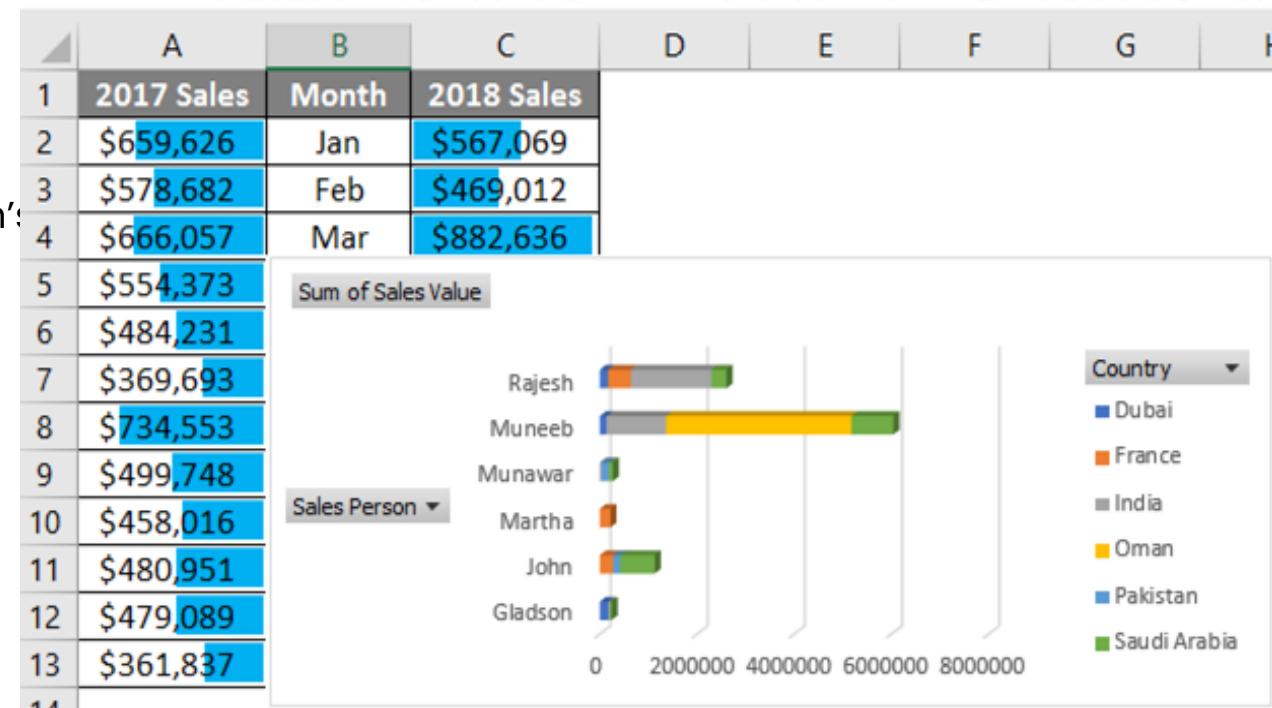


# Dashboarding

- Create and format different types of charts such as Thermometer and Pareto Charts
- Importance of interactive charts
- Form Controls such as Combo box, Check box, and Radio buttons

An appropriately designed dashboard can:

- Quicken decision-making processes
- Provide better coordination for your organization's efforts
- Record the performance outcome





# Dashboarding

- Using dashboards, the data visualization tool of Excel, it is easy to create the detailed analysis reports.
- These dashboard reports will provide insights and alert us in case of negative trends or projections for Profit/Sales in specific regions which can then be used to develop future strategy.
- Dashboards are highly effective in validating the effectiveness of the matrices captured over time and bringing out the leading trends.
- Dashboards help consolidate and organize these metrics through a summary.

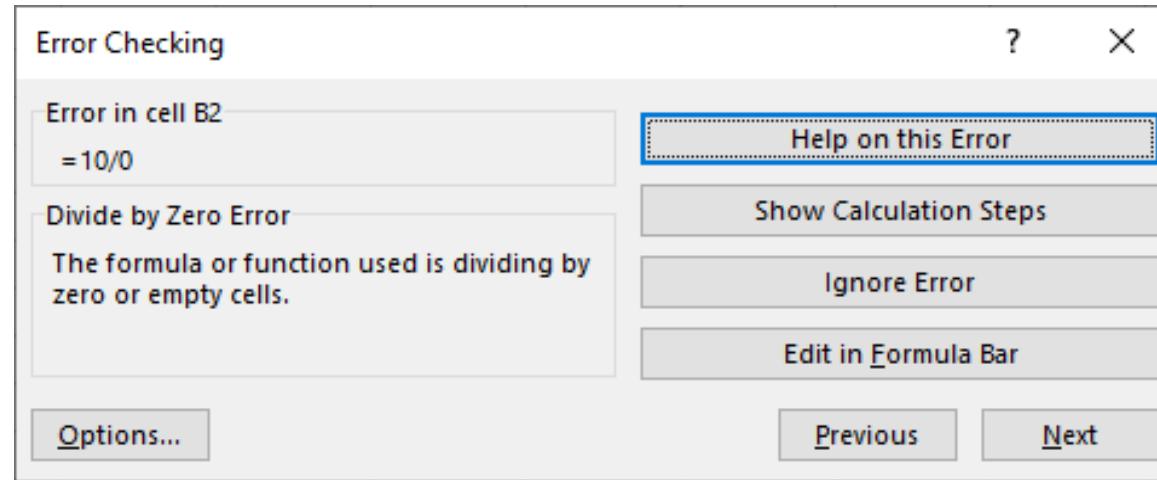


# Dashboarding

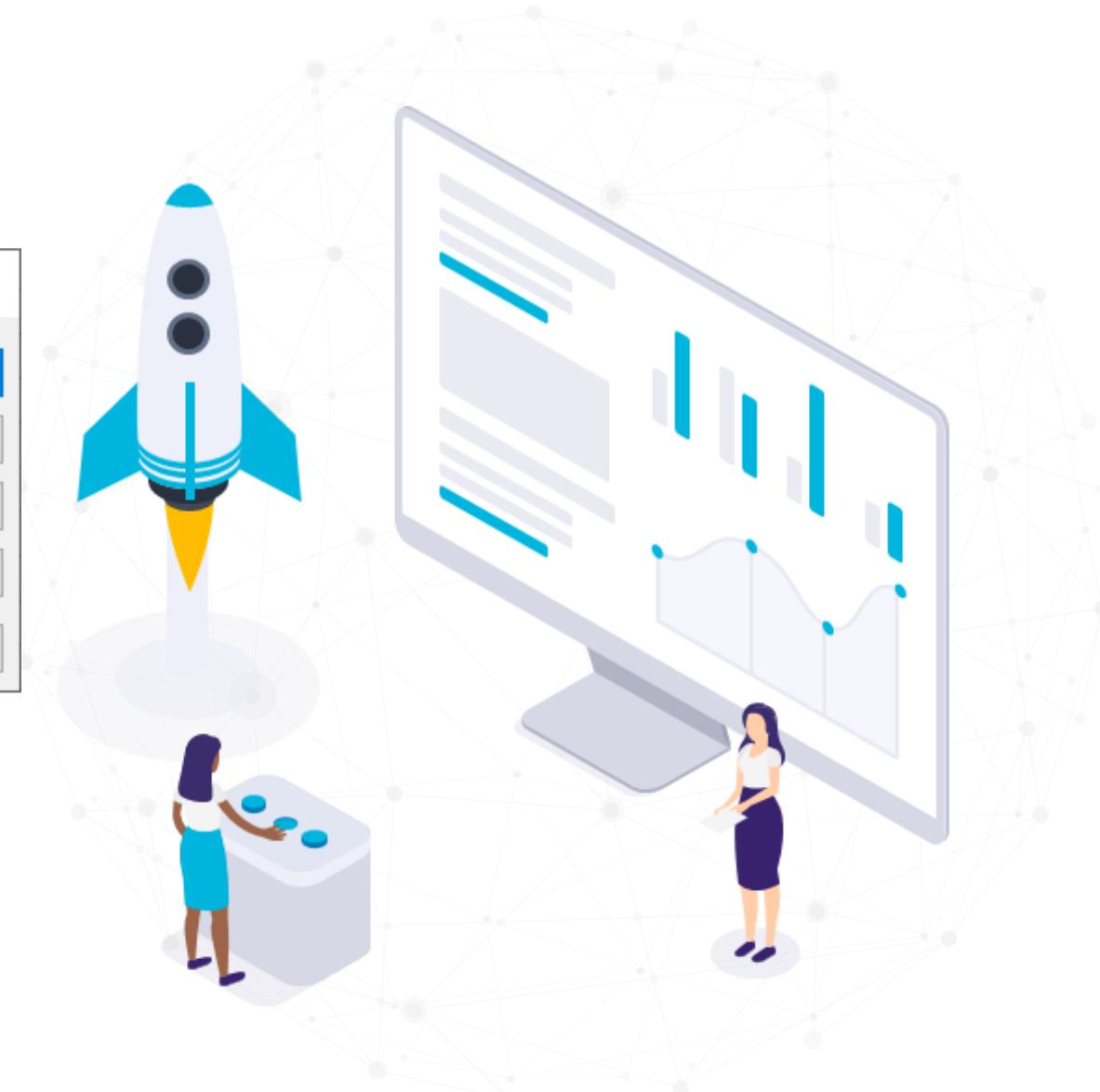




# Error Checking



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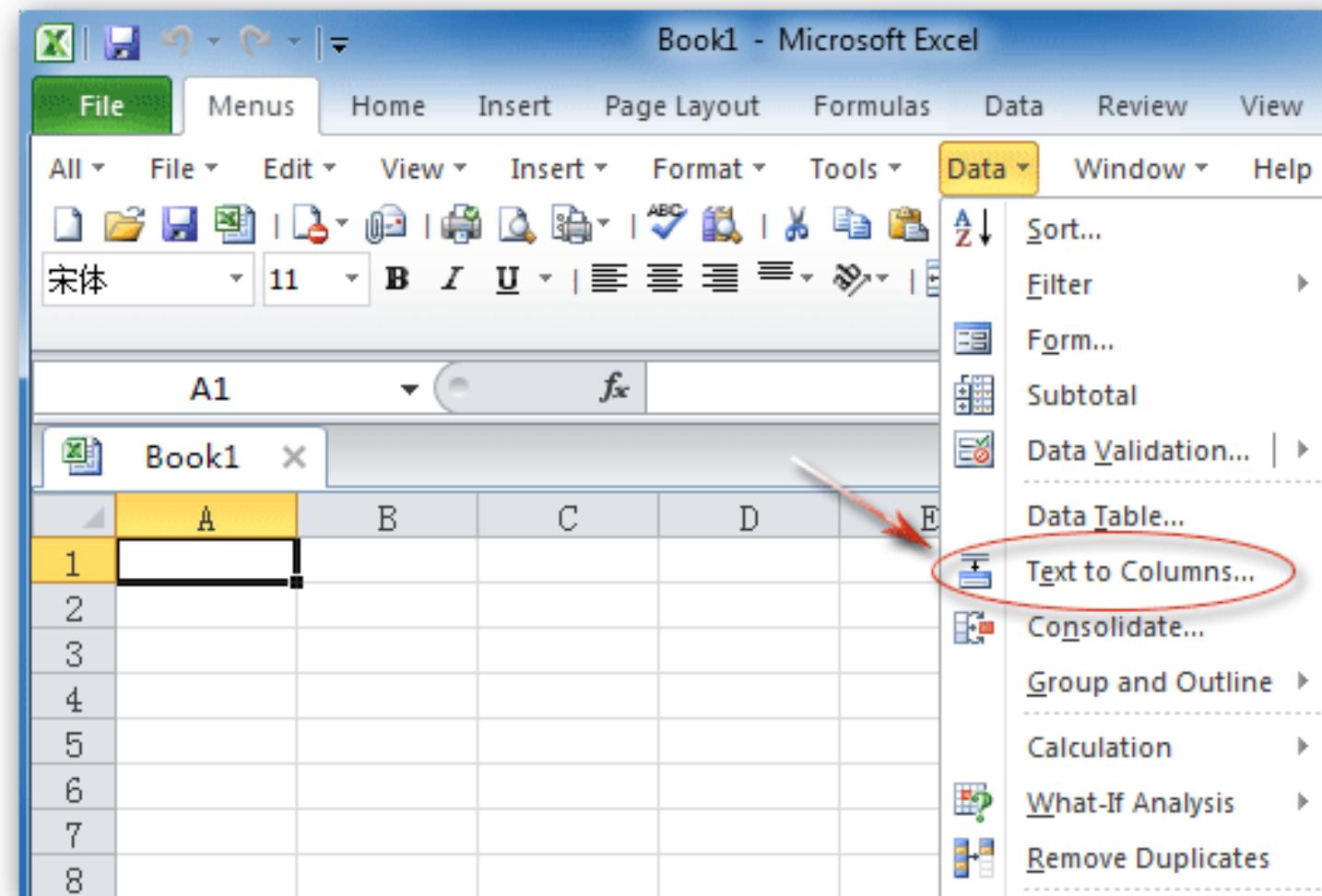
# Show Formulas

The screenshot shows a Microsoft Excel interface. The ribbon at the top has tabs: File, Home, Insert, Page Layout, Formulas (which is selected), Data, Review, and View. On the far right of the ribbon, there are "How to" and "Tell me" buttons. Below the ribbon is a toolbar with icons for Insert Function (fx), AutoSum (Σ), Recently Used (star), Financial Functions (calculator), Logical Functions (question mark), Text Functions (A), Date & Time Functions (calendar), Lookup & Reference Functions (magnifying glass), Math & Trig Functions (theta), and More Functions (ellipsis). The "Function Library" dropdown is open, showing these categories. The main area shows a table with data. Row 1 contains headers: Shop 1, Shop 2, GCD, and Ratio. Rows 2 through 7 contain data for Mobile, Laptop, Desktop, Tab, Watch, and TV respectively. The formula bar at the top shows cell A1 is selected. The status bar at the bottom shows the formula fx.

	A	B	C	D	E	F	G	H
1	Shop 1	Shop 2	GCD	Ratio				
2	Mobile	100	15	5	20:3			
3	Laptop	150	50	50	3:1			
4	Desktop	80	20	20	4:1			
5	Tab	50	200	50	1:4			
6	Watch	320	16	16	20:1			
7	TV	10	8	2	5:4			
8								
9								
10								
11								



# Text to Column





# Data Validation

The screenshot shows a Microsoft Excel window titled "data validation with conditional list.xlsx - Microsoft Excel". The active cell is C4, which contains the text "City". The "Data" tab is selected in the ribbon. A "Data Validation" dialog box is open, showing the "Settings" tab. Under "Validation criteria", the "Allow:" dropdown is set to "List", and the "Source:" dropdown contains the formula `=IF(C4="See full list",long_list,short_list)`. The "Ignore blank" and "In-cell dropdown" checkboxes are checked. At the bottom of the dialog box, there is a checkbox for "Apply these changes to all other cells with the same settings". The "OK" button is highlighted with a blue border.

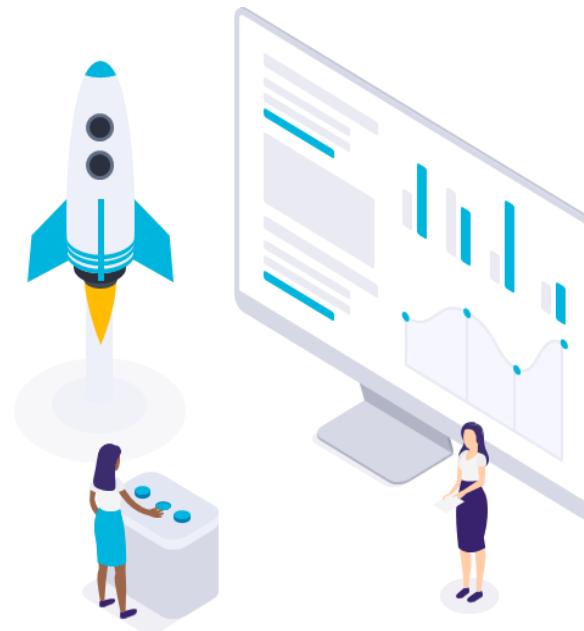
# Sort and Filter

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. The 'Sort & Filter' section of the ribbon is highlighted with a red box, and the 'Filter' icon is also highlighted with a red box. A red arrow points from the 'Record' dropdown menu in the table below to the 'Filter' icon.

ID	Record 1	Record 1	Record 3	Record 4
A	1	1	3	4
B	2	3	2	3
C	3	2	1	2
D	4	3	2	3



# Wrap Text



The screenshot shows the Microsoft Excel ribbon with the 'HOME' tab selected. In the 'Font' section of the ribbon, the 'Wrap Text' button is highlighted with a green border. A red arrow points from the text 'Insert images and pictures delete background images' in cell A1 towards the 'Wrap Text' button. The cell A1 contains the text 'Insert images and pictures delete background images'.

A1	B1	C1	D1	E1	F1	G1
1 Insert images and pictures delete background images	2					



# Merge Cell and Insert Comments

The screenshot shows the Microsoft Excel ribbon with the "Home" tab selected. In the "Font" section, the font is set to "Calibri" and the font size is "11". The "Alignment" section is highlighted with a blue arrow, showing the "Merge & Center" button. A table is displayed below the ribbon, with the first two columns ("Order no." and "Item") merged into a single header cell.

Order no.	Item	Status
101	Apples	Delivered
102	Oranges	Delivered
	Bananas	
103	Oranges	In transit
	Apples	
104	Bananas	Delivered
	Oranges	Cancelled
105	Bananas	Delivered

The screenshot shows the Microsoft Excel ribbon with the "Review" tab selected. The "Comments" section is highlighted with a blue arrow, specifically the "Show Comments" button. A table is displayed below the ribbon, with a comment box open over the cell E3. The comment box contains a message from "EasyClick Academy" asking for an update, with a timestamp of "30-Oct-19 5:10 PM".

	January	February	March
John	93	63	85
Lucy	96	55	63
Grace	106	76	63
Sum	295	194	211

# What-if Tools

**What-If Analysis** is the process of changing the values in cells to see how those changes will affect the outcome of formulas on the worksheet. Three kinds of What-If Analysis tools come with Excel: Scenarios, Goal Seek, and Data Tables. Scenarios and Data tables take sets of input values and determine possible results.

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected, indicated by a red box. In the 'Data Tools' group, the 'What-If Analysis' button is also highlighted with a red box. A tooltip box is displayed below the 'What-If Analysis' button, containing the text: 'What-If Analysis Try out various values for the formulas in your sheet using Scenario Manager, Goal Seek and Data Tables.'





# Scenario Manager

The image shows a Microsoft Excel spreadsheet for budgeting. On the left, there are two tables: one for Income and one for Expenses. The Income table includes rows for Salary, wife, Other Source, and Total Income (90,000). The Expenses table includes rows for Rent, Electricity Bill, Mobile Bill, Internet Bill, Water Bill, Clothes, Fuel, Food, Personal Loan, and Total Expenses (74,450). The Income Left row (15,550) is highlighted with a blue oval. On the right, the 'Scenario Manager' dialog box is open, listing three scenarios: Actual Budget (highlighted in yellow), Plan 2, and Plan 3. A red arrow points to the 'Show' button at the bottom of the dialog box.

A	B
1 <b>Particulars</b>	<b>Amt</b>
2 Income from Salary	50,000
3 Income from wife	25,000
4 Income from Other Source	15,000
5 <b>Total Income</b>	<b>90,000</b>
6	
A	B
7 <b>Expenses</b>	<b>Amt</b>
8 Rent	18,000
9 Electricity Bill	2,500
10 Mobile Bill	1,250
11 Internet Bill	1,500
12 Water Bill	1,200
13 Clothes	10,000
14 Fuel	10,000
15 Food	10,000
16 Personal Loan	20,000
17 <b>Total Expenses</b>	<b>74,450</b>
18	
19 <b>Income Left</b>	<b>15,550</b>
20	

Scenario Manager

Scenarios:

- Actual Budget
- Plan 2
- Plan 3

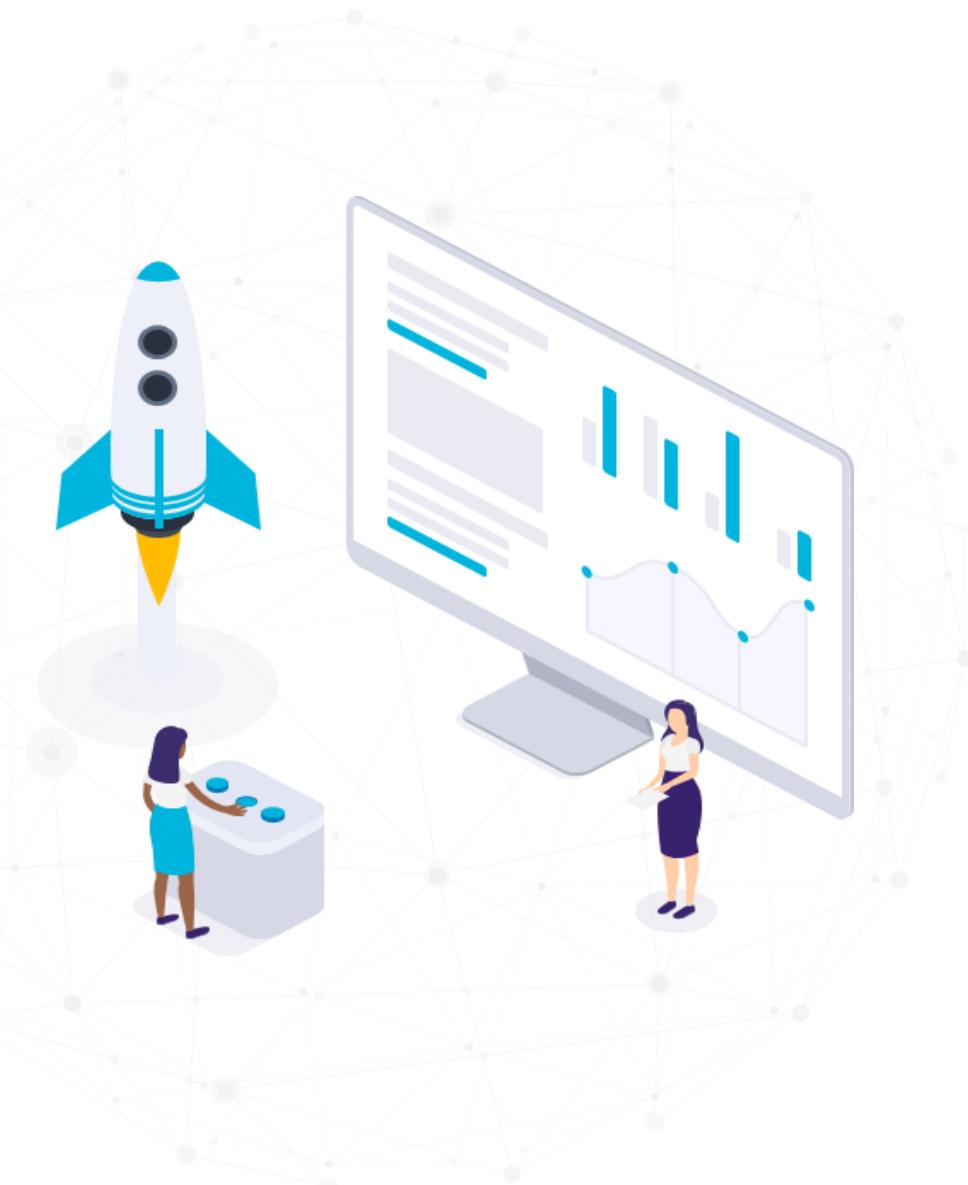
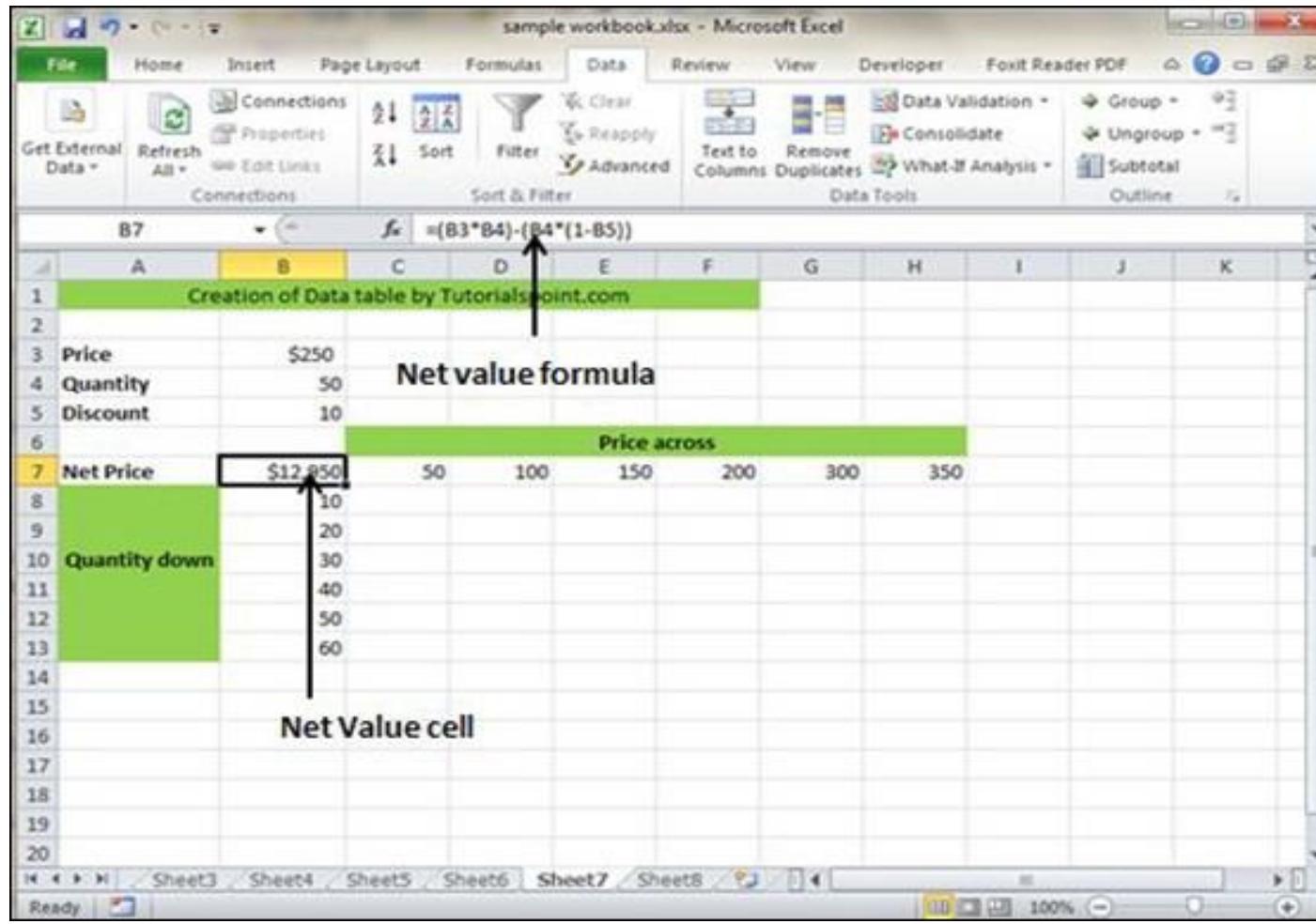
Changing cells: \$B\$15,\$B\$13

Comment: Created by Family Head

Show Close



# Data Table





# VBA and Macros

The screenshot shows the Microsoft Visual Basic for Applications (VBA) environment integrated with Excel. The VBA editor window is titled "Microsoft Visual Basic for Applications - My First Macro.xlsm [break] - [m\_CopyPaste (Code)]". The code module "Range\_Copy\_Examples" contains the following VBA code:

```
Option Explicit

Sub Range_Copy_Examples()
    'The Range.Copy Method - Copy & Paste with 1 line
    Range("A1").Copy Range("C1")
    Range("A1:A3").Copy Range("D1:D3")
    Range("A1(A3)").Copy Range("D1")

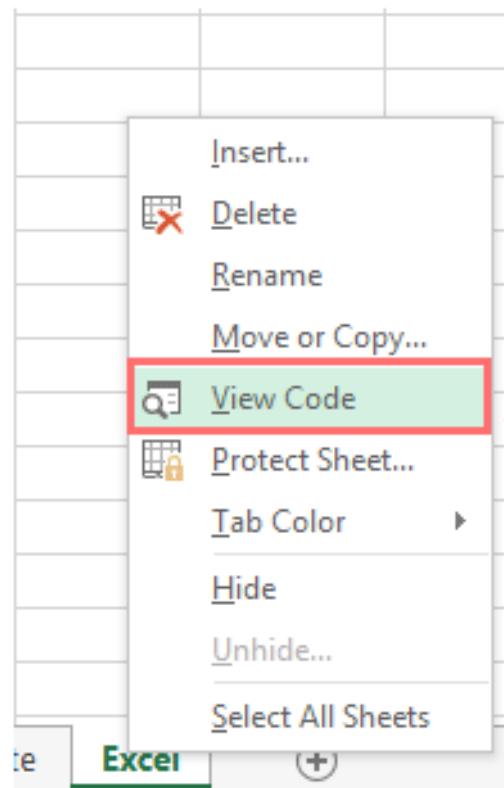
    'Range.Copy to other worksheets
    Worksheets("Sheet1").Range("A1").Copy Worksheets("Sheet2").Range("A1")

    'Range.Copy to other workbooks
    Workbooks("Book1.xlsx").Worksheets("Sheet1").Range("A1").Copy _
        Workbooks("Book2.xlsx").Worksheets("Sheet1").Range("A1")
End Sub
```

The Excel application window in the background shows two sheets: "Sheet1" and "Sheet2". "Sheet1" contains data with formulas for AVERAGE, COUNT, and SUM. "Sheet2" is currently selected and has an empty range A1.



# Assign a Macros



Microsoft Visual Basic for Applications - 2016-dec-data.xlsx - [Sheet11 (Code)]

File Edit View Insert Format Debug Run Tools Add-Ins Window Help

Project - VBAProject

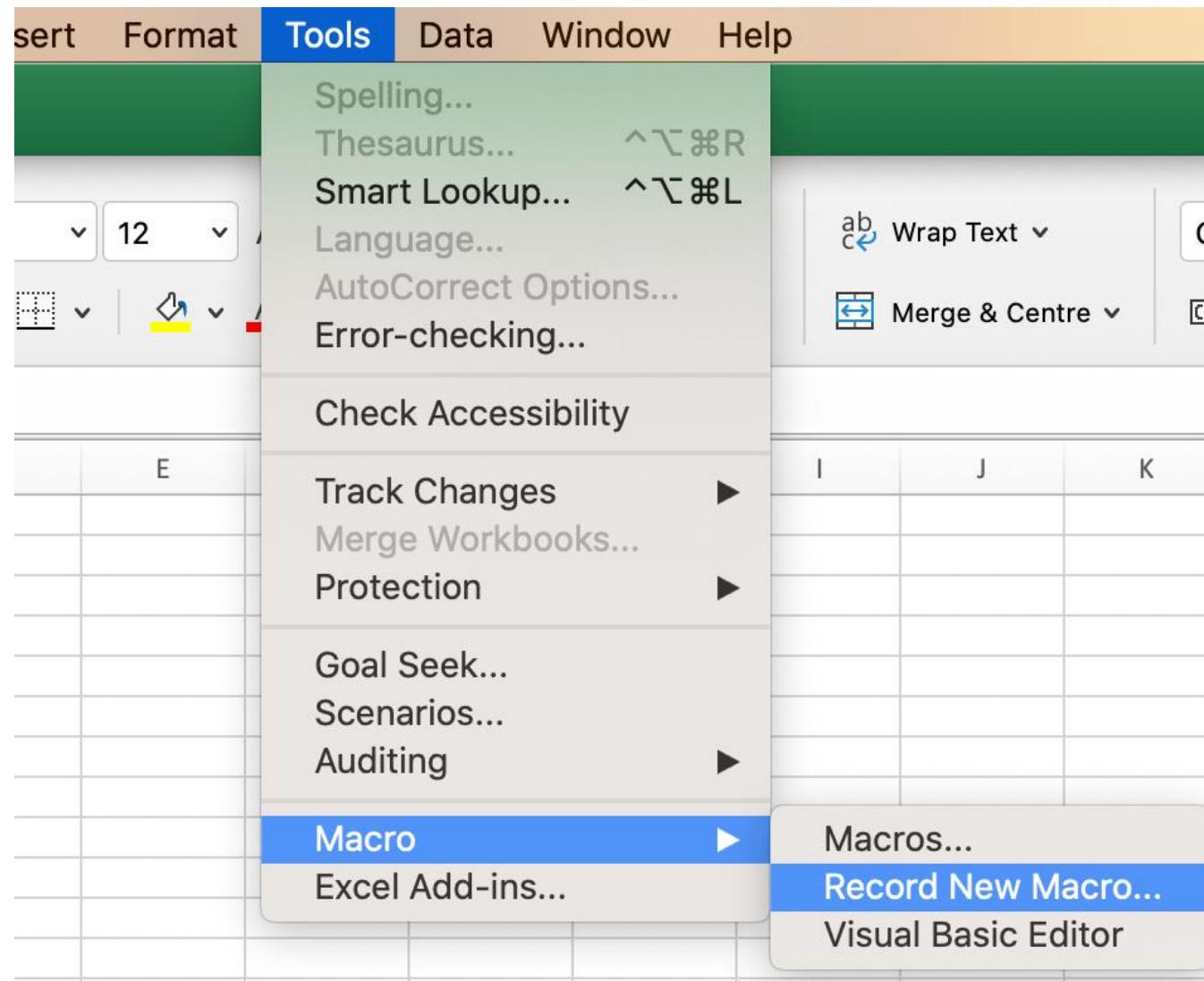
Worksheet Change

```
Private Sub Worksheet_Change(ByVal Target As Excel.Range)
    If Target.Cells.Count > 1 Then Exit Sub
    If IsNumeric(Target) And Target.Address = "$A$1" Then
        Select Case Target.Value
            Case 10 To 50: Macro1
            Case Is > 50: Macro2
        End Select
    End If
End Sub
```

Change these macro names to your own.



# Record a Macros





# Thank you

