UNIT 5

DATA VISUALIZATION

5.1 Create tables in a report

Microsoft Excel is a beneficial tool for recording and tracking many processes, including in finance and marketing analysis. When we have multiple data sources we want to track in a spreadsheet, creating a report can help us organize and review data more effectively. Additionally, we can create reports using different methods, depending on our purpose for using the application.

The following approaches show how to create a report in Microsoft Excel, using several methods:

1. Display data in charts

One method to create a report is to display data in a graph or chart. Excel has several types of charts you can set up in your spreadsheet, including line graphs, pie charts and tables. To create a visual report using graphs, use the following steps:

1. Enter the data into the sheet using the "Insert" option in the program toolbar.
2. After the data is in the sheet, find the "Select data" option to choose the information you want to display. This gives you a basic chart display, but you can change the chart design to a different style.
3. Select the style of graph you want for your report from the "Chart design" tool in the menu.

2. Create a pivot table to organize data

A pivot table in Excel creates a table of summarized values from large sets of data. If you have an extensive amount of data to aggregate into informational reports, you can create a pivot table to make this information more accessible. Create your report using PivotTables by following these steps:

1. Under the "Insert" option, select "PivotTable" in the menu.
2. Select the range and location of the data you want to include in the table.
3. Enter the labels for the reference and values fields of the new table and arrange it in your sheet.
4. Choose the calculation you want the table to measure from the data, such as the average or maximum and minimum, and update the pivot table.

As you update the various data connecting to the pivot table, the chart also updates to display the information according to your parameters.

3. Separate the data types of your reports

With large data, consider separating numerical data values from visual and text information. Excel allows you to create multiple sheets within a workbook and multiple pages within a sheet. This means you can visualize data in charts and graphs on one sheet, tabular data on another and any text values on a different sheet. Using this method creating reports in Excel is beneficial, for organizing and monitoring changes in data more effectively.

4. Add page headers

To print or export, reports need to have page headers. Use the steps below to insert headers and prepare reports for printing and exporting:

1. Navigate to the menu and select "Insert." From here, choose "Text," then "Header and footer."
2. Enter the name of your report in the related field and format the text according to your preferences, like large or bold text.
3. Repeat this process for each of the pages you want to include in the printed report.
4. If you want to omit certain sheets from your report, right-click on the corresponding tabs and select "Hide."

5. Format and print reports

When printing your report, you can change the layout so you're able to fit it to the printer paper. The following steps show how to format and print Excel reports:

1. For visual data in graphs, charts or pivot tables, change the page to "Landscape" orientation under the print settings.
2. Choose the option that allows you to fit all your report columns on a single page.
3. Click "OK" to print the workbook as individual pages.
4. If you're sending your reports through email, save the document as a .pdf file for compatible delivery.

Applications of Excel reports:

Microsoft Excel provides a range of tools for organizing and evaluating various data. Excel reports make up one program feature that can be useful for applications in different fields, including:

- **Finance and accounting**

  Excel reports are often applicable to financial documentation and analysis. The report feature gives finance professionals the ability to create visual representations of critical data companies rely on to make important decisions. For instance, accounting

professionals and bookkeepers can use Excel reports to track and evaluate various metrics, including budgets, incomes and expenses.

- **Sales and marketing**

  Sales metrics like conversion rates, customer satisfaction, sales transactions and inventories are several factors professionals in this industry may include in an Excel report. For instance, the graphing function can show changes in customer purchases over time so sales teams can report on the performance of current practices. In marketing, Excel is applicable to creating reports for activities like campaign progress, budget analysis, market analysis and strategy performance can be common uses of the program.

- **Human resources**

  Reports in Excel are also useful for documenting hiring practices and analytics in businesses. Managers can enter information regarding current processes, including application numbers, interview invites and successful hires. Reports are also applicable to measuring growth rates among staff members within different departments of a company. This range of documentation tools Excel features is often helpful for organizing and monitoring onboarding and employee metrics, too.

How maximize use of Excel's report features?

Consider the following tips to maximize your use of Excel's report features:

- **Combine reports on a dashboard.** If you have multiple reports you want to track on one page, create a dashboard to display the most important aspects of the reports.
- **Use timelines or interactive elements.** Timelines and info graphics or layered charts can provide additional approaches to including relevant and current topics of interest in a dashboard report.
- **Create backups of your data reports.** As you update information in your documents, create backup files that you can use in the event you lose data or report documentation.
- **Use formatting tools when arranging data.** When entering or importing data into Excel, use tools to clean data and wrap elements within the cells of your sheet.
- **Delete blank rows for more accuracy.** Eliminate blank rows and empty cells to increase the accuracy of your data analysis and reporting, which can otherwise affect the calculations excel makes when summarizing information.
- **Include column headers when charting data.** Include the column headers in the text fields as you select the range of data you're documenting in your report.

5.2 Visualize data as a chart

Excel is widely used for data analysis owing to its excellent data visualization features. The data visualization capability of Excel allows for building insightful visualizations. Every chart in

Excel has its own significance. Excel provides many built-in charts, which can be beautifully leveraged to use data correctly.

Defining Data Visualization

Data visualization is a graphical representation of data. By utilizing charts, graphs, maps, etc., we can provide a simple and accessible way to understand our data and identify trends and outliers within our datasets. Note that Excel uses the term "chart" to mean a "plot". For example, a bar plot is called a bar chart in Excel terminology.

Example Dataset

We first need a dataset to work with before creating any visualizations. Simple dataset containing sales data for a local electronics store is shown below. The dataset contains information on the number of units sold for various product types in 2022 and totals for columns and rows.

Month	TVs	Mobile Phones	Laptops	Total
1/1/2022	145	335	82	562
2/1/2022	145	362	126	633
3/1/2022	105	311	95	511
4/1/2022	171	259	93	523
5/1/2022	178	277	107	562
6/1/2022	167	292	145	604
7/1/2022	200	385	77	662
8/1/2022	181	388	78	647
9/1/2022	152	291	83	526
10/1/2022	143	345	102	590
11/1/2022	114	399	99	612
12/1/2022	109	250	101	460
Total	1810	3894	1188	

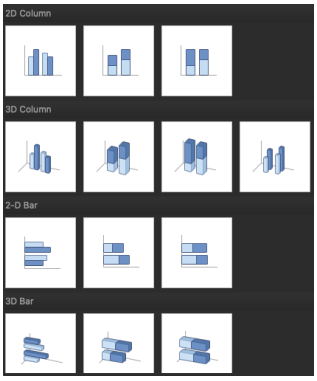
Alternatively, you can import the dataset using the following steps:

- Open Excel and create a new workbook.
- Copy the dataset above and paste it into cell A1
  Format the cells as needed (e.g., adjust column width, apply bold formatting to headers, etc.).

Creating Basic Charts in Excel

Excel has multiple options for choosing a particular chart type. For example, if you want to create a column or bar chart, you are often presented with various visualization options. For example, there are 2D and 3D versions and normal, stacked, and 100% stacked options.

Depending on your requirements, you can choose the visualization type that best suits your needs.

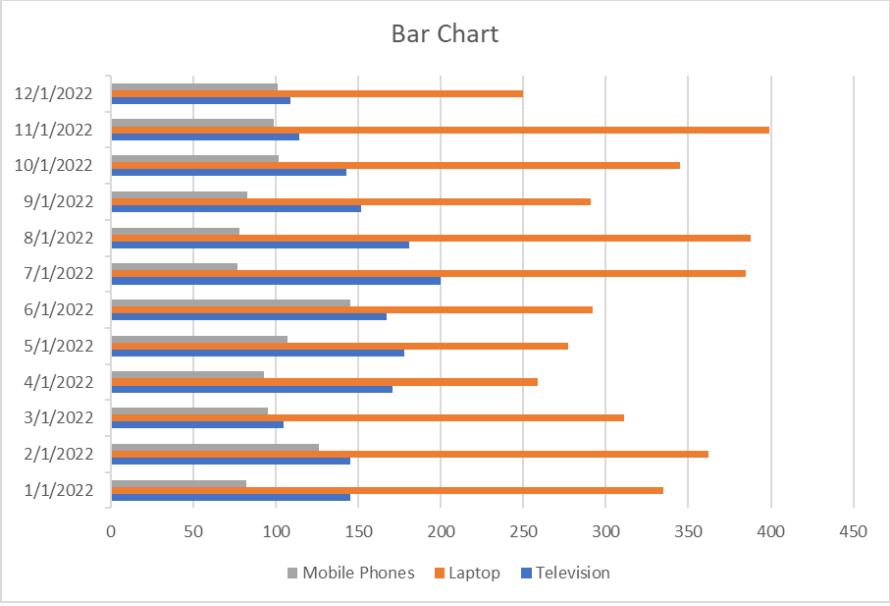


Excel bar charts

Bar charts are one of the easiest charts to interpret, enabling the person viewing the chart an easy way to compare categorical data quickly. On a bar chart, the categorical data is on the y-axis, and the values are on the x-axis.

To create a bar chart:

- Select the data range A1:D13
- Click the "Insert" tab in the Excel ribbon
- Click on the columns icon button dropdown, and under the “2-D Bar” category, choose “Clustered Bar”



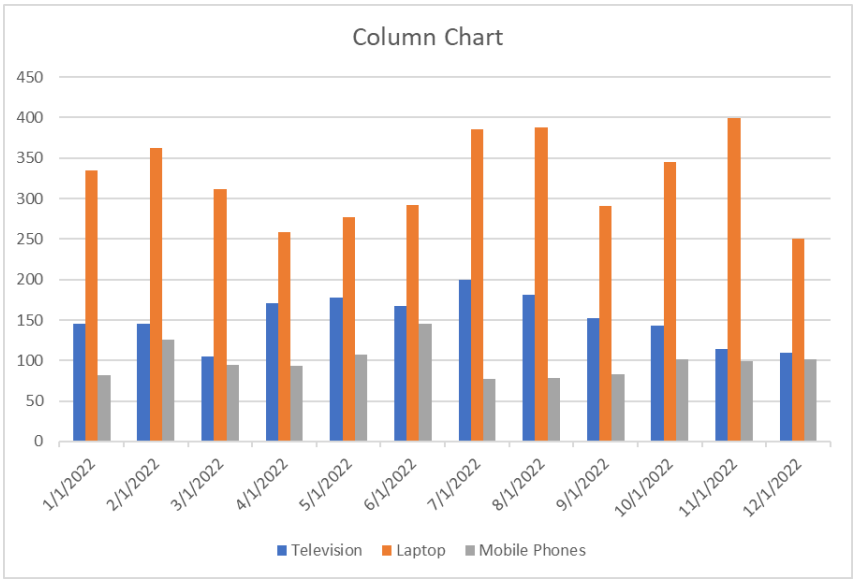
Excel column charts

A column chart, also known as a vertical bar chart, helps visualize data where categories are placed on the x-axis and the values on the y-axis. Similar to bar charts, they help visualize data across categories.

To create a column chart in Excel:

- Select the data range A1:D13
- Click the "Insert" tab in the Excel ribbon
- Click on the columns icon dropdown, and under the “2-D Column” category, choose “Clustered Column”

You can now see a column chart that displays the number of units sold for each product category by the month.



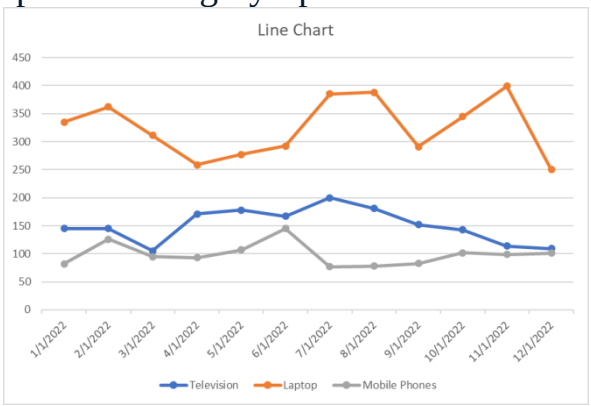
Excel line charts

A line chart is the most useful way to capture how a numerical variable changes over time. This is helpful to identify trends in numeric values.

To create a line chart in Excel:

- Select the data range A1:D13
- Click the "Insert" tab in the Excel ribbon
- Click on the line chart dropdown, and under the “2-D Line” category, choose “Line with Markers"

You can now see a line chart displaying units sold each month split by product category. This enables you to compare each product category's performance over time easily.

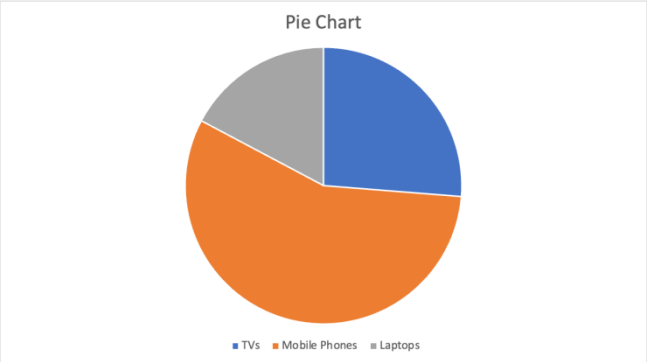


Excel pie charts

A pie chart is most commonly used to show the proportions of a whole. It's like visualizing fractions when you were in high school. With this pie chart, we want to compare the total sales between the three categories.

To create a pie chart in Excel:

- First, select the data range B1:D1
- Second, using the command (for Mac) or ctrl (for Windows), select the second date range: B14:D14
- Click the "Insert" tab in the Excel ribbon
- Click on the pie chart dropdown, and under the "2-D Pie" category, choose "Pie"

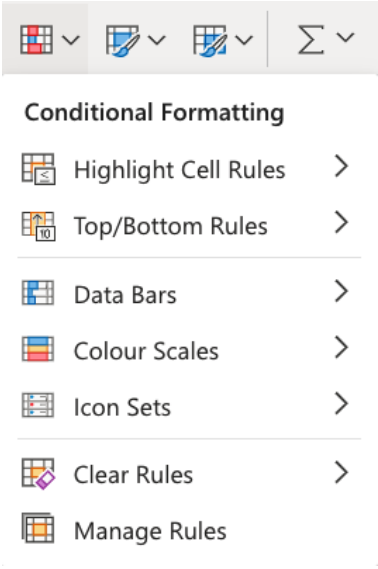


5.3 Background Conditional Formatting

- Conditional formatting is used to change the appearance of cells in a range based on your specified **conditions**.

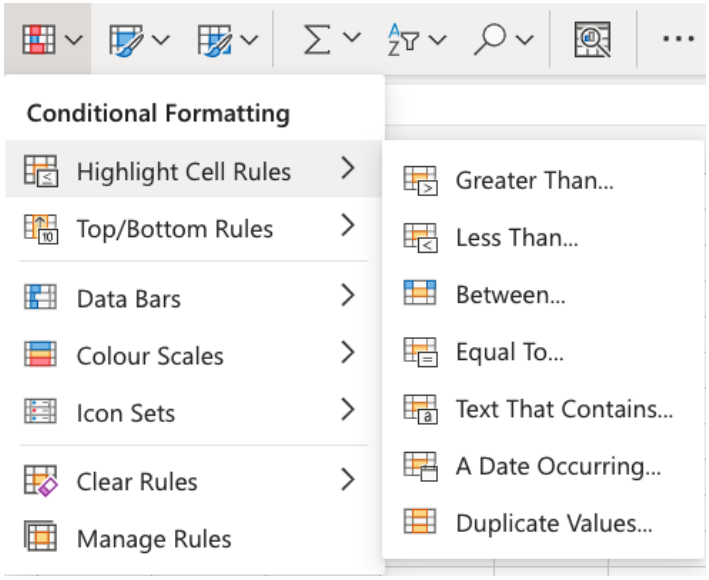
- The conditions are rules based on specified numerical values or matching text. Changing the appearance of cells can visually highlight interesting data points for analysis.

- The browser version of Excel provides a number of built-in conditions and appearances:



5.3.1 Highlight Cell Rules

- Highlight Cell Rules is a premade type of conditional formatting in Excel used to change the appearance of cells in a range based on your specified **conditions**.
- The conditions are rules based on specified numerical values, matching text, calendar dates, or duplicated and unique values.
- Here is the Highlight Cell Rules part of the conditional formatting menu:

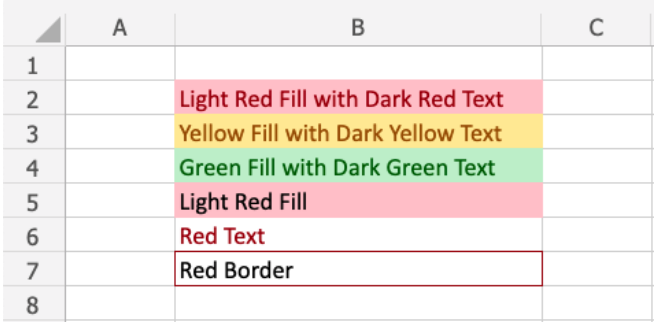


Appearance Options

The web browser version of Excel offers the following appearance options for conditionally formatted cells:

- Light Red Fill with Dark Red Text
- Yellow Fill with Dark Yellow Text
- Green Fill with Dark Green Text
- Light Red Fill
- Red Text
- Red Border

Here is how the options look in a spreadsheet:



Cell Rule Types

Excel offers the following cell rule types:

- Greater Than...
- Less Than...
- Between...
- Equal To...
- Text That Contains...
- A Date Occurring...
- Duplicate/Unique Values

Highlight Cell Rules - Greater Than

Greater Than... is one of the options for the condition.

The "Greater Than..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value being **greater than** to your specified value.

The specified value is typically a number, but it also works with a text value.

In this example, the specified value will be "65".

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

You can choose any range for where the Highlight Cell Rule should apply. It can be a few cells, a single column, a single row, or a combination of multiple cells, rows and columns.

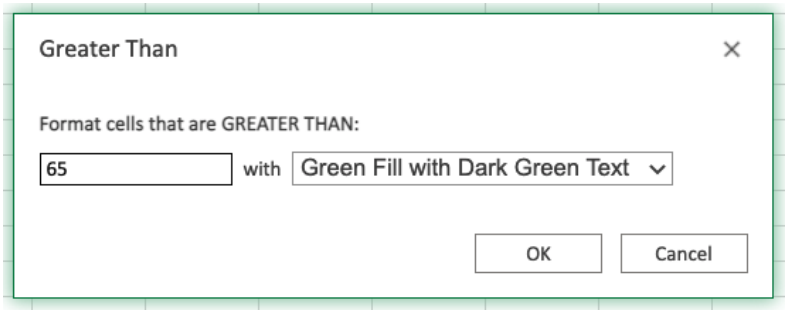
"Greater Than..." Highlight Cell Rule, step by step:

1. Select the range C2:C8 for HP values
2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Greater Than...** from the menu

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

This will open a dialog box where you can specify the value and the appearance option.

5. Enter 65 into the input field
6. Select the appearance option "Green Fill with Dark Green Text" from the dropdown menu



Now, the cells with values greater than "65" will be highlighted in green:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

Gyarados, Lapras and Vaporeon have HP values greater than 65, so they are highlighted. Value 65 is not highlighted because rule does not include the specified value itself.

Highlight Cell Rule - Greater Than Example (with Text)

The "Greater Than..." Highlight Cell Rule also works with text values.
Excel will use alphabetical order (A-Z) to highlight the text values that starts with a letter that is **later** in the alphabet than the specified value.
In the above data set example, the specified text value will be "Gyarados".

"Greater Than..." Highlight Cell Rule, step by step:

1. Select the range A2:A8 for Name values
2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Greater Than...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter Gyarados into the input field
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu

Now, the cells with text values **later** in the alphabet than "Gyarados" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

Magikarp starts with "M", Lapras with "L", Vaporeon with "V", and Jolteon with "J".

"M", "L", "V", and "J" are all **later** in the alphabet than "G", which Gyarados starts with, so these all are highlighted.

But, what about the rest of the letters in the text value?

Let's see what happens if we add a fictional pokemon with a new name:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Gzarados	Fictional	100	100	100	100	100	100	
5	Lapras	Water	130	85	80	85	95	60	
6	Ditto	Normal	48	48	48	48	48	48	
7	Eevee	Normal	55	55	50	45	65	55	
8	Vaporeon	Water	130	65	60	110	95	65	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

Notice that the fictional "Gzarados" is highlighted.
The Excel condition checks each letter in the specified text value from left to right.
Because the "z" in "G**z**arados" comes **later** in the alphabet than the "y" in "G**y**arados", this is considered **Greater Than** and is highlighted.

Highlight Cell Rules - Less Than

Less Than... is one of the options for the condition.

The "Less Than..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value being **less than** to your specified value.
The specified value is typically a number, but it also works with a text value.
In this example, the specified value will be "55".

"Less Than..." Highlight Cell Rule, step by step:

1. Select the range D2:D8 for Attack values

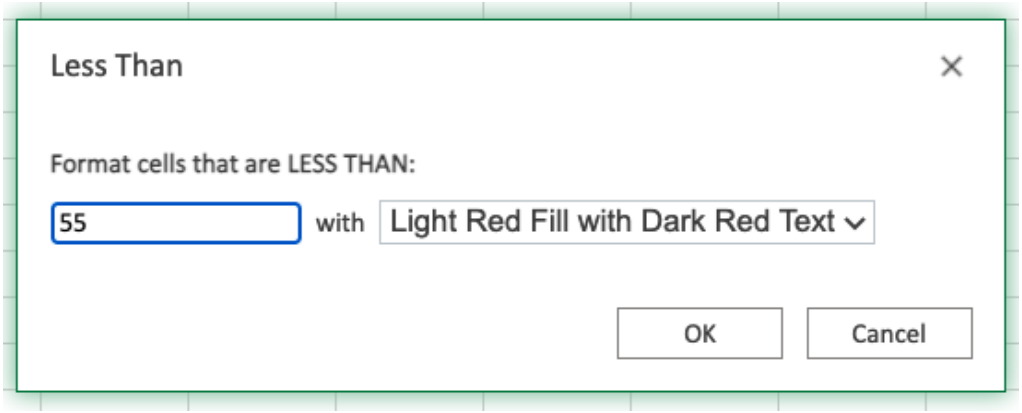
	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu

3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Less Than...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter 55 into the input field
6. Select the appearance option "Light Red Fill with Dark Red Text" from the dropdown menu



Now, the cells with values less than "55" will be highlighted in red:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

Highlight Cell Rule - Less Than Example (with Text)

The "Less Than..." Highlight Cell Rule also works with text values.
Excel will use alphabetical order (A-Z) to highlight the text values that starts with a letter that is **earlier** in the alphabet than the specified value
In this example, the specified text value will be "Electric".
Let's apply the rule to the Type 1 values.
"Less Than..." Hightlight Cell Rule, step by step:

1. Select the range B2:B8 for Type 1 values
2. Click on the Conditional Formatting icon in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Less Than...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter Electric into the input field
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu

Now, the cells with text values earlier in the alphabet than "Electric" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

Nothing seems to have changed!

Water starts with "W" and Normal starts with "N".

"W"and "N" are all **later** in the alphabet than "E", which Electric starts with, so **none** of these are highlighted. The specified value “Electric” itself is not highlighted. If we add a fictional pokemon with a new Name and Type: Ficteon and eclectic

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Ficteon	Eclectic	42	42	42	42	42	42	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

Notice that the fictional "Ficteon" has the type "Eclectic", which is highlighted.
The Excel condition checks each letter in the specified text value from left to right.
Because the "c" in "E**c**lectic" comes **earlier** in the alphabet than the "l" in "E**l**ectric", this is considered **Less Than** and is highlighted.

Highlight Cell Rules - Between

Between... is one of the options for the condition.
The "Between..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value being **between** two specified values.
The specified values is typically numbers, but can also be text values.
In this example, the specified values will be "79" and "100".

"Between..." Hightlight Cell Rule, step by step:

1. Select the range C2:H8 for all of the stat values

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Between...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter 79 and 100 into the input fields
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu

Now, the cells with values between "79" and "100" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Ficteon	Eclectic	42	42	42	42	42	42	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

Notice that Gyarados' Defense and Special Defense, which are 79 and 100, are highlighted. The **Between**... condition includes the specified values. This is different from the Greater Than... and Less Than... conditions, which do not include the specified values.

Highlight Cell Rules - Equal To

Equal To... is one of the options for the condition. The "Equal To..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value being **equal** to your specified value. The specified value could be a particular number or particular text.
In this example, the specified value will be "48".

"Equal To..." Highlight Cell Rule, step by step:

1. Select the range C2:H8 for all of the stat values

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Equal To...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter 48 into the input field
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu

Now, the cells with values equal to "48" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

Highlight Cell Rule - Equal To Example (with Text)

The "Equal To..." Highlight Cell Rule also works with text values.

In this example, the specified text value will be "Magikarp".

Let's apply the rule to the Name values.

"Equal To..." Hightlight Cell Rule, step by step:

1. Select the range A2:A8 for Name values

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Jolteon	Electric	65	65	60	110	95	130	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Equal To...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter **Magikarp** into the input field
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu

Now, the cells with text values equal to "Magikarp" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Ficteon	Eclectic	42	42	42	42	42	42	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

Highlight Cell Rules - Text That Contains

Text That Contains... is one of the options for the condition.

Highlight Cell Rule - Text That Contains Example (with Text)
The "Text That Contains..." Highlight Cell Rule will highlight a cell with one of the appearance options based on **a part of the cell value** containing your specified value.
The specified value is typically text, but also works with a numerical value.
In this example, the specified value will be "Pidge".

"Text That Contains..." Hightlight Cell Rule, step by step:

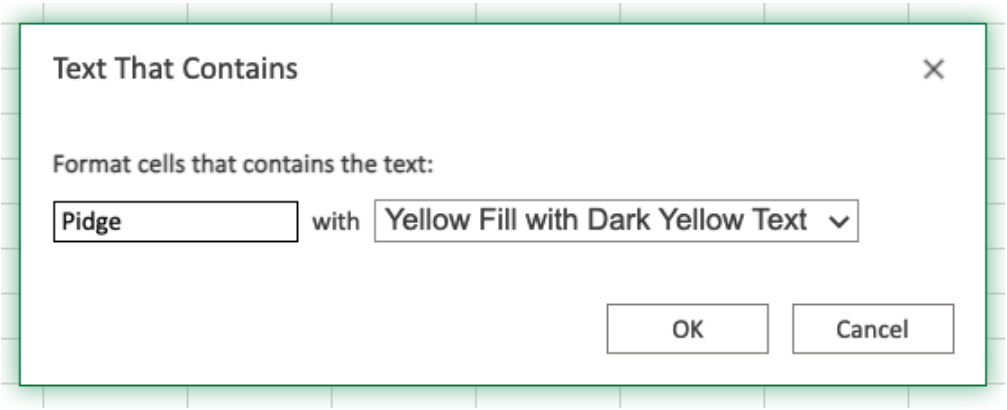
1. Select the range A2:A8 for the Name values

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Pidgey	Normal	40	45	40	35	35	56	
3	Pidgeotto	Normal	63	60	55	50	50	71	
4	Pidgeot	Normal	83	80	75	70	70	101	
5	Rattata	Normal	30	56	35	25	35	72	
6	Raticate	Normal	55	81	60	50	70	97	
7	Spearow	Normal	40	60	30	31	31	70	
8	Fearow	Normal	65	90	65	61	61	100	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Text That Contains...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Enter Pidge into the input field
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu



Now, the cells with values Text That Contains "Pidge" will be highlighted in yellow:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Pidgey	Normal	40	45	40	35	35	56	
3	Pidgeotto	Normal	63	60	55	50	50	71	
4	Pidgeot	Normal	83	80	75	70	70	101	
5	Rattata	Normal	30	56	35	25	35	72	
6	Raticate	Normal	55	81	60	50	70	97	
7	Spearow	Normal	40	60	30	31	31	70	
8	Fearow	Normal	65	90	65	61	61	100	
9									

The names "Pidgey", "Pidgeot", and "Pidgeotto" all start with "Pidge", so all these cells are highlighted.

Highlight Cell Rules - A Date Occurring

A Date Occurring... is one of the options for the condition. The "A Date Occurring..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value relative to a specified time frame.

The time frame can be:

- Yesterday
- Today
- Tomorrow
- In the last 7 days
- Last Week
- This Week
- Next Week
- Last Month
- This Month
- Next Month

In this example, the specified time frame will be "next month".

	A	B	C	D	E
1	Name	Type 1	Birthday	Year	
2	Bulbasaur	Grass	27-Feb	1996	
3	Charmander	Fire	27-Feb	1996	
4	Squirtle	Water	27-Feb	1996	
5	Chikorita	Grass	21-Nov	1999	
6	Cyndaquil	Fire	21-Nov	1999	
7	Totodile	Water	21-Nov	1999	
8	Treecko	Grass	21-Nov	2002	
9	Torchic	Fire	21-Nov	2002	
10	Mudkip	Water	21-Nov	2002	
11	Turtwig	Grass	28-Sep	2006	
12	Chimchar	Fire	28-Sep	2006	
13	Piplup	Water	28-Sep	2006	
14	Snivy	Grass	18-Sep	2010	
15	Tepig	Fire	18-Sep	2010	
16	Oshawott	Water	18-Sep	2010	
17	Chespin	Grass	12-Oct	2013	
18	Fennekin	Fire	12-Oct	2013	
19	Froakie	Water	12-Oct	2013	
20					

"A Date Occurring..." Hightlight Cell Rule, step by step:

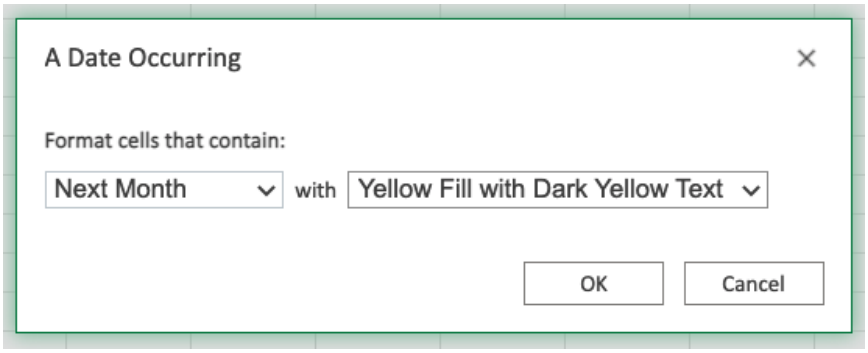
1. Select the range C2:C19 for the Birthday values

	A	B	C	D	E
1	Name	Type 1	Birthday	Year	
2	Bulbasaur	Grass	27-Feb	1996	
3	Charmander	Fire	27-Feb	1996	
4	Squirtle	Water	27-Feb	1996	
5	Chikorita	Grass	21-Nov	1999	
6	Cyndaquil	Fire	21-Nov	1999	
7	Totodile	Water	21-Nov	1999	
8	Treecko	Grass	21-Nov	2002	
9	Torchic	Fire	21-Nov	2002	
10	Mudkip	Water	21-Nov	2002	
11	Turtwig	Grass	28-Sep	2006	
12	Chimchar	Fire	28-Sep	2006	
13	Piplup	Water	28-Sep	2006	
14	Snivy	Grass	18-Sep	2010	
15	Tepig	Fire	18-Sep	2010	
16	Oshawott	Water	18-Sep	2010	
17	Chespin	Grass	12-Oct	2013	
18	Fennekin	Fire	12-Oct	2013	
19	Froakie	Water	12-Oct	2013	
20					

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **A Date Occurring...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Select "Next Month" from the dropdown menu
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu



Now, the cells with values A Date Occurring next month will be highlighted in yellow, in this example current month is August.

	A	B	C	D	E
1	Name	Type 1	Birthday	Year	
2	Bulbasaur	Grass	27-Feb	1996	
3	Charmander	Fire	27-Feb	1996	
4	Squirtle	Water	27-Feb	1996	
5	Chikorita	Grass	21-Nov	1999	
6	Cyndaquil	Fire	21-Nov	1999	
7	Totodile	Water	21-Nov	1999	
8	Treecko	Grass	21-Nov	2002	
9	Torchic	Fire	21-Nov	2002	
10	Mudkip	Water	21-Nov	2002	
11	Turtwig	Grass	28-Sep	2006	
12	Chimchar	Fire	28-Sep	2006	
13	Piplup	Water	28-Sep	2006	
14	Snivy	Grass	18-Sep	2010	
15	Tepig	Fire	18-Sep	2010	
16	Oshawott	Water	18-Sep	2010	
17	Chespin	Grass	12-Oct	2013	
18	Fennekin	Fire	12-Oct	2013	
19	Froakie	Water	12-Oct	2013	
20					

Highlight Cell Rules - Duplicate and Unique Values

Duplicate Values.. is one of the options for the condition, and can check for both **duplicate** and **unique** values.

The "Duplicate Value..." Highlight Cell Rule will highlight a cell with one of the appearance options based on the cell value being the **same** as other cells in the range.

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Ditto	Normal	48	48	48	48	48	48	
3	Ditto	Normal	48	48	48	48	48	48	
4	Ditto	Normal	48	48	48	48	48	48	
5	Mew	Psychic	100	100	100	100	100	100	
6	Ditto	Normal	48	48	48	48	48	48	
7	Ditto	Normal	48	48	48	48	48	48	
8	Ditto	Normal	48	48	48	48	48	48	
9									

" Duplicate Value..." Hightlight Cell Rule, step by step:

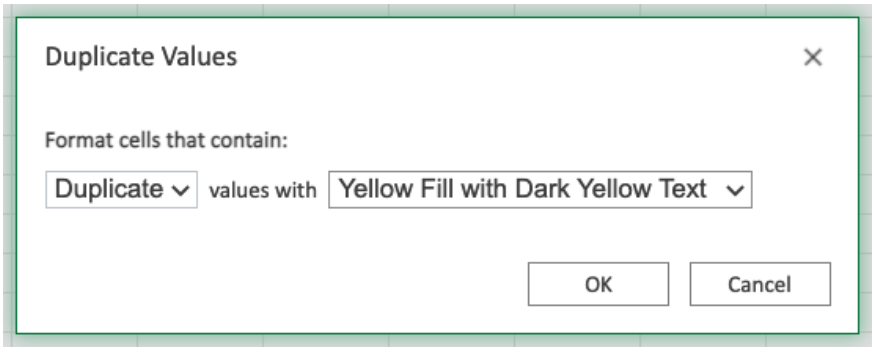
1. Select the range A2:H8

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Ditto	Normal	48	48	48	48	48	48	
3	Ditto	Normal	48	48	48	48	48	48	
4	Ditto	Normal	48	48	48	48	48	48	
5	Mew	Psychic	100	100	100	100	100	100	
6	Ditto	Normal	48	48	48	48	48	48	
7	Ditto	Normal	48	48	48	48	48	48	
8	Ditto	Normal	48	48	48	48	48	48	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Duplicate Values...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Select **Duplicate**
6. Select the appearance option "Yellow Fill with Dark Yellow Text" from the dropdown menu



Now, all the cells in the range that have the **same** value as another cell are highlighted in yellow. All of Ditto's stat values are 48 and all of Mew's stat values are 100, so they are all highlighted. All of the Dittos and all of the Normal Type values are also highlighted.

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Ditto	Normal	48	48	48	48	48	48	
3	Ditto	Normal	48	48	48	48	48	48	
4	Ditto	Normal	48	48	48	48	48	48	
5	Mew	Psychic	100	100	100	100	100	100	
6	Ditto	Normal	48	48	48	48	48	48	
7	Ditto	Normal	48	48	48	48	48	48	
8	Ditto	Normal	48	48	48	48	48	48	
9									

Highlight Cell Rule - Unique Value Example

The "Duplicate Values..." Highlight Cell Rule can also find and highlight **Unique Values**. Let's apply this to the same set of data.
"Equal To..." Highlight Cell Rule, step by step:

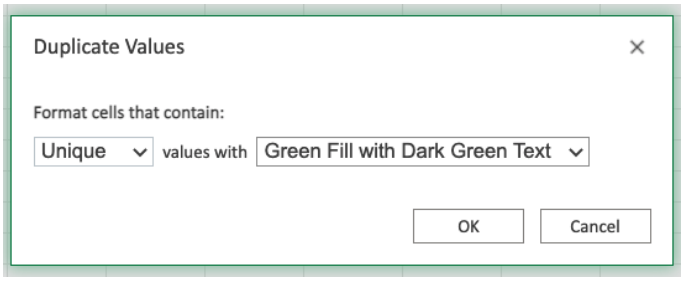
1. Select the range A2:H8

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Ditto	Normal	48	48	48	48	48	48	
3	Ditto	Normal	48	48	48	48	48	48	
4	Ditto	Normal	48	48	48	48	48	48	
5	Mew	Psychic	100	100	100	100	100	100	
6	Ditto	Normal	48	48	48	48	48	48	
7	Ditto	Normal	48	48	48	48	48	48	
8	Ditto	Normal	48	48	48	48	48	48	
9									

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Highlight Cell Rules** from the drop-down menu
4. Select the **Duplicate Value...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Select **Unique** from the dropdown menu
6. Select the appearance option "Green Fill with Dark Green Text" from the dropdown menu

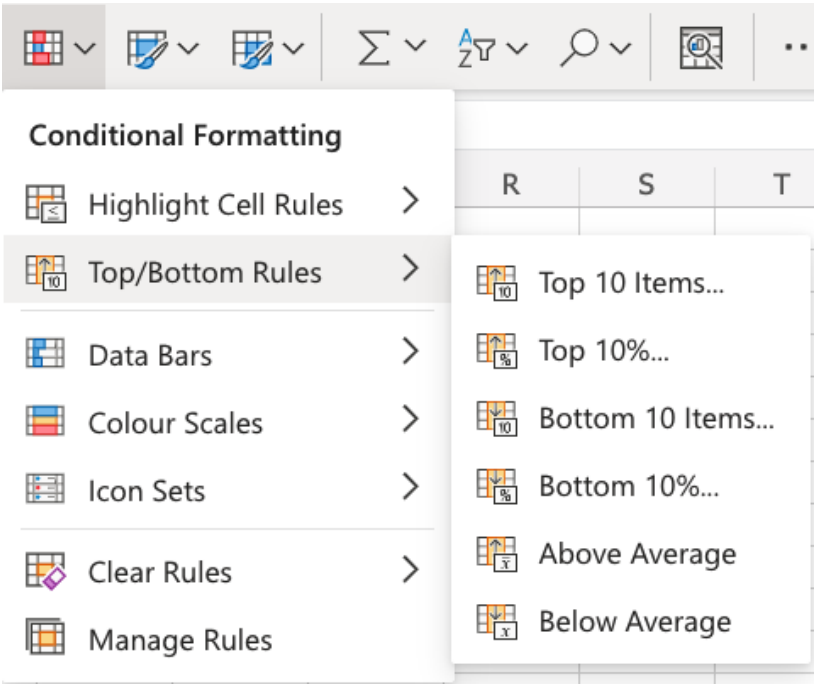


Now, the cells with **unique** values will be highlighted in green. Mew and Psychic only appears once in the range, so these values are highlighted.

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Ditto	Normal	48	48	48	48	48	48	
3	Ditto	Normal	48	48	48	48	48	48	
4	Ditto	Normal	48	48	48	48	48	48	
5	Mew	Psychic	100	100	100	100	100	100	
6	Ditto	Normal	48	48	48	48	48	48	
7	Ditto	Normal	48	48	48	48	48	48	
8	Ditto	Normal	48	48	48	48	48	48	
9									

5.3.2 Top/Bottom Rules

Top/Bottom Rules are premade types of conditional formatting in Excel used to change the appearance of cells in a range based on your specified **conditions**.
Here is the Top/Bottom Rules part of the conditional formatting menu:



Top/Bottom 10 Items Example

The "Top 10 Items..." and "Bottom 10 Items..." rules will highlight cells with one of the appearance options based on the cell value being the top or bottom values in a range. The default number of items is 10, but you can specify any whole number up to 1000 for Top/Bottom Items to be highlighted.

First apply the **Top 10 Items...** rule to the Speed values.

"Top 10 Items..." Rule, step by step:

1. Select the range C2:C31 for Speed values

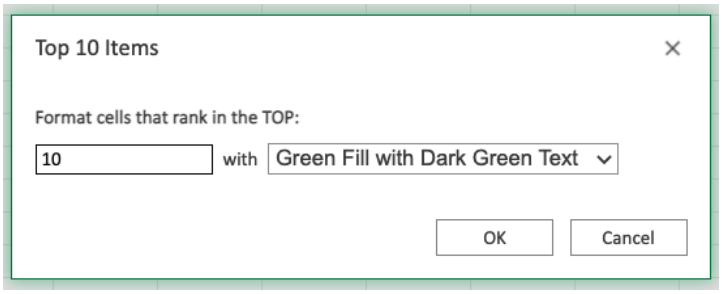
	A	B	C	D
1	Name	Type 1	Speed	
2	Bulbasaur	Grass	45	
3	Ivysaur	Grass	60	
4	Venusaur	Grass	80	
5	Charmander	Fire	65	
6	Charmeleon	Fire	80	
7	Charizard	Fire	100	
8	Squirtle	Water	43	
9	Wartortle	Water	58	
10	Blastoise	Water	78	
11	Caterpie	Bug	45	
12	Metapod	Bug	30	
13	Butterfree	Bug	70	
14	Weedle	Bug	50	
15	Kakuna	Bug	35	
16	Beedrill	Bug	75	
17	Pidgey	Normal	56	
18	Pidgeotto	Normal	71	
19	Pidgeot	Normal	101	
20	Rattata	Normal	72	
21	Raticate	Normal	97	
22	Spearow	Normal	70	
23	Fearow	Normal	100	
24	Ekans	Poison	55	
25	Arbok	Poison	80	
26	Pikachu	Electric	90	
27	Raichu	Electric	110	
28	Sandshrew	Ground	40	
29	Sandslash	Ground	65	
30	Nidoran ♀	Poison	41	
31	Nidorina	Poison	56	
32				

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Top/Bottom Rules** from the drop-down menu
4. Select the **Top 10 Items...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Leave the default value 10 in the input field

6. Select the appearance option "Green Fill with Dark Green Text" from the dropdown menu



Now, the 10 cells with the top values will be highlighted in green:

	A	B	C	D
1	Name	Type 1	Speed	
2	Bulbasaur	Grass	45	
3	Ivysaur	Grass	60	
4	Venusaur	Grass	80	
5	Charmander	Fire	65	
6	Charmeleon	Fire	80	
7	Charizard	Fire	100	
8	Squirtle	Water	43	
9	Wartortle	Water	58	
10	Blastoise	Water	78	
11	Caterpie	Bug	45	
12	Metapod	Bug	30	
13	Butterfree	Bug	70	
14	Weedle	Bug	50	
15	Kakuna	Bug	35	
16	Beedrill	Bug	75	
17	Pidgey	Normal	56	
18	Pidgeotto	Normal	71	
19	Pidgeot	Normal	101	
20	Rattata	Normal	72	
21	Raticate	Normal	97	
22	Spearow	Normal	70	
23	Fearow	Normal	100	
24	Ekans	Poison	55	
25	Arbok	Poison	80	
26	Pikachu	Electric	90	
27	Raichu	Electric	110	
28	Sandshrew	Ground	40	
29	Sandslash	Ground	65	
30	Nidoran♀	Poison	41	
31	Nidorina	Poison	56	
32				

Repeat the steps, but instead choose **Bottom 10 Items...** in the menu and select the "Light Red Fill with Dark Red Text" appearance option.

Now, the slowest values are also highlighted:

	A	B	C	D
1	Name	Type 1	Speed	
2	Bulbasaur	Grass	45	
3	Ivysaur	Grass	60	
4	Venusaur	Grass	80	
5	Charmander	Fire	65	
6	Charmeleon	Fire	80	
7	Charizard	Fire	100	
8	Squirtle	Water	43	
9	Wartortle	Water	58	
10	Blastoise	Water	78	
11	Caterpie	Bug	45	
12	Metapod	Bug	30	
13	Butterfree	Bug	70	
14	Weedle	Bug	50	
15	Kakuna	Bug	35	
16	Beedrill	Bug	75	
17	Pidgey	Normal	56	
18	Pidgeotto	Normal	71	
19	Pidgeot	Normal	101	
20	Rattata	Normal	72	
21	Raticate	Normal	97	
22	Spearow	Normal	70	
23	Fearow	Normal	100	
24	Ekans	Poison	55	
25	Arbok	Poison	80	
26	Pikachu	Electric	90	
27	Raichu	Electric	110	
28	Sandshrew	Ground	40	
29	Sandslash	Ground	65	
30	Nidoran♀	Poison	41	
31	Nidorina	Poison	56	
32				

Top/Bottom 10% Example

The "Top 10%..." and "Bottom 10%..." rules will highlight cells with one of the appearance options based on the cell value being the top or bottom **percent of values** in a range. The default percent of items is 10, but you can specify any whole number up to 100 for Top/Bottom Percent to be highlighted.

Let's apply Top and Bottom 10% rules to the same dataset with sorted Speed values:

"Bottom 10%..." Rule, step by step:

1. Select the range C2:C31 for Speed values

	A	B	C	D
1	Name	Type 1	Speed	
2	Raichu	Electric	110	
3	Pidgeot	Normal	101	
4	Charizard	Fire	100	
5	Fearow	Normal	100	
6	Raticate	Normal	97	
7	Pikachu	Electric	90	
8	Venusaur	Grass	80	
9	Charmeleon	Fire	80	
10	Arbok	Poison	80	
11	Blastoise	Water	78	
12	Beedrill	Bug	75	
13	Rattata	Normal	72	
14	Pidgeotto	Normal	71	
15	Butterfree	Bug	70	
16	Spearow	Normal	70	
17	Charmander	Fire	65	
18	Sandslash	Ground	65	
19	Ivysaur	Grass	60	
20	Wartortle	Water	58	
21	Pidgey	Normal	56	
22	Nidorina	Poison	56	
23	Ekans	Poison	55	
24	Weedle	Bug	50	
25	Bulbasaur	Grass	45	
26	Caterpie	Bug	45	
27	Squirtle	Water	43	
28	Nidoran ♀	Poison	41	
29	Sandshrew	Ground	40	
30	Kakuna	Bug	35	
31	Metapod	Bug	30	
32				

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu

3. Select the **Top/Bottom Rules** from the drop-down menu
4. Select the **Bottom 10%...** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Leave the default value 10 in the input field
6. Select the appearance option "Light Red Fill with Dark Red Text" from the dropdown menu
7. Now, the bottom 10% of cells will be highlighted in red:

	A	B	C	D
1	Name	Type 1	Speed	
2	Raichu	Electric	110	
3	Pidgeot	Normal	101	
4	Charizard	Fire	100	
5	Fearow	Normal	100	
6	Raticate	Normal	97	
7	Pikachu	Electric	90	
8	Venusaur	Grass	80	
9	Charmeleon	Fire	80	
10	Arbok	Poison	80	
11	Blastoise	Water	78	
12	Beedrill	Bug	75	
13	Rattata	Normal	72	
14	Pidgeotto	Normal	71	
15	Butterfree	Bug	70	
16	Spearow	Normal	70	
17	Charmander	Fire	65	
18	Sandslash	Ground	65	
19	Ivysaur	Grass	60	
20	Wartortle	Water	58	
21	Pidgey	Normal	56	
22	Nidorina	Poison	56	
23	Ekans	Poison	55	
24	Weedle	Bug	50	
25	Bulbasaur	Grass	45	
26	Caterpie	Bug	45	
27	Squirtle	Water	43	
28	Nidoran♀	Poison	41	
29	Sandshrew	Ground	40	
30	Kakuna	Bug	35	
31	Metapod	Bug	30	
32				

Notice that there are 3 highlighted cells. There are 30 cells in the range, so 10% of that is 3 cells.

Above and Below Average Rules

Above and Below Average Rules are premade types of conditional formatting in Excel used to change the appearance of cells in a range based on your specified **conditions**.
Above and Below Average Rules are found in the **Top/Bottom Rules** part of the conditional formatting menu. The "Above Average" rule will highlight cells with one of the appearance options based on the cell value being the above the average value in a range.

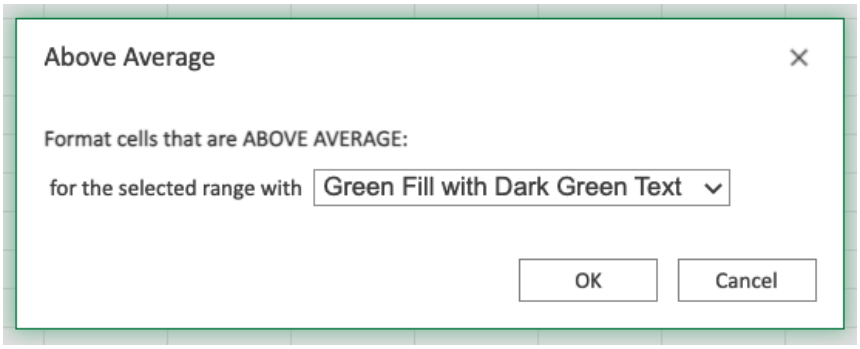
	A	B	C	D
1	Name	Type 1	HP	
2	Nidoking	Poison	81	
3	Clefairy	Fairy	70	
4	Clefable	Fairy	95	
5	Vulpix	Fire	38	
6	Ninetales	Fire	73	
7	Jigglypuff	Normal	115	
8	Wigglytuff	Normal	140	
9	Zubat	Poison	40	
10	Golbat	Poison	75	
11	Oddish	Grass	45	
12	Average		77.2	
13				

"Above Average" Rule, step by step:

1. Select the range C2:C11 for HP values
2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select the **Top/Bottom Rules** from the drop-down menu
4. Select **Above Average** from the menu

This will open a dialog box where you can specify the value and the appearance option.

5. Select the appearance option "Green Fill with Dark Green Text" from the dropdown menu



Now, the cells with above average HP values (more than 77.2) will be highlighted in green:

	A	B	C	D
1	Name	Type 1	HP	
2	Nidoking	Poison	81	
3	Clefairy	Fairy	70	
4	Clefable	Fairy	95	
5	Vulpix	Fire	38	
6	Ninetales	Fire	73	
7	Jigglypuff	Normal	115	
8	Wigglytuff	Normal	140	
9	Zubat	Poison	40	
10	Golbat	Poison	75	
11	Oddish	Grass	45	
12	Average		77.2	
13				

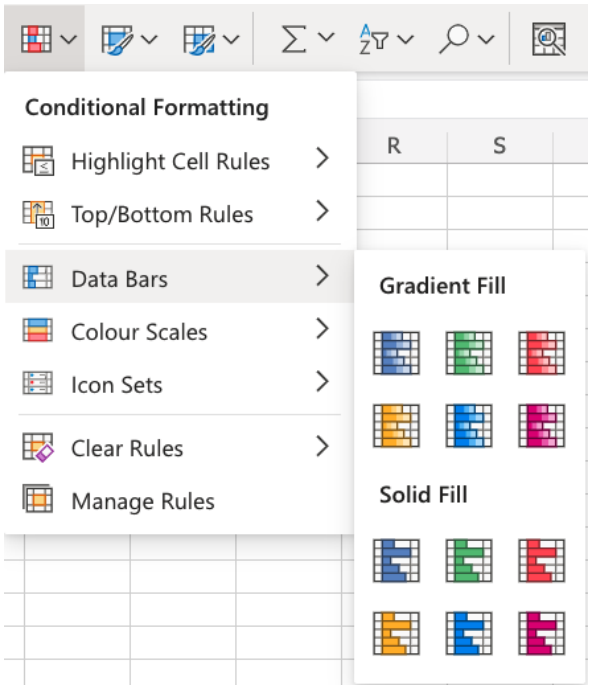
Repeat the steps, but instead choose **Below Average** in the menu and select the "Light Red Fill with Dark Red Text" appearance option.

Now, the below average values are also highlighted:

	A	B	C	D
1	Name	Type 1	HP	
2	Nidoking	Poison	81	
3	Clefairy	Fairy	70	
4	Clefable	Fairy	95	
5	Vulpix	Fire	38	
6	Ninetales	Fire	73	
7	Jigglypuff	Normal	115	
8	Wigglytuff	Normal	140	
9	Zubat	Poison	40	
10	Golbat	Poison	75	
11	Oddish	Grass	45	
12	Average		77.2	
13				

5.3.3 Data Bars

Data Bars are premade types of conditional formatting in Excel used to add colored bars to cells in a range to indicate how large the cell values are compared to the other values.
Here is the Data Bars part of the conditional formatting menu:



Data Bars Example

	A	B	C	D
1	Name	Type 1	Speed	
2	Onix	Rock	70	
3	Drowzee	Psychic	42	
4	Hypno	Psychic	67	
5	Krabby	Water	50	
6	Kingler	Water	75	
7	Voltorb	Electric	100	
8	Electrode	Electric	140	
9	Exeggcute	Grass	40	
10	Exeggutor	Grass	55	
11				

The size of the data bars depends on the **smallest** and **largest** cell value in the range.

Let's apply the **Data Bars** conditional formatting to the Speed values.

"Data Bars", step by step:

1. Select the range C2:C10 for Speed values

	A	B	C	D
1	Name	Type 1	Speed	
2	Onix	Rock	70	
3	Drowzee	Psychic	42	
4	Hypno	Psychic	67	
5	Krabby	Water	50	
6	Kingler	Water	75	
7	Voltorb	Electric	100	
8	Electrode	Electric	140	
9	Exeggcute	Grass	40	
10	Exeggutor	Grass	55	
11				

2. Click on the Conditional Formatting icon  in the ribbon, from **Home** menu
3. Select **Data Bars** from the drop-down menu
4. Select the "Green Data Bars" color option from the **Gradient Fill** menu

Both **Gradient Fill** and **Solid Fill** work the same way. The only difference between those, and the color options are aesthetic. Now, all of the Speed value cells have a green bar showing how big the value is compared to the other values in the range:

	A	B	C	D
1	Name	Type 1	Speed	
2	Onix	Rock	70	
3	Drowzee	Psychic	42	
4	Hypno	Psychic	67	
5	Krabby	Water	50	
6	Kingler	Water	75	
7	Voltorb	Electric	100	
8	Electrode	Electric	140	
9	Exeggcute	Grass	40	
10	Exeggutor	Grass	55	
11				

Electrode has the highest value, 140, so the bar fills the entire cell. The other bars are scaled relative to the highest value and 0 by default. Exeggcute has the lowest value, 40, so this is the shortest bar. Though, it is larger than 0, so there is still a small bar.

Let's see what happens if we add a fictional Pokemon with a 0 Speed value:

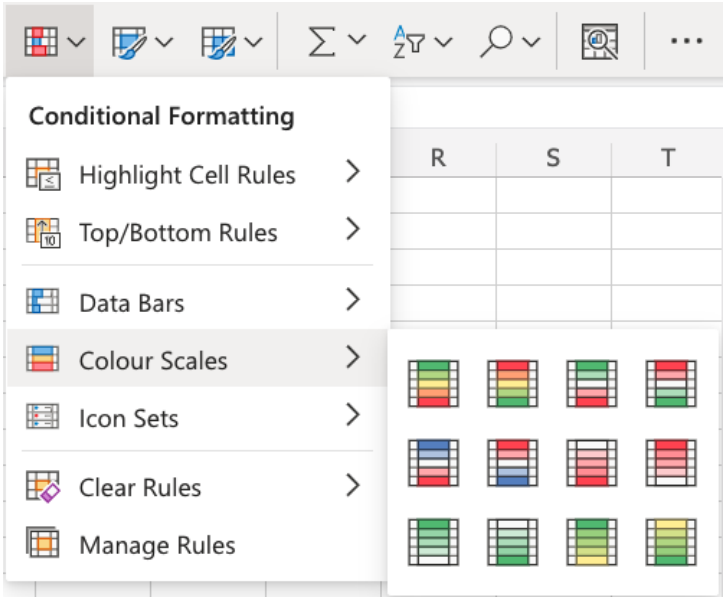
	A	B	C	D
1	Name	Type 1	Speed	
2	Onix	Rock	70	
3	Drowzee	Psychic	42	
4	Hypno	Psychic	67	
5	Krabby	Water	50	
6	Kingler	Water	75	
7	Voltorb	Electric	100	
8	Electrode	Electric	140	
9	Neutrinode	Neutral	0	
10	Exeggcute	Grass	40	
11	Exeggutor	Grass	55	
12				

The fictional Neutrinode has a Speed value of 0, so this becomes an invisible "minimum" bar.

5.3.4 Color Scales

Color Scales are premade types of conditional formatting in Excel used to highlight cells in a range to indicate how large the cell values are compared to the other values in the range.

Here is the Color Scales part of the conditional formatting menu:



Color Scale Formatting Example

Highlight the Speed values of each Pokemon with **Color Scale** conditional formatting.

Color Scales, step by step:

1. Select the range of Speed values C2:C8

	A	B	C	D
1	Name	Type 1	Speed	
2	Geodude	Rock	20	
3	Graveler	Rock	35	
4	Golem	Rock	45	
5	Ponyta	Fire	90	
6	Rapidash	Fire	105	
7	Slowpoke	Water	15	
8	Slowbro	Water	30	
9				

2. Click on the Conditional Formatting icon  in the ribbon, from the **Home** menu
3. Select the **Color Scales** from the drop-down menu

There are 12 Color Scale options with different color variations. The color on the top of the icon  will apply to the highest values.

4. Click on the "Green - Yellow - Red Colour Scale" icon

Now, the Speed value cells will have a colored background highlighting:

	A	B	C	D
1	Name	Type 1	Speed	
2	Geodude	Rock	20	
3	Graveler	Rock	35	
4	Golem	Rock	45	
5	Ponyta	Fire	90	
6	Rapidash	Fire	105	
7	Slowpoke	Water	15	
8	Slowbro	Water	30	
9				

Dark green is used for the highest values, and dark red for the lowest values.

Rapidash has the highest Speed value (105) and Slowpoke has the lowest Speed value (15).

All the cells in the range gradually change color from green, yellow, orange, then red. The color formatting is **relative** to the **smallest** and **largest** cell values in the range.

5.3.5 Icon Sets

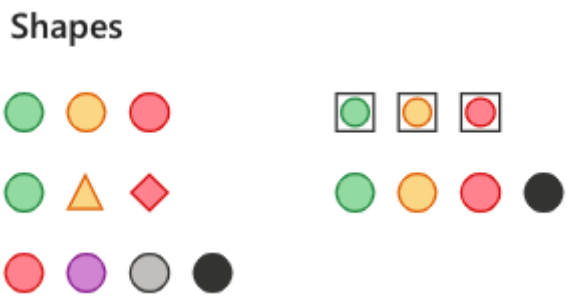
Icon Sets are premade types of conditional formatting in Excel used to add icons to cells in a range to indicate how large the cell values are compared to the other values in the range. Icon Sets can be used together with other conditional formatting rules.

Icon Sets Options

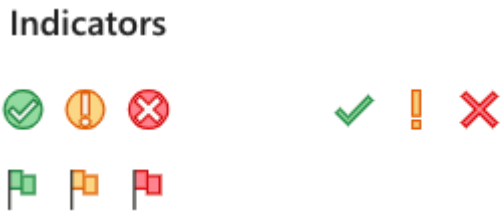
Excel has a number of different icon sets, organized as:

Directional

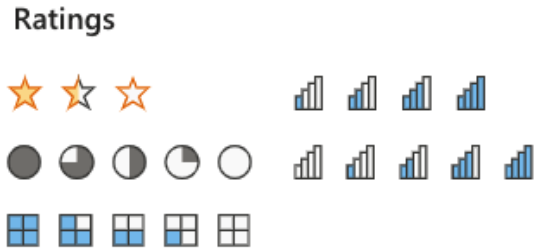
Shapes



Indicators



Ratings

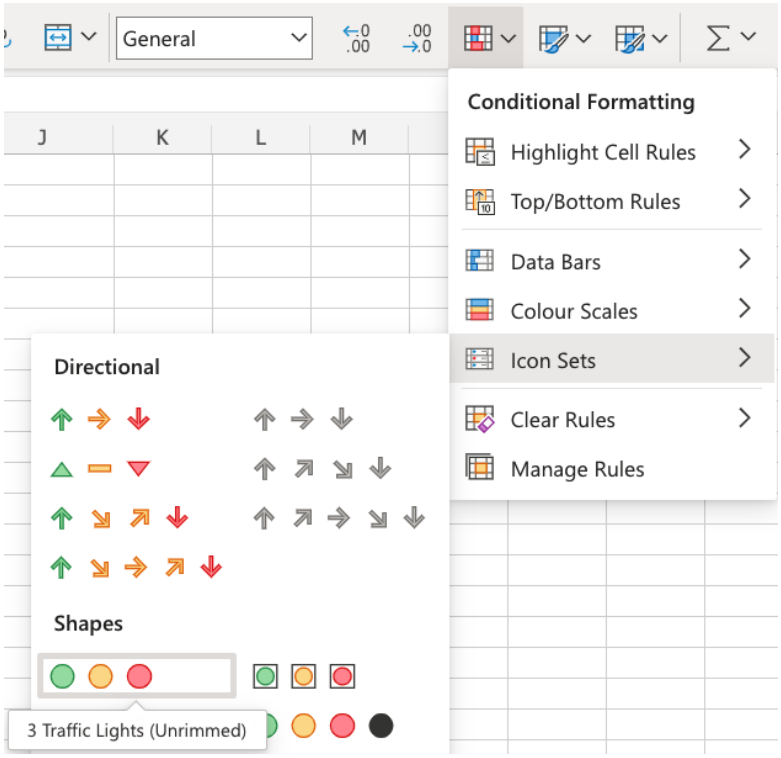


Add icons to the Speed values of each Pokemon with **Icon Set** conditional formatting.

	A	B	C	D
1	Name	Type 1	Speed	
2	Bulbasaur	Grass	45	
3	Ivysaur	Grass	60	
4	Venusaur	Grass	80	
5	Charmander	Fire	65	
6	Charmeleon	Fire	80	
7	Charizard	Fire	100	
8	Squirtle	Water	43	
9	Wartortle	Water	58	
10	Blastoise	Water	78	
11				

Icon Sets, step by step:

1. Select the range of Speed values C2:C10
2. Click on the Conditional Formatting icon  in the ribbon, from the **Home** menu
3. Select the **Icon Sets** from the drop-down menu
4. Click on the "3 Traffic Lights (Unrimmed)" option



Now, the Speed value cells will have icons indicating how large the values are compared to the other values in the range:

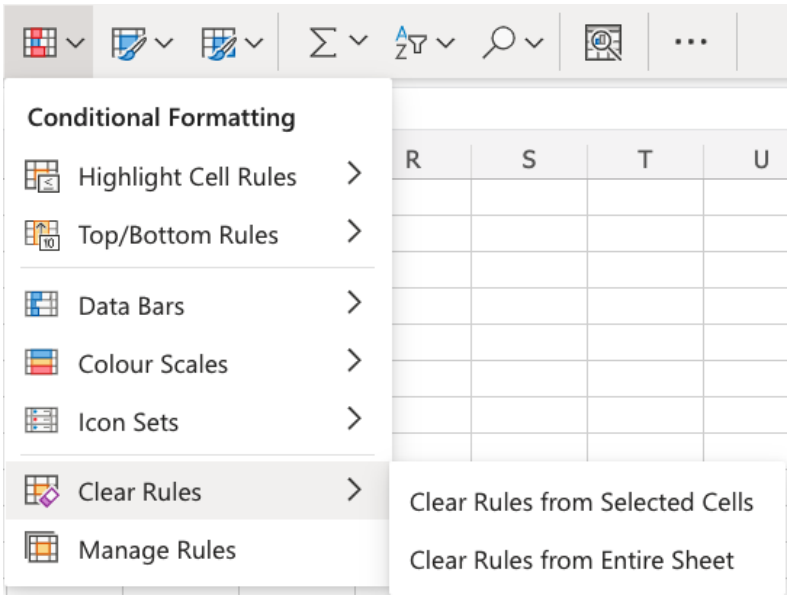
	A	B	C	D
1	Name	Type 1	Speed	
2	Bulbasaur	Grass	45	
3	Ivysaur	Grass	60	
4	Venusaur	Grass	80	
5	Charmander	Fire	65	
6	Charmeleon	Fire	80	
7	Charizard	Fire	100	
8	Squirtle	Water	43	
9	Wartortle	Water	58	
10	Blastoise	Water	78	
11				

The green traffic light is used for the highest values, yellow for the middle values, and red for the lowest values. Excel automatically calculates and chooses which values get which colored traffic light icon.

5.3.6 Excel Manage Rules

Conditional Formatting rules can be managed and removed using the **Clear Rules** and **Manage Rules** features.

Here is the Clear Rules part of the conditional formatting menu:



You can remove all the rules from a **selected range of cells** or from the entire spreadsheet using the **Clear Rules** menu options. We can also use the **Manage Rules** menu option to clear conditional formatting rules.

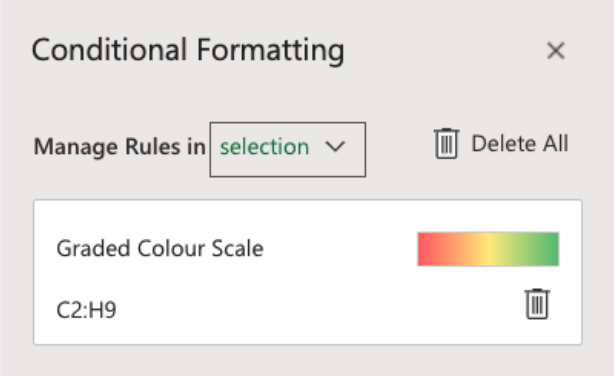
Let's remove the **Color Scale** rule applied to all the Stat values:

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Ficteon	Eclectic	42	42	42	42	42	42	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

Select the range C2:H9.

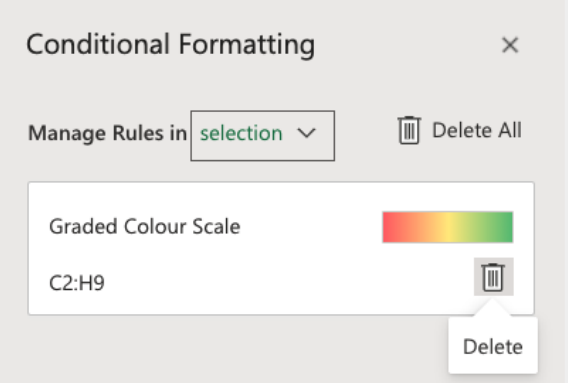
Select the **Manage Rules** option from the Conditional Formatting menu  in the **Home** menu.

This box will appear on the right-hand side of your spreadsheet:



This will show all the active rules that are applied to the selected range.

It will also indicate which cells the rule is applied to. Which, in this example, is C2:H9?



Clicking on the recycling bin icon will remove a particular rule.

	A	B	C	D	E	F	G	H	I
1	Name	Type 1	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	
2	Magikarp	Water	20	10	55	15	20	80	
3	Gyarados	Water	95	125	79	60	100	81	
4	Lapras	Water	130	85	80	85	95	60	
5	Ditto	Normal	48	48	48	48	48	48	
6	Eevee	Normal	55	55	50	45	65	55	
7	Vaporeon	Water	130	65	60	110	95	65	
8	Ficteon	Eclectic	42	42	42	42	42	42	
9	Jolteon	Electric	65	65	60	110	95	130	
10									

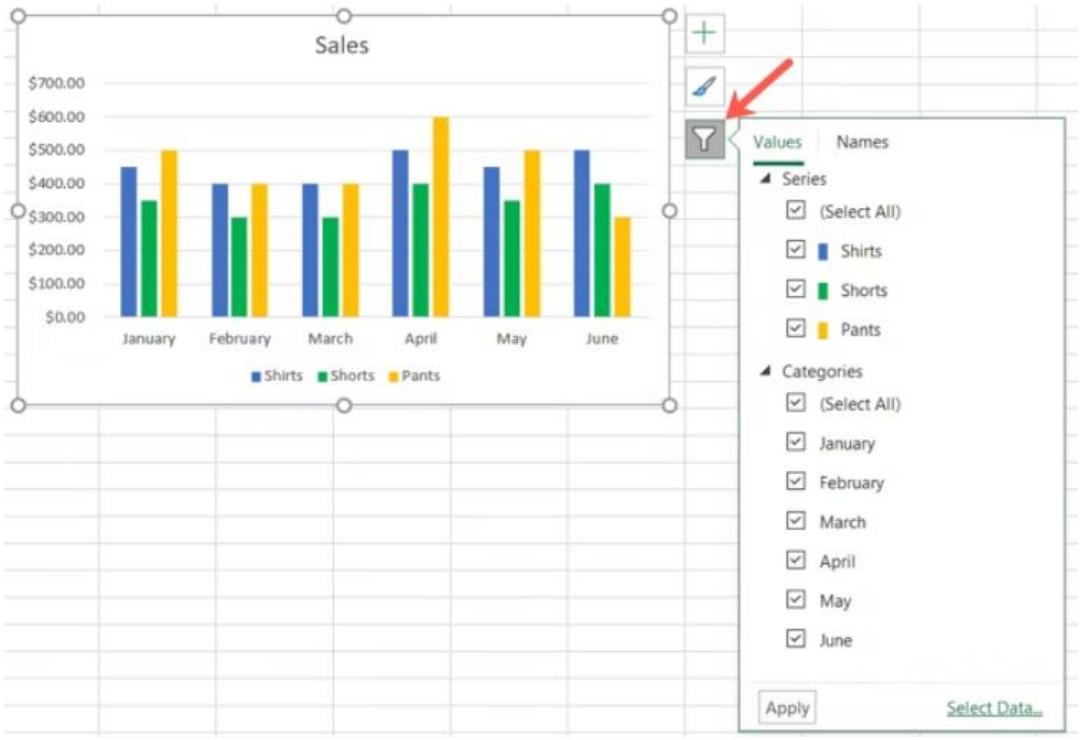
Now, the cells no longer have conditional formatting.

5.4 Visual level filter

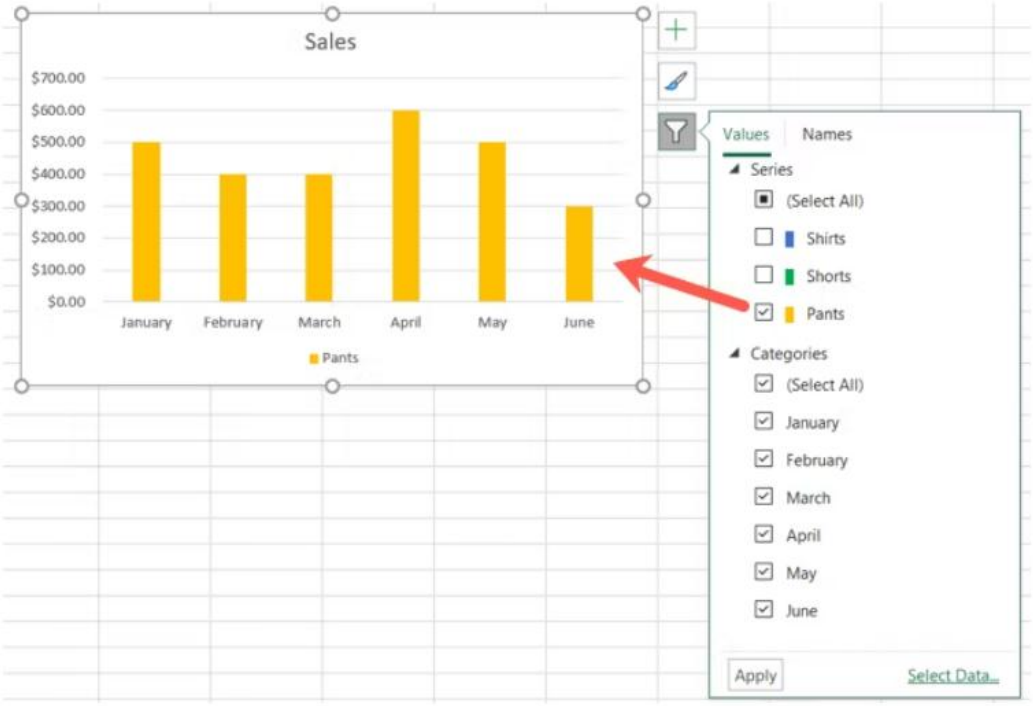
Filter a Chart in Excel on Windows

You can certainly use Excel's data filter on the Home tab. But Microsoft makes applying a filter to a chart a bit simpler on Windows.

Select the chart and you'll see buttons display to the right. Click the Chart Filters button (funnel icon).



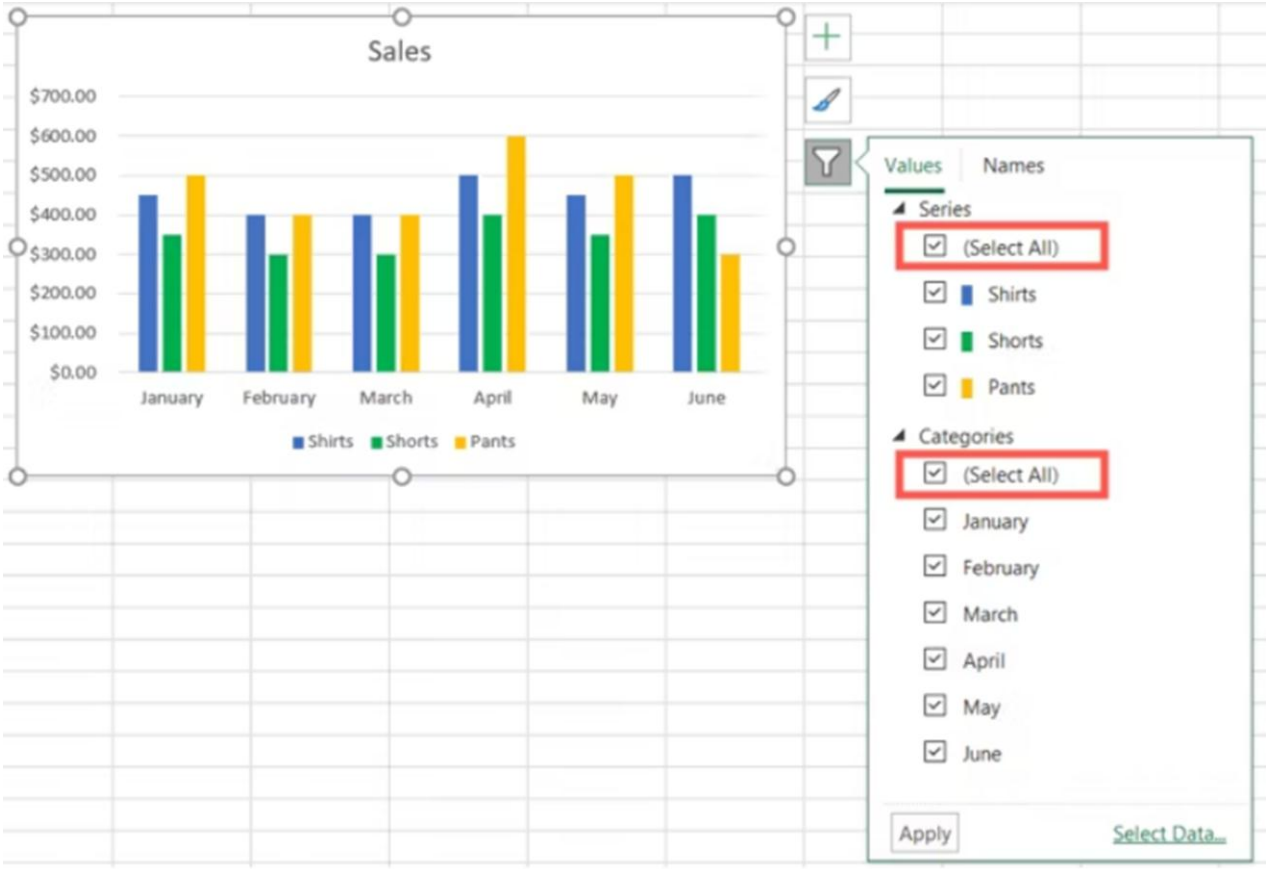
When the filter box opens, select the Values tab at the top. You can then expand and filter by Series, Categories, or both. Simply check the options you want to view on the chart, then click "Apply."



Note that some chart types don't offer the Chart Filters option such as Pareto, Histogram, and Waterfall charts. You can still filter the chart by applying a filter to the data instead. Follow the steps below for filtering a chart on Mac as the steps are the same in Excel on Windows.

Remove a Filter

When you finish using the Chart Filters, click that button once more to open the filter box. Check the boxes for Select All in Series or Categories, depending on the filter you used. Then, click "Apply."

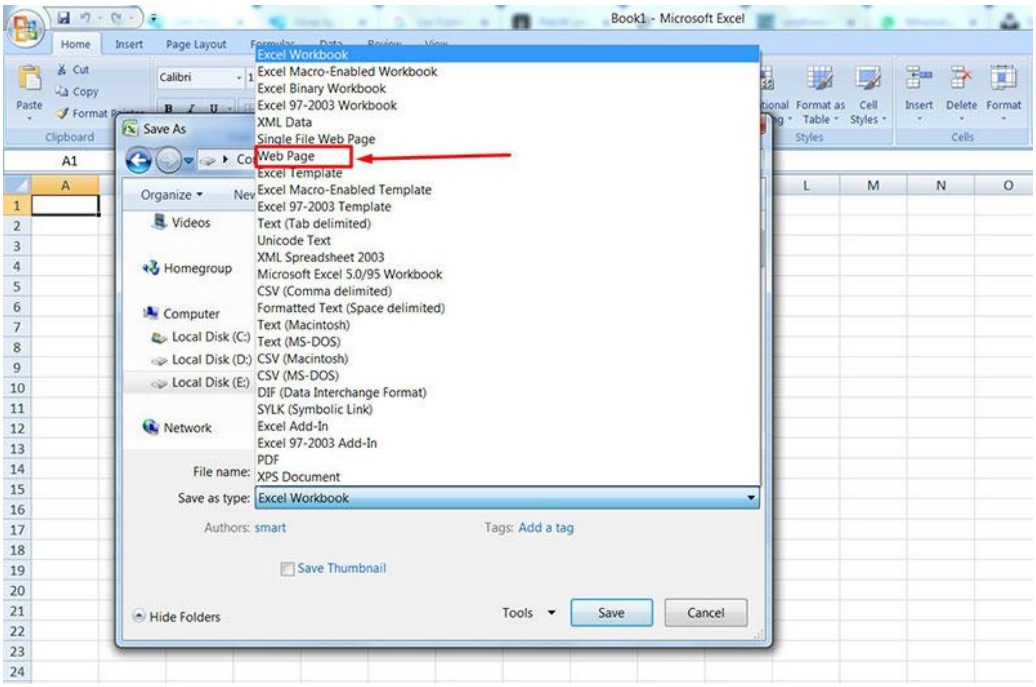


Your chart should then be back to its original view

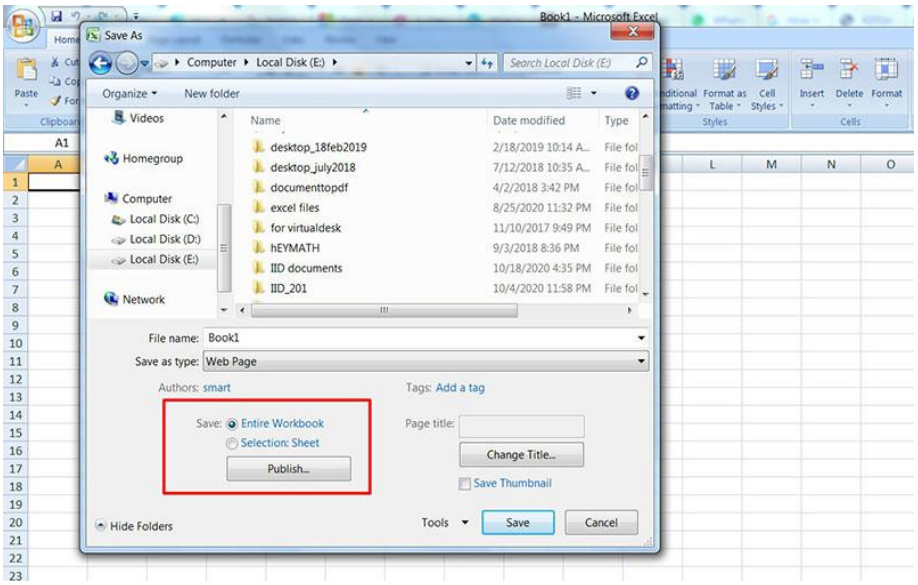
5.5 How to Publish an Excel Spreadsheet on the Web

Start by opening the desired Excel spreadsheets in Microsoft Office Excel.

- Open the **File**
- Click **Save As**.
- At the bottom of the window, click on the down arrow of the **drop-down menu**.
- Select **Web Page** from the list.
- In the **File Name** box, type an appropriate name for the file.
- Click **Publish**.



Sheet Option Button



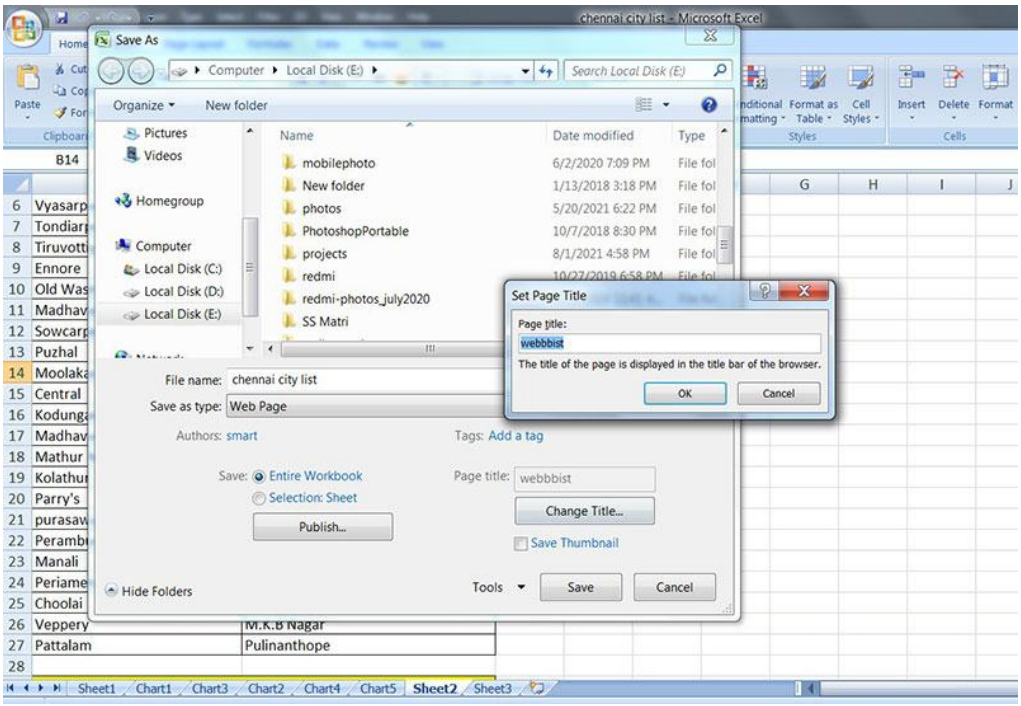
Change the Selection Option depending on whether **part of the sheet** is selected. If changes to the sheet are being saved, the button changes to **Republish: Sheet**. If nothing is selected, Excel will by default save the entire workbook. It will include all the data in the HTML file.

To limit what gets included in the HTML file, **select the appropriate items in the Choose List**. It is possible to publish only one item at a time. To continue publishing, select a different element and follow the procedure outlined above. These are the publishable elements and a description of how to publish them:

- **The whole workbook**.

Select the whole workbook. Excel will publish it with all the associated interactivity.
It is not possible to publish it with the interactive elements.

- **Complete worksheets**.
  Select the sheet names, then select All Content of the sheet.
- **Items**.
  Under Sheet Name select the desired items. Examples include PivotTable or a chart.
  Items do not include cell ranges.
- **Cell Ranges**.
  Select the cell ranges.
  To select the right range, click on the worksheet. The dialog box will now collapse.
  Now, select the range by clicking and dragging. Then click on the Expand Dialog Button:
- **Charts**.
  Select Items on Sheet. Then select the appropriate Chart.
- **Filtered ranges**.
  Click Select Items on Sheet and then apply the AutoFilter.
- **External data ranges**.
  Select Items on Sheet name. Then select the query item
  To republish part of a previously published workbook, click **Previously Published Items**.
  Select the elements to republish.
  Alternatively, select Remove to prevent an element from publishing again. Finally, click a different item on the list to continue publishing.
  It is also possible to add a page to the HTML file:
- Click the **Change**
- **Type a heading** in the Page Title text box in the Set Page Title box.
- Click **OK**. The title will appear in the middle at the top of the page.
  This header is not the same as the web page title.
- Click **Save**.
- **Close** the Save As box.
  By default, Excel saves a single worksheet as HTM, a Hypertext Markup file. It uses the .mht extension if publishing multiple worksheets.
  Some file servers, in particular the ones that run on UNIX, are case-sensitive. So, keep the effect of capitalization in mind when choosing a file name.



5.5 Excel Dashboard

A **dashboard** is a visual representation of Key Performance Indicators (KPIs), key business metrics, and other complex data in a way that's easy to understand. We can create both a **static** or **dynamic** dashboard in Excel.

Static dashboards simply highlight data from a specific timeframe. It never changes.

On the other hand, dynamic dashboards are updated daily to keep up with changes.

Benefits of creating an Excel dashboard

- Gives a detailed overview of business' Key Performance Indicators at a glance
- Adds a sense of accountability as different people and departments can see the areas of improvement
- Provides powerful analytical capabilities and complex calculations
- Helps you make better decisions for your business

Steps To Create A Dashboard In Excel

Step 1: Import the necessary data into Excel

The first thing to do is to bring data into Microsoft Excel, if data already exists in Excel. Or import data to Excel.

Step 2: Set up workbook

Open a new Excel workbook and add **two or more** worksheets (or tabs) to it.

For example, let's say we create three tabs.
Name the first worksheet as '**Raw Data**,' the second as '**Chart Data**,' and the third as '**Dashboard**.' This makes it easy to compare the data in your Excel file.

Step 3: Add raw data to a table

The **raw data** worksheet you created in your workbook must be in an Excel table format, with each data point recorded in cells.

Step 4: Data analysis

Take a good look at all the raw data gathered, study it, and determine what you want to use in the dashboard sheet.

Add those data points to your 'Chart Data' worksheet.

Analyzing your data will also help you understand the different tools you may want to use in your dashboard.

Some of the options include:

- **Charts**: to visualize data
- **Excel formulas**: for complex calculations and filtering
- **Conditional formatting**: to automate the spreadsheet's responses to specific data points
- **PivotTable**: to sort, reorganize, count, group, and sum data in a table
- **Power Pivot**: to create data models and work with large data sets

Step 5: Determine the visuals

The next step is to determine the visuals and the dashboard design that best represents your data.

You should mainly pay attention to the different chart types Excel gives you, like:

- **Bar chart**: compare values on a graph with bars
- **Waterfall chart**: view how an initial value increases and decreases through a series of alterations to reach an end value
- **Pie chart**: highlight percentages and proportional data
- **Dynamic chart**: automatically update a data range
- **Pivot char**t: summarize your data in a table full of statistics

Step 6: Create your Excel dashboard

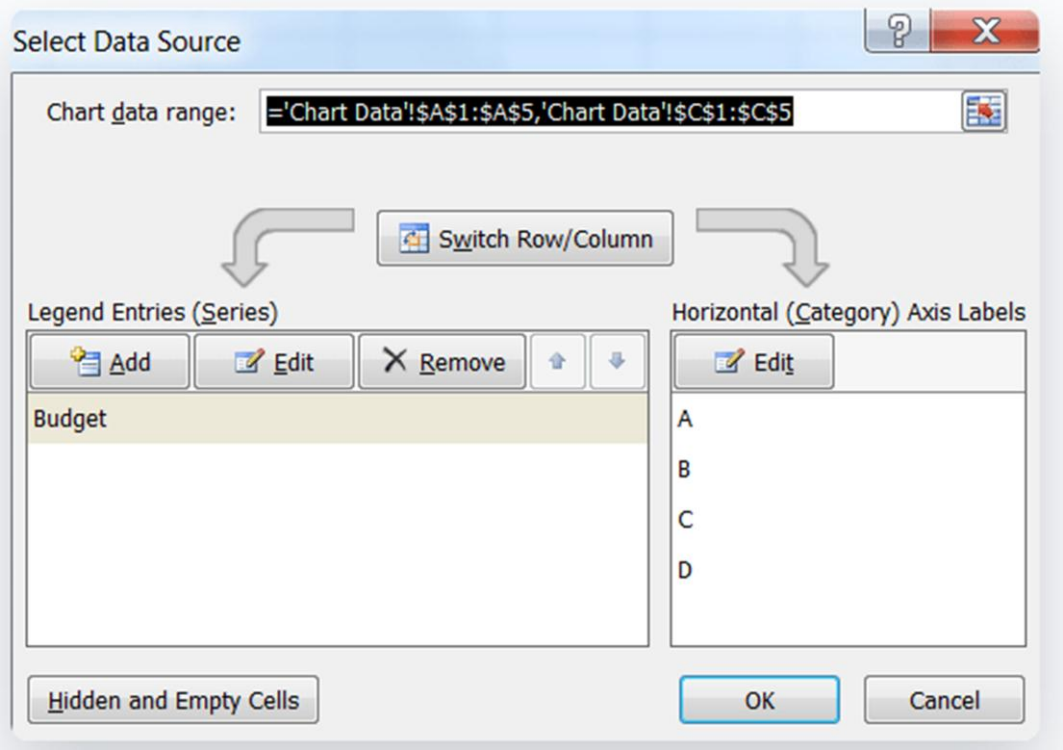
To explain the process of creating a dashboard in Excel, we'll use a **clustered column chart**.
A clustered column chart consists of clustered, horizontal columns that represent more than one data series.
Start by clicking on the **dashboard worksheet** or tab that you created in your workbook.
Then click on '**Insert**' > '**Column**' > '**Clustered column chart**'.

If you notice your horizontal axis doesn't represent what you want, you can edit it.

All you have to do is: select the chart again > right-click > select data.

The **Select Data Source** dialogue box will appear.

Here, you can click on '**Edit**' in the '**Horizontal (Category) Axis Labels**' and then select the data you want to show on the X-axis from the 'Chart Data' tab again.



To give a title to your chart: Select the chart and then click on Design > **chart layouts**. Choose a layout that has a chart title text box. Click on the text box to type in a new title

Publishing

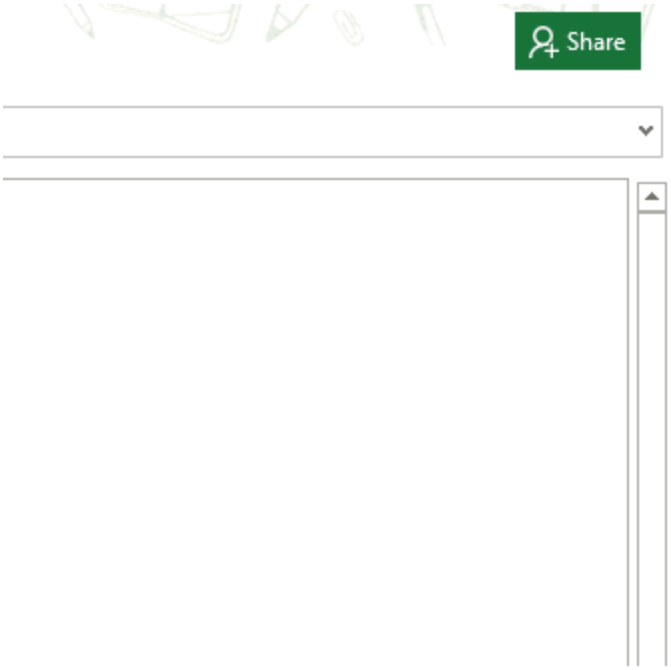
Once you have created the spreadsheet in your computer you can then create a shareable link and multiple users can access that report. And sure enough the report will be dynamic with all the slicers, buttons and fancy controls working in sync.

Save the Excel file to OneDrive

1. Make sure you have a OneDrive account. It is free!
2. Go to File and Click on Save As (make sure one drive is selected)
3. Then go to More Options
4. And then in the popup window choose Browser View Options

5. Under Show Tab – check Screen 1 and Screen 2 (the 2 named ranges)

Now Share the workbook

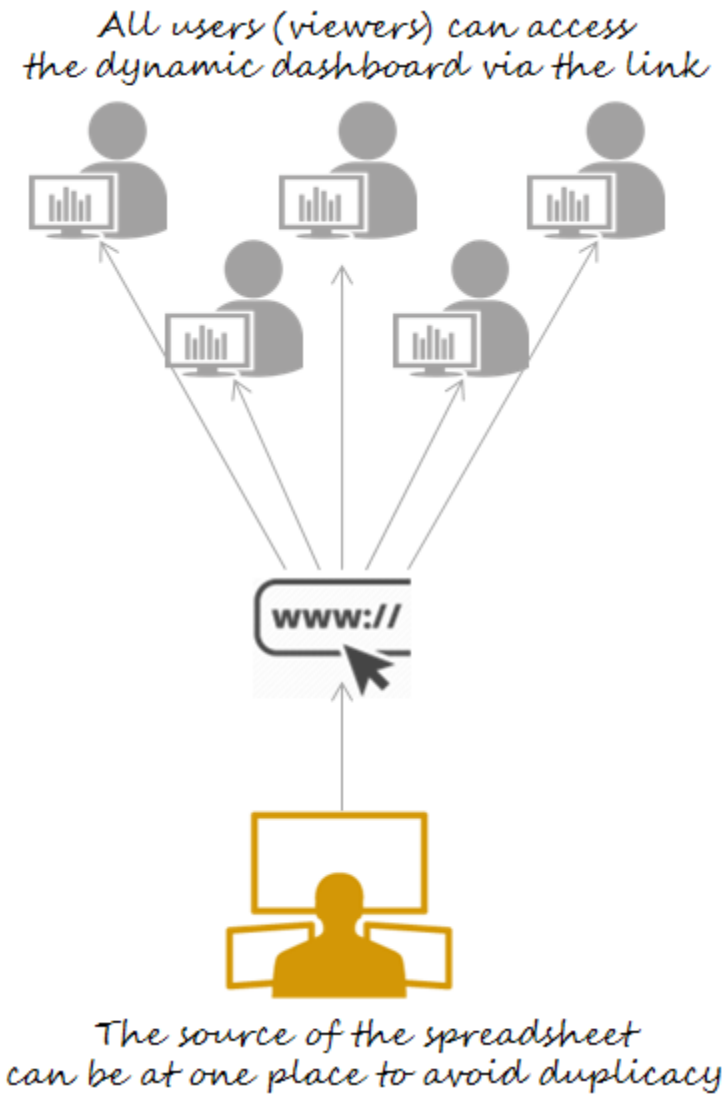


1. Go to the right hand top corner of the excel screen and click on Share. You can also find the sharing option in the File menu in the older versions of Excel (version 2010 – 2013)
2. Then choose Get a Sharing Link
3. Excel will offer you 2 types of links
    1. Links for editing
    2. Links for viewing only
4. Copy the view only link and send this link to anyone!

If you make any changes in the excel file *(which will now also be saved on your local computer and on Onedrive)* the users can instantly refresh the link and view the changes!

The pros & cons

One of the biggest pro is that it can massively reduce duplicate excel files floating around. Take a look!



One of biggest con is security of data if anyone has the link to your online dashboard they get to see your numbers! So cautious about that

It still is largely helpful in presenting non confidential information to multiple users!