



Microsoft®

# Excel 2016 Advanced

## Quick Reference Guide

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### PivotTable Elements

The screenshot shows an Excel PivotTable with the following data:

Row Labels	Boston	Cancun	Chicago
Jan	8	6	6
Feb	1	7	8
Mar	5	8	9
<b>Grand Total</b>	<b>14</b>	<b>21</b>	<b>23</b>

The PivotTable Fields pane is configured as follows:

- Filters:** Name
- Columns:** Destination
- Rows:** Months, Date
- Values:** Sum of Tickets

### PivotTable Layout

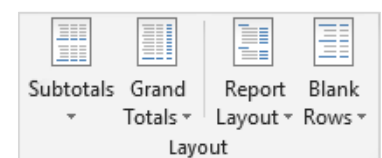
#### PivotTable Fields Pane

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.

### 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 the 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**.

## 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, description and 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 and 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 for a true result, and another for a false result.

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

logical\_test      value\_if\_true      value\_if\_false

that can be      value to return      value to return

evaluated as      when the test is      when the test is

true or false      true      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")`

logical1 the first      logical2 the second

condition to evaluate      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      criteria used to      calc\_range to

you want to apply      determine what      calculate, if

criteria against      cells to sum or      different than the

average      average      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	16	7,367

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

value to look      table from which      col\_index the

for in the first      to retrieve a value      column number in

column of the      the table      the table from

table           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      table from which      row\_index the

for in the first      to retrieve a value      row number in the

row of the table      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      num\_chars to extract

extract characters      from the left or right side

of the text

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

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

text from which      start\_num      num\_chars the

to extract      location of the      number of

characters      first character to      characters to

extract      extract      extract

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

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

lookup\_value to match      lookup\_array range

in the lookup\_array      of cells

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

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

array a range      row\_num the      col\_num the

of cells      row position      column position

          (optional)

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