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Excel Intermediate: Complex Formulas and Charts

Overview: Expand your current Excel knowledge to include more complex formulas (including Year-to-Date formulas with cells from across spreadsheets), charts, naming worksheets and printing headers.

Student Skill Level: Intermediate

Requirements: **Excel Basic class or familiarity with the program.** Good mouse skills (ability to move the mouse on the computer screen and click or double click as required with minimal assistance).

Objectives

- The student will be able to use an existing Excel workbook for the following:
 - Look at a collection tool and set up a workbook
 - Create Year-to-Date formulas across spreadsheets
 - Insert a chart based on data from a spreadsheet



Getting Information into the Spreadsheet: Practice Setting Up the Workbook

The following is a simple form that could be used to collect responses regarding workshops. How would you “translate” this paper into the Excel format? It’s important to get all the data into the spreadsheet so that we can see how many workshops were done, dates, locations, etc. All of this information would be tallied so that a monthly report could be made. How would you do it?

Location Name: _____ Date: _____

Workshop Title: _____

Trainer’s Name: _____

How did you advertise this class? (For example, Flyer, Newspaper, Web Site, Other?)

Please comment on the following **benefits** of hosting this workshop (check the box):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Attendees report satisfaction					
Computer training frees time					
Staff members asked questions					
Trainer discussed future classes					
Interested in future classes					

Please rate your **satisfaction** with the following (check the box):

	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied
Interaction with Trainer					
Easy to Book					
BTOP Web Site Content					
Materials & Handouts					
Overall Satisfaction					

Please include additional comments about this program and/or how it may have made a difference to your patrons:

Once you have the questions in the sheet, you may use **Alt+Enter** to place a “hard return” in the cells (to make them take up less horizontal space).

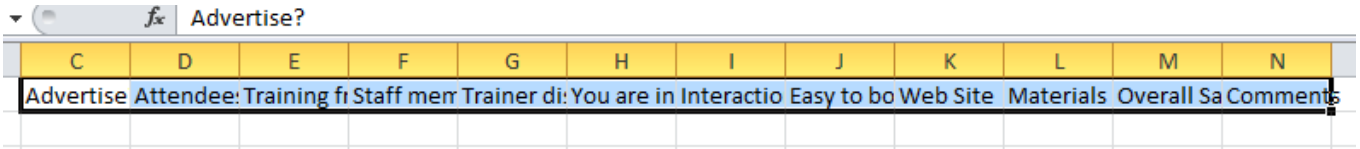
Where to start: What data doesn't change?

Every piece of paper is a person – and every person corresponds to a row in Excel. So, we'll put the “unchanging” data across Row 1. Please USE THE **TAB** key to move from cell to cell. We'll wrap the text so it looks right **either before** or **after** we've entered it. **START IN CELL A1** with “Location,” to **B1** with “Date,” etc.

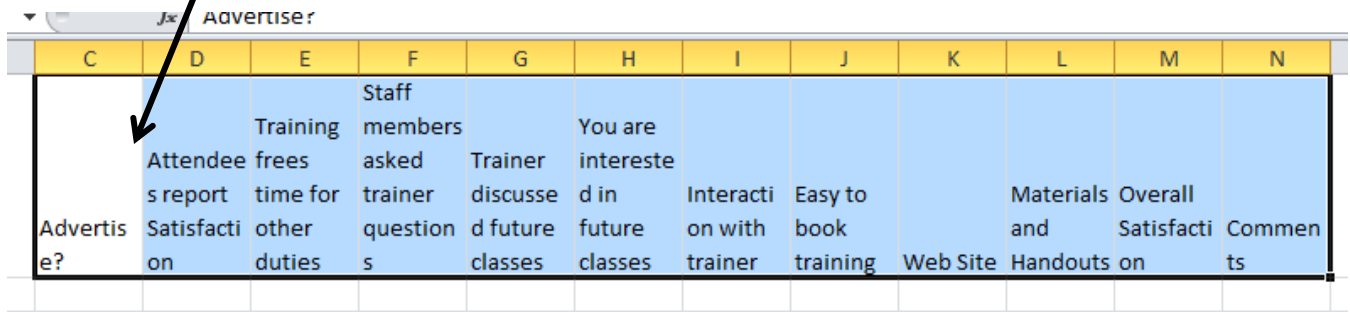
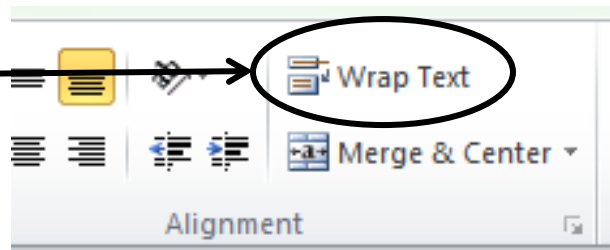
C	D	E	F	G	H	I	J	K	L	M	N
Advertise	Attendee: Training	fr	Staff mem	Trainer di:	You are in	Interactio	Easy to bo	Web Site	Materials	Overall Sa	Comments

It looks messy here, but we'll use **Wrap Text** to make it look better.

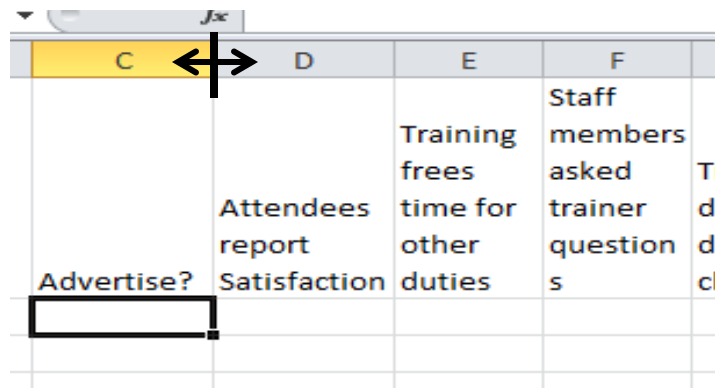
Select cells **A1 to N1** only.



Click on **Wrap Text** in the Alignment group on the Home tab, and this is what you'll see:



Click on any blank cell on the spreadsheet to get rid of the selection (in blue). Change the column width to accommodate the words.



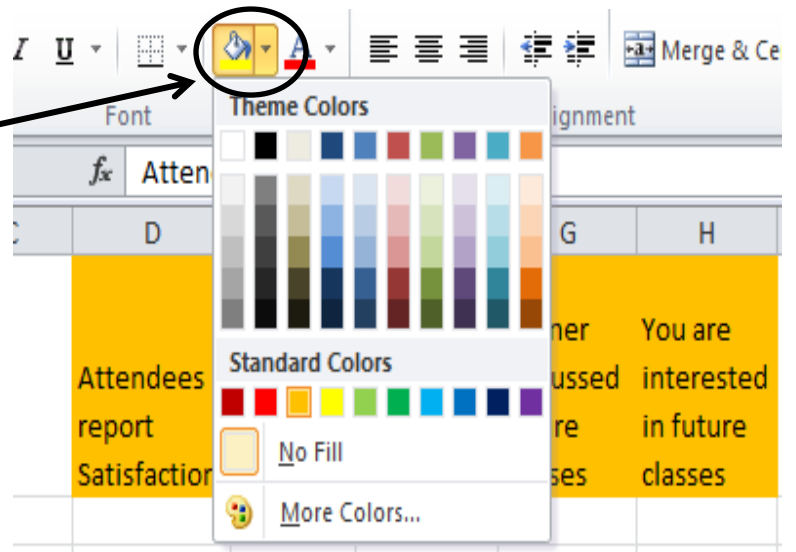
C	D	E	F	G	H	I	J	K	L	M	N
Advertise?	Attendees report Satisfaction	Training frees time for other duties	Staff members asked trainers questions	Trainer discussed future classes	You are interested in future classes	Interaction with trainer	Easy to book training	Web Site	Materials and Handouts	Overall Satisfaction	Comme

This is an example of how you may set up a spreadsheet to capture data. Next thing I would do is color-code the three separate areas of interest: **Benefits**, **Satisfaction**, and **Overall Satisfaction**.

Select the questions under **Benefits**

D	E	F	G	H
Attendees report Satisfaction	Training frees time for other duties	Staff members asked trainers questions	Trainer discussed future classes	You are interested in future classes

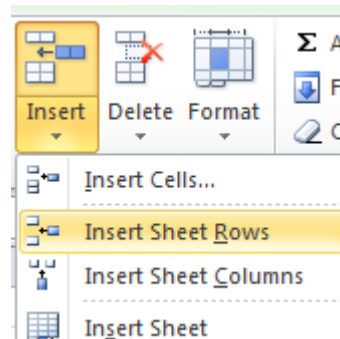
Click on the **Fill Color** command and choose a color (I go for lighter colors because they're easier to read). Repeat this for **Satisfaction** and **Overall Satisfaction** cells.



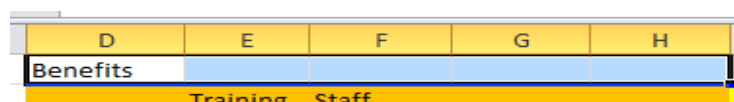
D	E	F	G	H	I	J	K	L	M
Attendees report Satisfaction	Training frees time for other duties	Staff members asked trainers questions	Trainer discussed future classes	You are interested in future classes	Interaction with trainer	Easy to book training	Web Site	Materials and Handouts	Overall Satisfaction

** Prove It Test: Since we have two main sections, let's add a row, label them, and use the **Merge and Center** option. We will also **Freeze** the top row.

Insert a new row one by **clicking on cell A1** and clicking on the **Home Tab > Cells group > Insert > Insert Sheet Rows**

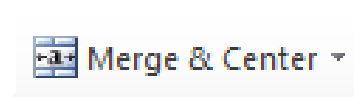


Type "Benefits" in cell D1 and press Enter

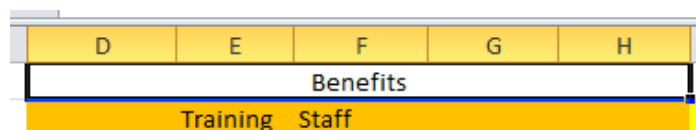


Highlight D1 to H1

To merge and center the item, click the **Home Tab > Alignment Group > Merge and Center**

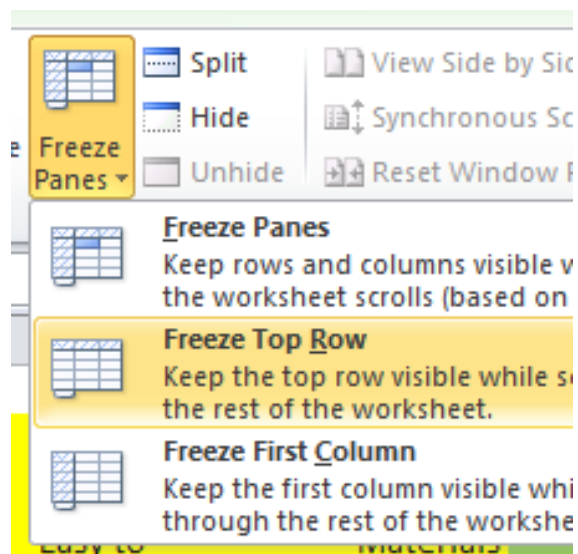


Do the same for cells I1 to L1, "Satisfaction."



To freeze this row so it can be seen at all times, go to the **View Tab > Window Group > Freeze Top Row.**

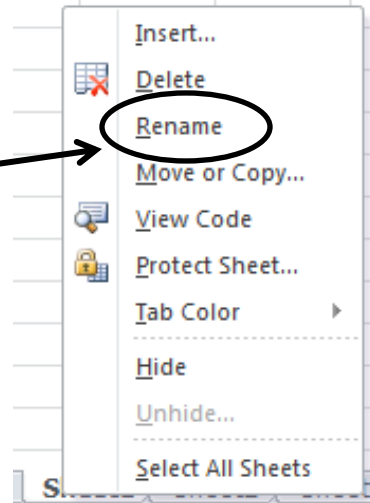
This makes the top row visible no matter how far down you scroll.



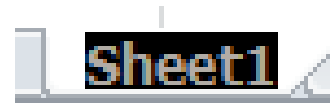
Rename and Copy Spreadsheet

Once you get a spreadsheet set up, you don't want to keep having to set it up month after month. You may **rename** it then **copy** it.

Right-click the tab (labeled **Sheet 1** here) and click on the **Rename** command. (Alternately, you may **double click** the sheet name and type over it.)



Sheet 1 will be selected (in black)

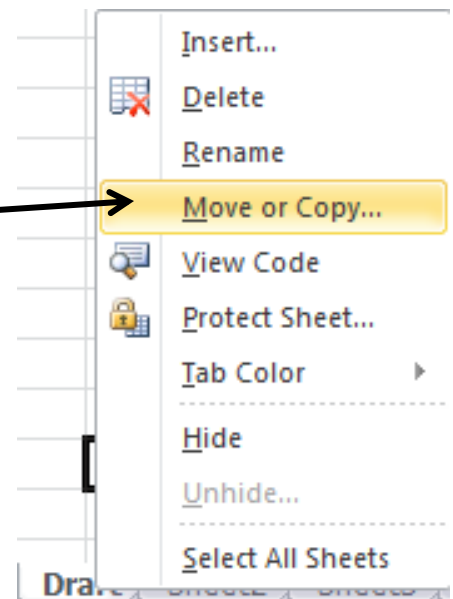


Type in **Draft** for the sheet name (or "Template" or whatever name makes sense to you). This will be the generic sheet we will copy for the rest of the months.



Press your Enter key or click once on the sheet to make the new name permanent.

Right-click on the sheet name. This time choose the **Move or Copy** command.



We will put in two formulas: a **count formula** in column **A** and an **average formula** in column **M**.

COLUMN A FORMULA:

It's easiest to create the formulas in the following manner:

= every formula begins with an equal sign

COUNTA this is the proper formula to use when you are counting text items in cells

(open parenthesis

Now, use your mouse to select the cells you want to include in the formula (click and hold your mouse and drag over the cells you want).

) close parenthesis

2		
3	Word Basic	
4	BDOL	1/4/20...
5	BDOL	1/4/20...
6	BDOL	1/4/20...
7	BDOL	1/4/20...
8	BDOL	1/4/20...
9	BDOL	1/4/20...
10	BDOL	1/4/20...
11	=COUNTA(A4:A10)	

=COUNTA(A4:A10)

When you do this correctly, press the **Enter key** on the keyboard. You should now see a number for your attendance for this particular class.

Repeat this pattern to get attendance numbers for the classes in January.

3	Word Basic	
4	BDOL	
5	BDOL	
6	BDOL	
7	BDOL	
8	BDOL	
9	BDOL	
10	BDOL	
11		7

COLUMN M FORMULA:

= every formula begins with an equal sign

AVERAGE this is the proper formula to use when you are averaging numbers in cells

(open parenthesis

Now, use your mouse to select the cells you want to include in the formula (click and hold your mouse and drag over the cells you want).

) close parenthesis

Press **Enter**

5	5	
5	5	
4	4	
3	3	
5	5	
4	4	
4	5	
=AVERAGE(M4:M10)		
		4.42857143

Once the numbers are in, we have to summarize the entire month. Below is a way to do that.

Column **O** will contain our labels, and column **P** will have our formulas. These formulas will summarize our entire month.

O	P
Classes	5
Attendance	
Average	

Here's the **attendance** formula.
Type a comma between cells to select multiple, non-continuous cells.

Classes	5
Attendance	=sum(A11,A19,A28,A41,A50)
Average	

Here's the Overall Satisfaction **average** for the month of January

Attendance	
Average	=average(M11,M19,M28,M41,M50)

Here's the final outcome

Classes	5
Attendance	34
Average	3.97905

Remember, all your monthly sheets will look like this.

Year-to-Date Formulas

There are several ways to create YTD formulas. First, we'll get our sheet to automatically update monthly attendance totals. Then, we'll look at making a single formula that covers multiple spreadsheets. Here we see that the number of classes in January is simply counted "by hand" and typed in.

To get our monthly totals to automatically populate the YTD sheet, we can simply set up the sheet (as seen here) then add simple formulas.

1				
2		Classes	Attendance	Average
3	January	5		
4	February	4		
5	March	5		
6	April	6		
7	May	6		
8	June	5		
9	YTD Total	31		

The attendance in **cell C3** is actually a **partial formula**, but with only one cell from one spreadsheet.

	Classes	Attendance
January	5	34



So, we're not using a full formula:

Just type in an equal sign
Click the sheet you need
Click the cell you wish to "copy and paste."
Press Enter and you're back to the YTD sheet.

`=Jan!P4`

The same thing can be done to tally the **monthly averages**.

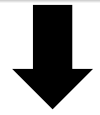
For the YTD totals, just use a sum formula for attendance **=SUM(C3:C8)**

9	YTD Total	31	288	4.126339
---	-----------	----	-----	----------

You may also create a “double check” formula that creates an overall total for the 6 months represented in our spreadsheet. Here are the steps to follow:

- Click in cell **C11**
- Type in **=SUM(**
- Click on the **January** spreadsheet
- Click cell **P4**
- Type in a comma
- Click on **February**
- Click cell **P4**
- Type in a comma

```
fx =SUM(Jan!P4, Feb!P4, Mar!P4, Apr!P4, May!P4, Jun!P4)
```



11	Double Check:	288
----	---------------	-----

Continue this pattern for each month.

- Close parenthesis (Shift +0)
- Press **Enter**

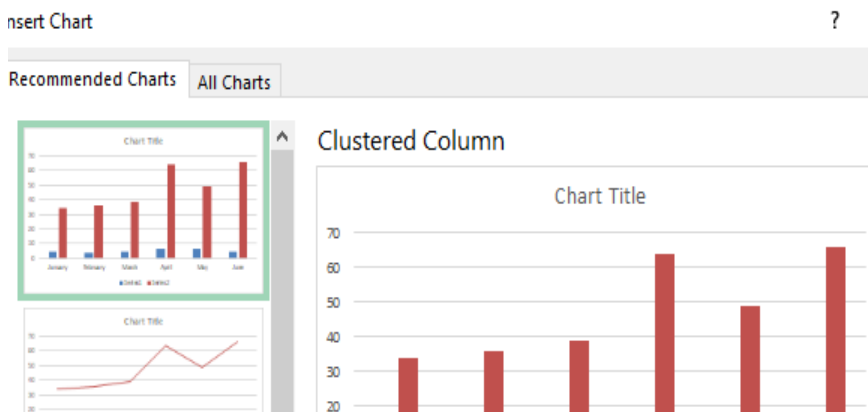
Insert a Chart

Let’s say we want to compare the total number of classes and attendance for these 6 months. We’ll select our data and use the Insert tab to choose a chart type.

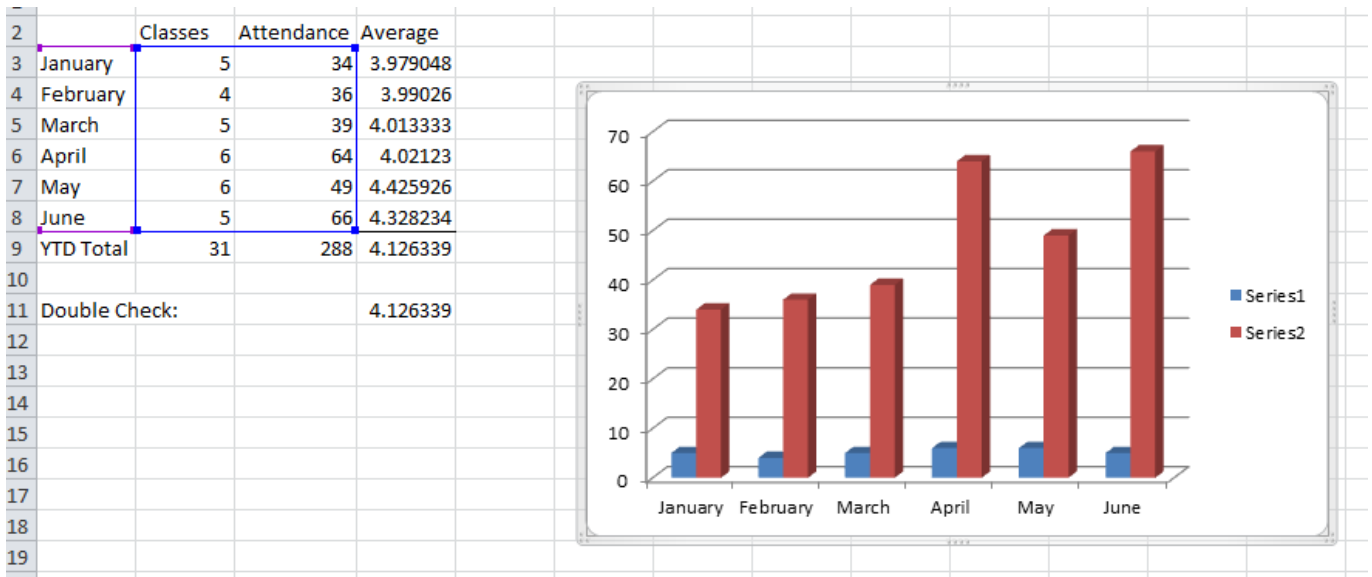
This is a fairly simple chart: **choose A3 to C8** for our chart information.

2		Classes	Attendance
3	January	5	34
4	February	4	36
5	March	5	39
6	April	6	64
7	May	6	49
8	June	5	66
9	YTD Total	31	288

On the **Insert** tab, choose the Recommended Charts button. Click on the **Clustered Column** chart.



As seen below, the chart automatically inserts on the spreadsheet.

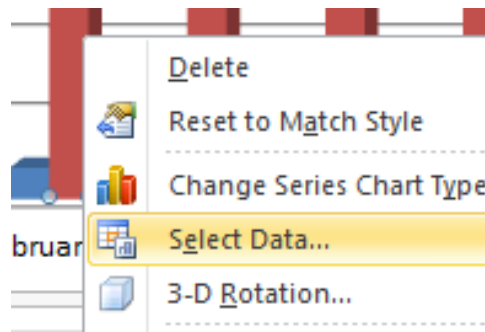


Prove It Test: to change a chart style, **click on the chart and then click the **Design tab** at the top. Choose the chart style from the gallery.

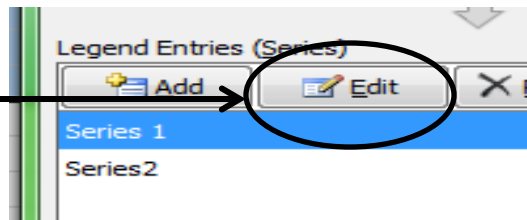


If you need to change the legend on it, here's what you do:

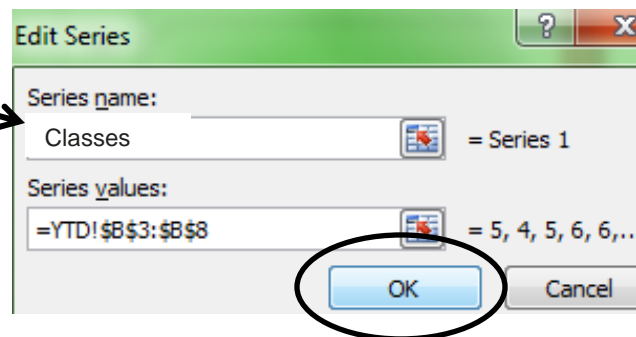
Right-click once on a taller column and choose **Select Data** from the submenu.



Click on **Series 1** and **Edit**



Type the name **Classes** and click OK. Do the same for attendance.



Resources

These items are available in the NIOGA Library System!

Contact your local library for assistance!

Author	Title
Harvey, G	Excel 2013 for Dummies
Harvey, G	Excel 2016 for Dummies
Gibson, J	Mastering Microsoft Excel 2013 (DVD)

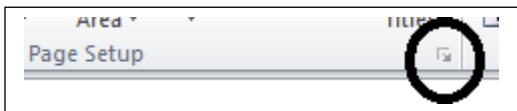
Edited 2021

Funding for computer training is provided by the Nioga Library System



.....Additional Prove It Test Items.....

To Center a selected worksheet both horizontally and vertically for printing: Page Layout > Page Setup > **Breakout arrow** > Margins > “Center on page” Horizontally and Vertically. Click OK.

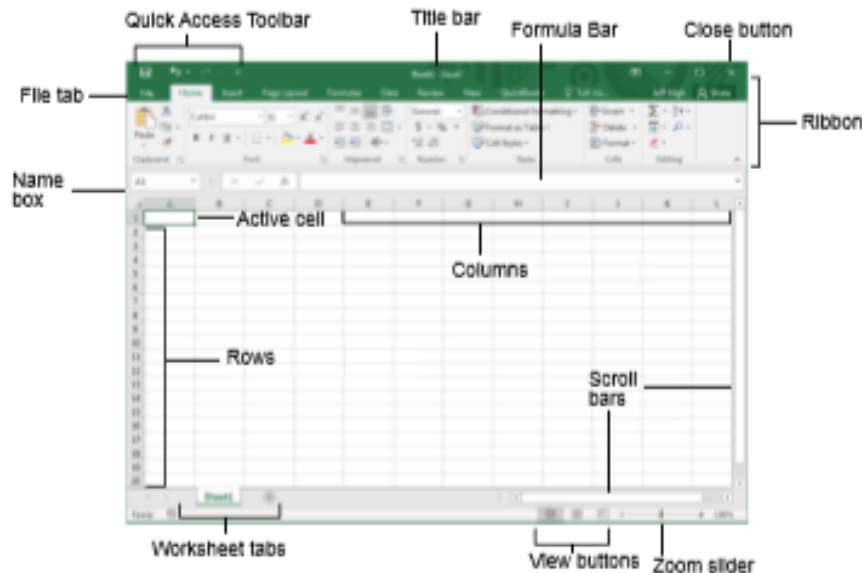


To get each worksheet to print on one page: Page Layout > Page Setup > Breakout Arrow > Page > Scaling.... **Fit to 1 page wide by 1 page tall.**

Microsoft®
Excel 2016
 Quick Reference Card

CustomGuide
 Interactive Training
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The Excel 2016 Screen



Keyboard Shortcuts

General

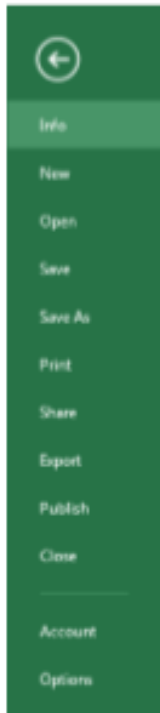
Open a Workbook	Ctrl + O
Create New	Ctrl + N
Save	Ctrl + S
Preview and Print	Ctrl + P
Close a Workbook	Ctrl + W
Help	F1
Run Spelling Check	F7
Calculate worksheets	F9
Create an absolute, normal, or mixed reference	F4

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
Up One Screen	Page Up
To Cell A1	Ctrl+Home
To Last Cell	Ctrl + End
Go To Dialog Box	F5

The Fundamentals

- The File tab menu and Backstage view contain commands for working with a program's files, such as Open, Save, Close, New, and Print.



- To Create a New Workbook:** Click the File tab, select New, and double-click workbook, or press Ctrl + N.
- To Open a Workbook:** Click the File tab and select Open, or press Ctrl + O.
- To Save a Workbook:** Click the Save button on the Quick Access Toolbar, or press Ctrl + S.
- To Preview and Print a Workbook:** Click the File tab and select Print, or press Ctrl + P.
- To Undo:** Click the Undo button on the Quick Access Toolbar, or press Ctrl + Z.
- To Redo or Repeat:** Click the Redo button on the Quick Access Toolbar, or press Ctrl + Y.
- To Close a Workbook:** Click the Close button, or press Ctrl + W.
- To Get Help:** Press F1 to open the Help window. Type your question and press Enter.
- Cell addresses:** Cells are referenced by addresses made from their column letter and row number, such as cell A1, A2, B1, B2, etc. You can find the address of a cell by looking at the Name Box under the clipboard.
- To Select a Cell:** Click a cell or use the keyboard arrow keys to select it.
- To 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 mouse pointer to the last cell of the range.
- To Select an Entire Worksheet:** Click the Select All button where column and row headings meet. Or press Ctrl + A.
- To Minimize the Ribbon:** Click the Minimize Ribbon button on the Ribbon. Or, press Ctrl + F1. Or, right-click a tab and select Unpin the Ribbon from the contextual menu.
- To Change Program Settings:** Click the File tab and select Options.
- To Use Zoom:** Click and drag the zoom slider to the left or right. Or, click the Zoom Out and Zoom In buttons on the slider.
- To Change Views:** Click a View button in the status bar. Or, click the View tab and select a view.

Editing

Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Undo	Ctrl + Z
Redo	Ctrl + Y
Find	Ctrl + F
Replace	Ctrl + H
Select All	Ctrl + A
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

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Editing

- **To Edit a Cell's Contents:** Select the cell and click the **Formula Bar**, or double-click the cell. Edit the cell contents and press **Enter**.
- **To Clear a Cell's Contents:** Select the cell(s) and press the **Delete** key.
- **To Cut or Copy Data:** Select cell(s) and click the **Cut** or **Copy** button in the **Clipboard** group on the **Home** tab.
- **To Paste Data:** Place the insertion point where you want to paste and click the **Paste** button in the **Clipboard** group on the **Home** tab.
- **To 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 the paste option to preview.
- **To 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**.
- **To Copy Using Auto Fill:** Point to the fill handle at the bottom-right corner of the selected cell(s), then drag to the destination cell(s).
- **To Complete a Series Using AutoFill:** Select the cells that define the series. Click and drag the fill handle to complete the series.
- **To 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 **Ctrl** key while dragging.
- **To Insert a Column or Row:** Right-click to the right of the column, or below the row you want to insert. Select **Insert** from the contextual menu, or click the **Insert** button in the **Cells** group on the **Home** tab.
- **To Delete a Column or Row:** Select the row or column heading(s). Right-click and select **Delete** from the contextual menu, or click the **Delete** button in the **Cells** group on the **Home** tab.
- **To Insert a Comment:** Select the cell where you want to insert a comment and click the **Review** tab on the **Ribbon**. Click the **New Comment** button in the **Comments** group. Type a comment and click outside the comment box.

Formulas and Functions

- **To Total a Cell Range:** Click the cell where you want to insert the total and click the **Sum** button in the **Editing** group on the **Home** tab. Verify the selected cell range and click the **Sum** button again.
- **To 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** when you're finished.
- **To Insert a Function:** Select the cell where you want to enter the function and click the **Insert Function** button on the **Formula Bar**.
- **To Reference a Cell in a Formula:** Type the cell reference (for example, **B5**) in the formula or click the cell you want to reference.
- **To Create an Absolute Cell Reference:** Precede the cell references with a **\$** sign or press **F4** after selecting cell(s) to make it absolute.
- **To Use Several Operators or Cell Ranges:** Enclose the part of a formula you want to calculate first in parentheses.

Charts

- **To Create a Chart:** Select the cell range that contains the data you want to chart and click the **Insert** tab on the **Ribbon**. Click a chart type button in the **Charts** group and select the chart you want to use from the list.
- **To Insert a Sparkline:** Select the cell range that contains the data you want to chart and click the **Insert** tab on the **Ribbon**. Select the sparkline you want to insert from the **Sparkline** group. Select the cell or cell range where you want to add the sparkline and click **OK**.

Formatting

- **To 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.
- **To 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.
- **To Copy Formatting with the Format Painter:** Select the cell(s) with the formatting you want to copy and 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.
- **To Apply a Cell Style:** Select the cell(s) you want to apply a cell style to. Click the **Cell Styles** button in the **Styles** group of the **Home** tab on the **Ribbon** and select a style from the gallery.
- **To 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 on the **Ribbon** and select a table format from the gallery.
- **To Apply a Document Theme:** Click the **Page Layout** tab on the **Ribbon**, click the **Themes** button in the **Themes** group, and select a theme from the gallery.
- **To Apply Conditional Formatting:** Select the cells to which you want to apply conditional formatting. Click the **Conditional Formatting** button in the **Styles** group of the **Home** tab. Select the formatting scheme you wish to use, then set the conditions in the dialog box.
- **To Adjust Column Width or Row Height:** 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.

Workbook Management

- **To Insert a New Worksheet:** Click the **Insert Worksheet** button next to the sheet tabs at the bottom of the program screen. Or, press **Shift + F11**.
- **To Delete a Worksheet:** Select the sheet you want to delete, click the **Delete** button in the **Cells** group on the **Home** tab, and select **Delete Sheet**. Or, right-click the sheet tab and select **Delete** from the contextual menu.
- **To Rename a Worksheet:** Double-click the sheet tab, enter a new name for the worksheet, and press **Enter**.
- **To Change a Worksheet's Tab Color:** Right-click the sheet tab, select **Tab Color**, and choose the color you want to apply.
- **To Move or Copy a Worksheet:** Click and drag a tab to move a worksheet. Hold down the **Ctrl** key while clicking and dragging to copy the worksheet.
- **To Split a Window:** Click the **View** tab and click the **Split** button in the **Window** group. Or, press **Alt + WS** (one at a time).
- **To Freeze Panes:** Place the cell pointer 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.
- **To 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 in the **Page Setup** group, and select **Set Print Area**.
- **To Adjust Page Margins, Orientation, Size, and Breaks:** Click the **Page Layout** tab on the **Ribbon** and use the commands in the **Page Setup** group, or click the **Dialog Box Launcher** in the **Page Setup** group to open the **Page Setup** dialog box.
- **To Protect or Share a Workbook:** Click the **Review** tab on the **Ribbon** and use the commands in the **Changes** group.
- **To Recover Autosaved Versions:** Click the **File** tab on the **Ribbon** and select **Info**. Select an autosaved version from the **Versions** list. Or, click the **Manage Versions** button and select **Recover Unsaved Workbooks**.