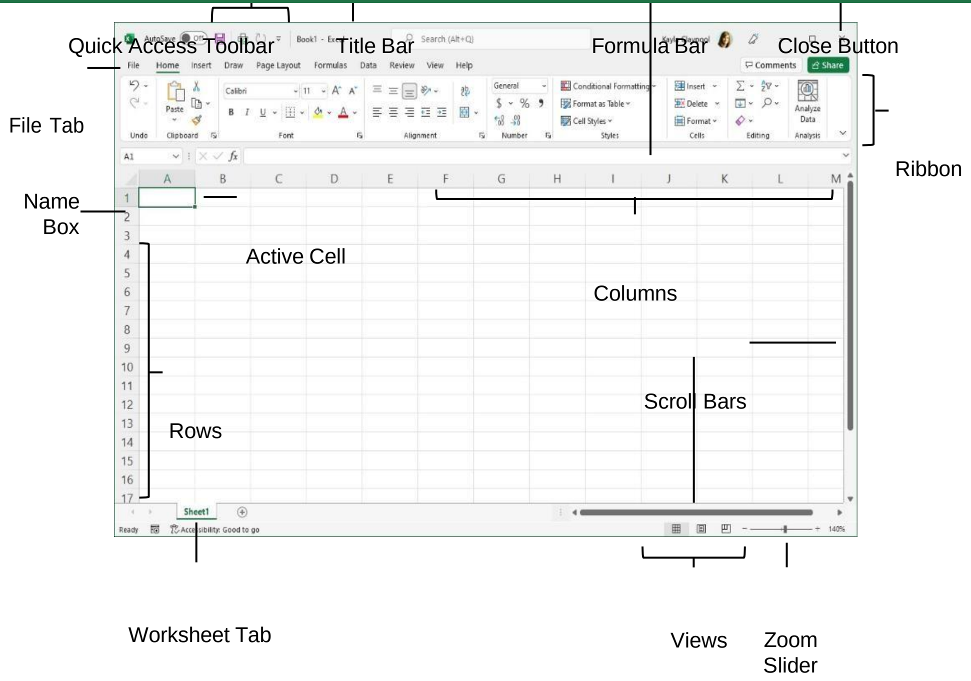
Microsoft®

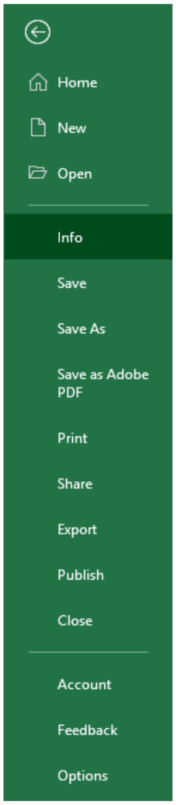
Excel Cheat Sheet

Basic Skills

The Excel Program Screen


Quick Access Toolbar
Title Bar
Formula Bar
Close Button
File Tab
Ribbon
Name Box
Active Cell
Columns
Scroll Bars
Rows
Worksheet Tab
Views
Zoom Slider

Getting Started


Home
New
Open
Info
Save
Save As
Save as Adobe PDF
Print
Share
Export
Publish
Close
Account
Feedback
Options

Create a Workbook: Click the **File** tab and select **New** or press **Ctrl** + **N**. Double-click a workbook.

Open a Workbook: Click the **File** tab and select **Open** or press **Ctrl** + **O**. Select a recent file or navigate to the location where the file is saved.

Preview and Print a Workbook: Click the **File** tab and select **Print**.

Undo: Click the **Undo** ↶ button on the Quick Access Toolbar.

Redo or Repeat: Click the **Redo** ↷ button on the Quick Access Toolbar. The button turns to Repeat ↻ once everything has been re-done.

Use Zoom: Click and drag the zoom slider to the left or right.

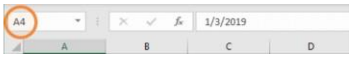
Select a Cell: Click a cell or use the keyboard arrow keys to select it.

Select a Cell Range: Click and drag to select a range of cells. Or, press and hold down the **Shift** key while using the arrow keys to move the selection to the last cell of the range.

Select an Entire Worksheet: Click the **Select All** ◢ button where the column and row headings meet.

Select Non-Adjacent Cells: Click the first cell or cell range, hold down the **Ctrl** key, and select any non-adjacent cell or cell range.

Cell Address: Cells are referenced by the coordinates made from their column letter and row number, such as cell A1, B2, etc.


A4
1/3/2019
A
B
C
D

Jump to a Cell: Click in the **Name Box**, type the cell address you want to go to, and press **Enter**.

Change Views: Click a **View** button in the status bar. Or, click the **View** tab and select a view.

Recover an Unsaved Workbook: Restart Excel. If a workbook can be recovered, it will appear in the Document Recovery pane. Or, click the **File** tab, click **Recover unsaved workbooks** to open the pane, and select a workbook from the pane.

Keyboard Shortcuts

General

Open a workbook	**Ctrl** + **O**
Create a new workbook	**Ctrl** + **N**
Save a workbook	**Ctrl** + **S**
Print a workbook	**Ctrl** + **P**
Close a workbook	**Ctrl** + **W**
Help	**F1**
Activate Tell Me field	**Alt** + **Q**
Spell check	**F7**
Calculate worksheets	**F9**
Create absolute reference	**F4**

Navigation

Move between cells	↑, ↓, ←, →
Right one cell	**Tab**
Left one cell	**Shift** + **Tab**
Down one cell	**Enter**
Up one cell	**Shift** + **Enter**
Down one screen	**Page Down**
To first cell of active row	**Home**
Enable End mode	**End**
To cell A1	**Ctrl** + **Home**
To last cell	**Ctrl** + **End**

Editing

Cut	**Ctrl** + **X**
Copy	**Ctrl** + **C**
Paste	**Ctrl** + **V**
Undo	**Ctrl** + **Z**
Redo	**Ctrl** + **Y**
Find	**Ctrl** + **F**
Replace	**Ctrl** + **H**
Edit active cell	**F2**
Clear cell contents	**Delete**

Formatting

Bold	**Ctrl** + **B**
Italics	**Ctrl** + **I**
Underline	**Ctrl** + **U**
Open Format Cells dialog box	**Ctrl** + **Shift** + **F**
Select All	**Ctrl** + **A**
Select entire row	**Shift** + **Space**
Select entire column	**Ctrl** + **Space**
Hide selected rows	**Ctrl** + **9**
Hide selected columns	**Ctrl** + **0**

Edit a Workbook

Edit a Cell's Contents: Select a cell and click in the Formula Bar or double-click the cell. Edit the cell's contents and press **Enter**.

Clear a Cell's Contents: Select the cell(s) and press the **Delete** key. Or, click the **Clear** button on the Home tab and select **Clear Contents**.

Cut or Copy Data: Select cell(s) and click the **Cut** or **Copy** button on the Home tab.

Paste Data: Select the cell where you want to paste the data and click the **Paste** button in the Clipboard group on the Home tab.

Preview an Item Before Pasting: Place the insertion point where you want to paste, click the **Paste** button list arrow in the Clipboard group on the Home tab, and hold the mouse over a paste option to preview.

Paste Special: Select the destination cell(s), click the **Paste** button list arrow in the Clipboard group on the Home tab, and select **Paste Special**. Select an option and click **OK**.

Move or Copy Cells Using Drag and Drop: Select the cell(s) you want to move or copy, position the pointer over any border of the selected cell(s), then drag to the destination cells. To copy, hold down the **Ctrl** key before starting to drag.

Find and Replace Text: Click the **Find & Select** button, select **Replace**. Type the text you want to find in the Find what box. Type the replacement text in the Replace with box. Click the **Replace All** or **Replace** button.

Check Spelling: Click the **Review** tab and click the **Spelling** button. For each result, select a suggestion and click the **Change/Change All** button. Or, click the **Ignore/Ignore All** button.

Insert a Column or Row: Right-click to the right of the column or below the row you want to insert. Select **Insert** in the menu, or click the **Insert** button on the Home tab.

Delete a Column or Row: Select the row or column heading(s) you want to remove. Right-click and select **Delete** from the contextual menu, or click the **Delete** button in the Cells group on the Home tab.

Hide Rows or Columns: Select the rows or columns you want to hide, click the **Format** button on the Home tab, select **Hide & Unhide**, and select **Hide Rows** or **Hide Columns**.

Basic Formatting

Change Cell Alignment: Select the cell(s) you want to align and click a vertical alignment ≡, ≡, ≡ button or a horizontal alignment ≡, ≡, ≡ button in the Alignment group on the Home tab.

Format Text: Use the commands in the Font group on the Home tab or click the dialog box launcher in the Font group to open the dialog box.

Format Values: Use the commands in the Number group on the Home tab or click the dialog box launcher in the Number group to open the Format Cells dialog box.

Wrap Text in a Cell: Select the cell(s) that contain text you want to wrap and click the **Wrap Text** button on the Home tab.

Merge Cells: Select the cells you want to merge. Click the **Merge & Center** button list arrow on the Home tab and select a merge option.

Cell Borders and Shading: Select the cell(s) you want to format. Click the **Borders** button and/or the **Fill Color** button and select an option to apply to the selected cell.

Copy Formatting with the Format Painter: Select the cell(s) with the formatting you want to copy. Click the **Format Painter** button in the Clipboard group on the Home tab. Then, select the cell(s) you want to apply the copied formatting to.

Adjust Column Width or Row Height: Click and drag the right border of the column header or the bottom border of the row header. Double-click the border to AutoFit the column or row according to its contents.

Basic Formulas

Enter a Formula: Select the cell where you want to insert the formula. Type **=** and enter the formula using values, cell references, operators, and functions. Press **Enter**.

Insert a Function: Select the cell where you want to enter the function and click the **Insert Function** fx button next to the formula bar.

Reference a Cell in a Formula: Type the cell reference (for example, B5) in the formula or click the cell you want to reference.

SUM Function: Click the cell where you want to insert the total and click the **Sum** Σ button in the Editing group on the Home tab. Enter the cells you want to total, and press **Enter**.

MIN and MAX Functions: Click the cell where you want to place a minimum or maximum value for a given range. Click the **Sum** Σ button list arrow on the Home tab and select either **Min** or **Max**. Enter the cell range you want to reference, and press **Enter**.

COUNT Function: Click the cell where you want to place a count of the number of cells in a range that contain numbers. Click the **Sum** Σ button list arrow on the Home tab and select **Count Numbers**. Enter the cell range you want to reference, and press **Enter**.

Insert Objects

Complete a Series Using AutoFill: Select the cells that define the pattern, i.e. a series of months or years. Click and drag the fill handle to adjacent blank cells to complete the series.

Insert an Image: Click the **Insert** tab on the ribbon, click either the **Pictures** or **Online Pictures** button in the Illustrations group, select the image you want to insert, and click **Insert**.

Insert a Shape: Click the **Insert** tab on the ribbon, click the **Shapes** button in the Illustrations group, and select the shape you wish to insert.

Hyperlink: Text or Images: Select the text or graphic you want to use as a hyperlink. Click the **Insert** tab, then click the **Link** button. Choose a type of hyperlink in the left pane of the Insert Hyperlink dialog box. Fill in the necessary informational fields in the right pane, then click **OK**.

Modify Object Properties and Alternative Text: Right-click an object. Select **Edit Alt Text** in the menu and make the necessary modifications under the Properties and Alt Text headings.

View and Manage Worksheets

Insert a New Worksheet: Click the **Insert Worksheet** button next to the sheet tabs below the active sheet. Or, press **Shift** + **F11**.

Delete a Worksheet: Right-click the sheet tab and select **Delete** from the menu.

Hide a Worksheet: Right-click the sheet tab and select **Hide** from the menu.

Rename a Worksheet: Double-click the sheet tab, enter a new name for the worksheet, and press **Enter**.

Change a Worksheet's Tab Color: Right-click the sheet tab, select **Tab Color**, and choose the color you want to apply.

Move or Copy a Worksheet: Click and drag a worksheet tab left or right to move it to a new location. Hold down the **Ctrl** key while clicking and dragging to copy the worksheet.

Switch Between Excel Windows: Click the **View** tab, click the **Switch Windows** button, and select the window you want to make active.

Freeze Panes: Activate the cell where you want to freeze the window, click the **View** tab on the ribbon, click the **Freeze Panes** button in the Window group, and select an option from the list.

Select a Print Area: Select the cell range you want to print, click the **Page Layout** tab on the ribbon, click the **Print Area** button, and select **Set Print Area**.

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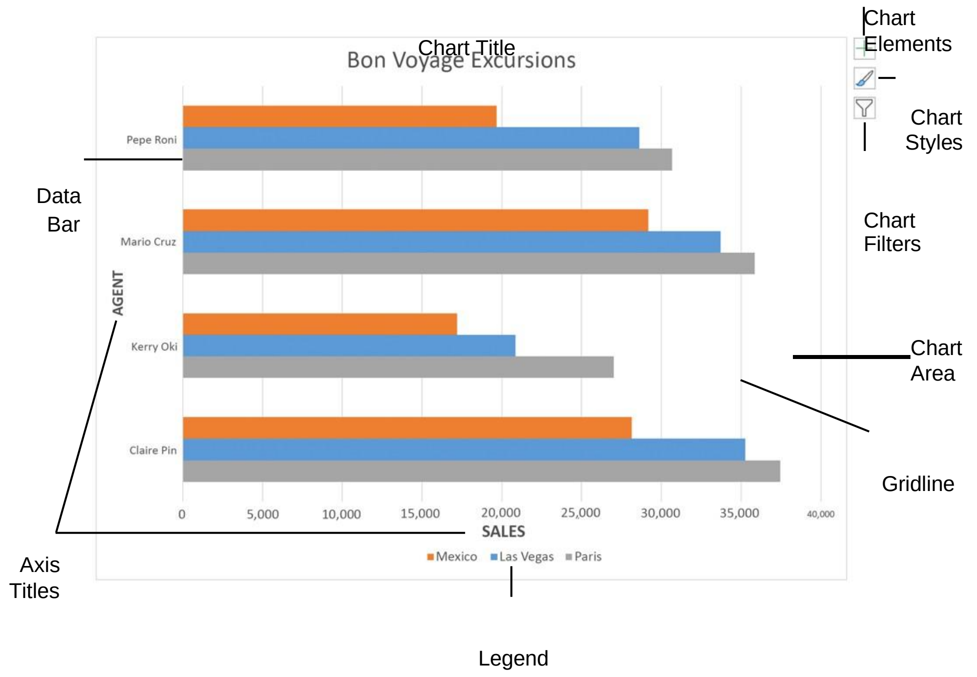
Excel Cheat Sheet

Intermediate Skills

Chart Elements



Charts

Create a Chart: Select the cell range that contains the data you want to chart. Click the **Insert** tab on the ribbon. Click a chart type button in the Charts group and select the chart you want to insert.

Move or Resize a Chart: Select the chart. Place the cursor over the chart's border and, with the 4-headed arrow ✥ showing, click and drag to move it. Or, click and drag a sizing handle ○ to resize it.

Change the Chart Type: Select the chart and click the **Design** tab. Click the **Change Chart Type** button and select a different chart.

Filter a Chart: With the chart you want to filter selected, click the **Filter** button next to it. Deselect the items you want to hide from the chart view and click the **Apply** button.

Position a Chart's Legend: Select the chart, click the **Chart Elements** button, click the **Legend** button, and select a position for the legend.

Show or Hide Chart Elements: Select the chart and click the **Chart Elements** button. Then, use the check boxes to show or hide each element.

Insert a Trendline: Select the chart where you want to add a trendline. Click the **Design** tab on the ribbon and click the **Add Chart Element** button. Select **Trendline** from the menu.

Charts

Insert a Sparkline: Select the cells you want to summarize. Click the **Insert** tab and select the sparkline you want to insert. In the Location Range field, enter the cell or cell range to place the sparkline and click **OK**.

Create a Dual Axis Chart: Select the cell range you want to chart, click the **Insert** tab, click the **Combo** button, and select a combo chart type.

Print and Distribute

Set the Page Size: Click the **Page Layout** tab. Click the **Size** button and select a page size.

Set the Print Area: Select the cell range you want to print. Click the **Page Layout** tab, click the **Print Area** button, and select **Set Print Area**.

Print Titles, Gridlines, and Headings: Click the **Page Layout** tab. Click the **Print Titles** button and set which items you wish to print.

Add a Header or Footer: Click the **Insert** tab and click the **Header & Footer** button. Complete the header and footer fields.

Adjust Margins and Orientation: Click the **Page Layout** tab. Click the **Margins** button to select from a list of common page margins. Click the **Orientation** button to choose Portrait or Landscape orientation.

Chart Options

Chart Types

Column: Used to compare different values vertically side-by-side. Each value is represented in the chart by a vertical bar.

Line: Used to illustrate trends over time (days, months, years). Each value is plotted as a point on the chart and values are connected by a line.

Pie: Useful for showing values as a percentage of a whole when all the values add up to 100%. The values for each item are represented by different colors.

Bar: Similar to column charts, except they display information in horizontal bars rather than in vertical columns.

Area: Similar to line charts, except the areas beneath the lines are filled with color.

XY (Scatter): Used to plot clusters of values using single points. Multiple items can be plotted by using different colored points or different point symbols.

Stock: Effective for reporting the fluctuation of stock prices, such as the high, low, and closing points for a certain day.

Surface: Useful for finding optimum combinations between two sets of data. Colors and patterns indicate values that are in the same range.

Additional Chart Elements

Data Labels: Display values from the cells of the worksheet on the plot area of the chart.

Data Table: A table added next to the chart that shows the worksheet data the chart is illustrating.

Error Bars: Help you quickly identify standard deviations and error margins.

Trendline: Identifies the trend of the current data, not actual values. Can also identify forecasts for future data.

Intermediate Formulas

Absolute References: Absolute references always refer to the same cell, even if the formula is moved. In the formula bar, add dollar signs ($) to the reference you want to remain absolute (for example, **A1** makes the column and row remain constant).

Name a Cell or Range: Select the cell(s), click the Name box in the Formula bar, type a name for the cell or range, and press **Enter**. Names can be used in formulas instead of cell addresses, for example: **=B4*Rate**.

Reference Other Worksheets: To reference another worksheet in a formula, add an exclamation point '!' after the sheet name in the formula, for example: **=FebruarySales!B4**.

Reference Other Workbooks: To reference another workbook in a formula, add brackets '[ ]' around the file name in the formula, for example: **=[FebruarySales.xlsx]Sheet1!B4**.

Order of Operations: When calculating a formula, Excel performs operations in the following order: Parentheses, Exponents, Multiplication and Division, and finally Addition and Subtraction (as they appear left to right). Use this mnemonic device to remember them:

Please	Parentheses
Excuse	Exponents
My	Multiplication
Dear	Division
Aunt	Addition
Sally	Subtraction

Concatenate Text: Use the CONCAT function **=CONCAT(text1,text2,...)** to join the text from multiple cells into a single cell. Use the arguments within the function to define the text you want to combine as well as any spaces or punctuation.

Payment Function: Use the PMT function **=PMT(rate,nper,pv,...)** to calculate a loan amount. Use the arguments within the function to define the loan rate, number of periods, and present value and Excel calculates the payment amount.

Date Functions: Date functions are used to add a specific date to a cell. Some common date functions in Excel include:

Date =DATE(year,month,day)

Today =TODAY()

Now =NOW()

Display Worksheet Formulas: Click the **Formulas** tab on the ribbon and then click the **Show Formulas** button. Click the **Show Formulas** button again to turn off the formula view.

Manage Data

Export Data: Click the **File** tab. At the left, select **Export** and click **Change File Type**. Select the file type you want to export the data to and click **Save As**.

Import Data: Click the **Data** tab on the ribbon and click the **Get Data** button. Select the category and data type, and then the file you want to import. Click **Import**, verify the preview, and then click the **Load** button.

Use the Quick Analysis Tools: Select the cell range you want to summarize. Click the **Quick Analysis** button that appears. Select the analysis tool you want to use. Choose from formatting, charts, totals, tables, or sparklines.

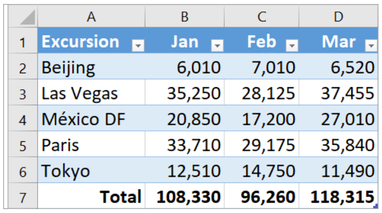
Outline and Subtotal: Click the **Data** tab on the ribbon and click the **Subtotal** button. Use the dialog box to define which column you want to subtotal and the calculation you want to use. Click **OK**.

Use Flash Fill: Click in the cell to the right of the cell(s) where you want to extract or combine data. Start typing the data in the column. When a pattern is recognized, Excel predicts the remaining values for the column. Press **Enter** to accept the Flash Fill values.

Create a Data Validation Rule: Select the cells you want to validate. Click the **Data** tab and click the **Data Validation** button. Click the **Allow** list arrow and select the data you want to allow. Set additional validation criteria options and click **OK**.

Tables

Format a Cell Range as a Table: Select the cells you want to apply table formatting to. Click the **Format as Table** button in the Styles group of the Home tab and select a table format from the gallery.



	A	B	C	D
1	**Excursion**	**Jan**	**Feb**	**Mar**
2	Beijing	6,010	7,010	6,520
3	Las Vegas	35,250	28,125	37,455
4	México DF	20,850	17,200	27,010
5	Paris	33,710	29,175	35,840
6	Tokyo	12,510	14,750	11,490
7	**Total**	**108,330**	**96,260**	**118,315**

Sort Data: Select a cell in the column you want to sort. Click the **Sort & Filter** button on the Home tab. Select a sort order or select **Custom Sort** to define specific sort criteria.

Filter Data: Click the filter arrow for the column you want to filter. Uncheck the boxes for any data you want to hide. Click **OK**.

Add Table Rows or Columns: Select a cell in the row or column next to where you want to add blank cells. Click the **Insert** button list arrow on the Home tab. Select either **Insert Table Rows Above** or **Insert Table Columns to the Left.**

Tables

Remove Duplicate Values: Click any cell in the table and click the **Data** tab on the ribbon. Click the **Remove Duplicates** button. Select which columns you want to check for duplicates and click **OK**.

Insert a Slicer: With any cell in the table selected, click the **Design** tab on the ribbon. Click the **Insert Slicer** button. Select the columns you want to use as slicers and click **OK**.

Table Style Options: Click any cell in the table. Click the **Design** tab on the ribbon and select an option in the Table Style Options group.

Intermediate Formatting

Apply Conditional Formatting: Select the cells you want to format. On the **Home** tab, click the **Conditional Formatting** button. Select a conditional formatting category and then the rule you want to use. Specify the format to apply and click **OK**.

Apply Cell Styles: Select the cell(s) you want to format. On the Home tab, click the **Cell Styles** button and select a style from the menu. You can also select **New Cell Style** to define a custom style.

Apply a Workbook Theme: Click the **Page Layout** tab on the ribbon. Click the **Themes** button and select a theme from the menu.

Collaborate with Excel

Add a Cell Comment: Click the cell where you want to add a comment. Click the **Review** tab on the ribbon and click the **New Comment** button. Type your comment and then click outside of it to save the text.

Invite People to Collaborate: Click the **Share** button on the ribbon. Enter the email addresses of people you want to share the workbook with. Click the permissions button, select a permission level, and click **Apply**. Type a short message and click **Send**.

Co-author Workbooks: When another user opens the workbook, click the user's picture or initials on the ribbon, to see what they are editing. Cells being edited by others appear with a colored border or shading.

Protect a Worksheet: Before protecting a worksheet, you need to unlock any cells you want to remain editable after the protection is applied. Then, click the **Review** tab on the ribbon and click the **Protect Sheet** button. Select what you want to remain editable after the sheet is protected.

Add a Workbook Password: Click the **File** tab and select **Save As**. Click **Browse** to select a save location. Click the **Tools** button in the dialog box and select **General Options**. Set a password to open and/or modify the workbook. Click **OK**.

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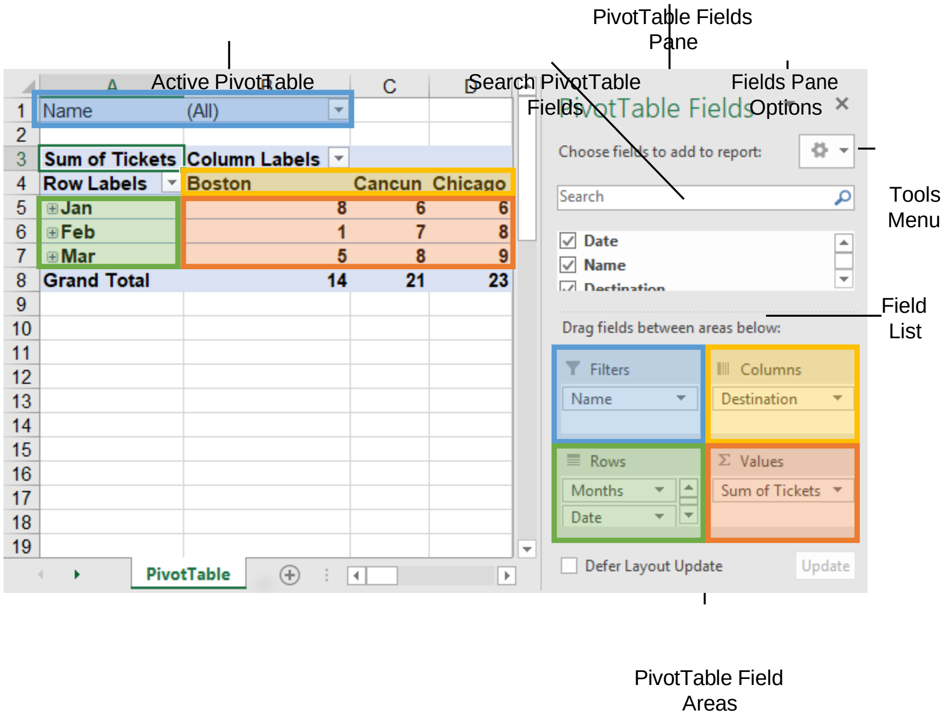
Excel Cheat Sheet

Advanced Skills

PivotTable Elements



Name	(All)		
Sum of Tickets	Column Labels		
Row Labels	Boston	Cancun	Chicago
Jan	8	6	6
Feb	1	7	8
Mar	5	8	9
Grand Total	14	21	23

PivotTables

Create a PivotTable: Select the data range to be used by the PivotTable. Click the **Insert** tab on the ribbon and click the **PivotTable** button in the Tables group. Verify the range and then click **OK**.

Add Multiple PivotTable Fields: Click a field in the field list and drag it to one of the four PivotTable areas that contains one or more fields.

Filter PivotTables: Click and drag a field from the field list into the Filters area. Click the field's list arrow above the PivotTable and select the value(s) you want to filter.

Group PivotTable Values: Select a cell in the PivotTable that contains a value you want to group by. Click the **Analyze** tab on the ribbon and click the **Group Field** button. Specify how the PivotTable should be grouped and then click **OK**.

Refresh a PivotTable: With the PivotTable selected, click the **Analyze** tab on the ribbon. Click the **Refresh** button in the Data group.

Format a PivotTable: With the PivotTable selected, click the **Design** tab. Then, select desired formatting options from the PivotTable Options group and the PivotTable Styles group

PivotCharts

Create a PivotChart: Click any cell in a PivotTable and click the **Analyze** tab on the ribbon. Click the **PivotChart** button in the Tools group. Select a PivotChart type and click **OK**.

Modify PivotChart Data: Drag fields into and out of the field areas in the task pane.

Refresh a PivotChart: With the PivotChart selected, click the **Analyze** tab on the ribbon. Click the **Refresh** button in the Data group.

Modify PivotChart Elements: With the PivotChart selected, click the **Design** tab on the ribbon. Click the **Add Chart Element** button in the Chart Elements group and select the item(s) you want to add to the chart.

Apply a PivotChart Style: Select the PivotChart and click the **Design** tab on the ribbon. Select a style from the gallery in the Chart Styles group.

Update Chart Type: With the PivotChart selected, click the **Design** tab on the ribbon. Click the **Change Chart Type** button in the Type group. Select a new chart type and click **OK**.

Enable PivotChart Drill Down: Click the **Analyze** tab. Click the **Field Buttons** list arrow in the Show/Hide group and select **Show Expand/Collapse Entire Field Buttons**.

PivotTable Layout

PivotTable Fields Pane

The PivotTable Fields pane controls how data is represented in the PivotTable. Click anywhere in the PivotTable to activate the pane. It includes a Search field, a scrolling list of fields (these are the column headings in the data range used to create the PivotTable), and four areas in which fields are placed. These four areas include:

Filters: If a field is placed in the Filters area, a menu appears above the PivotTable. Each unique value from the field is an item in the menu, which can be used to filter PivotTable data.

Column Labels: The unique values for the fields placed in the Columns area appear as column headings along the top of the PivotTable.

Row Labels: The unique values for the fields placed in the Rows area appear as row headings along the left side of the PivotTable.

Values: The values are the "meat" of the PivotTable, or the actual data that's calculated for the fields placed in the rows and/or columns area. Values are most often numeric calculations.

Not all PivotTables will have a field in each area, and sometimes there will be multiple fields in a single area.

The Layout Group

Subtotals: Show or hide subtotals and specify their location in the PivotTable.

Grand Totals: Add or remove grand total rows for columns and/or rows.

Report Layout: Adjust the report layout to show in compact, outline, or tabular form.

Blank Rows: Emphasize groups of data by manually adding blank rows between grouped items.

Macros

Enable the Developer Tab: Click the **File** tab and select **Options**. Select **Customize Ribbon** at the left. Check the **Developer** check box and click **OK**.

Record a Macro: Click the **Developer** tab on the ribbon and click the **Record Macro** button. Type a name and description then specify where to save it. Click **OK**. Complete the steps to be recorded. Click the **Stop Recording** ■ button on the Developer tab.

Run a Macro: Click the **Developer** tab on the ribbon and click the **Macros** button. Select the macro and click **Run**.

Edit a Macro: Click the **Developer** tab on the ribbon and click the **Macros** button. Select a macro and click the **Edit** button. Make the necessary changes to the Visual Basic code and click the **Save** button.

Delete a Macro: Click the **Developer** tab on the ribbon and click the **Macros** button. Select a macro and click the **Delete** button.

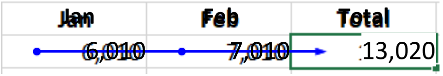
Macro Security: Click the **Developer** tab on the ribbon and click the **Macro Security** ⚠ button. Select a security level and click **OK.**

Troubleshoot Formulas

Common Formula Errors:

- **####### -** The column isn't wide enough to display all cell data.
- **#NAME? -** The text in the formula isn't recognized.
- **#VALUE! -** There is an error with one or more formula arguments.
- **#DIV/0 -** The formula is trying to divide a value by 0.
- **#REF! -** The formula references a cell that no longer exists.

Trace Precedents: Click the cell containing the value you want to trace and click the **Formulas** tab on the ribbon. Click the **Trace Precedents** button to see which cells affect the value in the selected cell.



Jan	Feb	Total
6,010	7,010	13,020

Error Checking: Select a cell containing an error. Click the **Formulas** tab on the ribbon and click the **Error Checking** ⚠ button in the Formula Auditing group. Use the dialog to locate and fix the error.

The Watch Window: Select the cell you want to watch. Click the **Formulas** tab on the ribbon and click the **Watch Window** button. Click the **Add Watch** button. Ensure the correct cell is identified and click **Add**.

Evaluate a Formula: Select a cell with a formula. Click the **Formulas** tab on the ribbon and click the **Evaluate Formula** button.

Advanced Formatting

Customize Conditional Formatting: Click the **Conditional Formatting** button on the Home tab and select **New Rule**. Select a rule type, then edit the styles and values. Click **OK**.

Edit a Conditional Formatting Rule: Click the **Conditional Formatting** button on the Home tab and select **Manage Rules**. Select the rule you want to edit and click **Edit Rule**. Make your changes to the rule. Click **OK**.

Change the Order of Conditional Formatting Rules: Click the **Conditional Formatting** button on the Home tab and select **Manage Rules**. Select the rule you want to re-sequence. Click the **Move Up** ▲ or **Move Down** ▼ arrow until the rule is positioned correctly. Click **OK**.

Analyze Data

Goal Seek: Click the **Data** tab on the ribbon. Click the **What-If Analysis** button and select **Goal Seek**. Specify the desired value for the given cell and which cell can be changed to reach the desired result. Click **OK**.

Advanced Formulas

Nested Functions: A nested function is when one function is tucked inside another function as one of its arguments, like this:

`=IF(D2>AVERAGE(B2:B10),1,0)`

Initial Function

Nested Function

IF: Performs a logical test to return one value fora true result, and another for a false result.

`=IF(B2>69,"True","False")`

logical_test that can be evaluated as true or false

value_if_true value to return when the test is true

value_if_false value to return when the test is false

AND, OR, NOT: Often used with IF to support multiple conditions.

- **AND** requires multiple conditions.
- **OR** accepts several different conditions.
- **NOT** returns the opposite of the condition.

`=OR(B5="MN",B5="WI")`

logical2 the second condition to evaluate

SUMIF and AVERAGEIF: Calculates cells that meet a condition.

- **SUMIF** finds the total.
- **AVERAGEIF** finds the average.

`=SUMIF(C6:C10,"MN",D6:D10)`

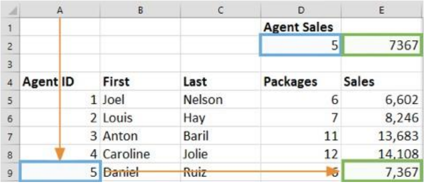
range of cells you want to apply criteria against

criteria used to determine what cells to sum or average

calc_range to calculate, if different than the range

Advanced Formulas

VLOOKUP: Looks for and retrieves data from a specific column in a table.



	A	B	C	D	E
1				Agent Sales	
2				5	7367
3					
4	Agent ID	First	Last	Packages	Sales
5	1	Joel	Nelson	6	6,602
6	2	Louis	Hay	7	8,246
7	3	Anton	Baril	11	13,683
8	4	Caroline	Jolie	12	14,108
9	5	Daniel	Ruiz	6	7,367

`=VLOOKUP(D2,A4:E10,5)`

value to look for in the first column of the table

table from which to retrieve a value

col_index the column number in the table from which to retrieve a value

HLOOKUP: Looks for and retrieves data from a specific row in a table.

`=HLOOKUP(B5,B2:I3,3)`

value to look for in the first row of the table

table from which to retrieve a value

row_index the row number in the table from which to retrieve a value

UPPER, LOWER, and PROPER: Changes how text is capitalized.

UPPER Case | lower case | Proper Case

`=UPPER(B4)`

text to change case or capitalization

LEFT and RIGHT: Extracts a given number of characters from the left or right.

`=LEFT(B5,3)`

text from which to extract characters

num_chars to extract from the left or right side of the text

MID: Extracts a given number of charactersfrom the middle of text; the example below would return "day".

`=MID("Sunday",4,3)`

text from which to extract characters

start_num location of the first character to extract

num_chars the number of characters to extract

MATCH: Locates the position of a lookup value in a row or column.

`=MATCH("Dog",B2:B10)`

lookup_value to match in the lookup_array

lookup_array range of cells

INDEX: Returns a value or the reference to a value from within a range.

`=INDEX(A1:B5,2,2)`

array a range of cells

row_num the row position

col_num the column position (optional)