Excel for Spreadsheets and Data

(Version 1: 11/2/2016)

Background Information

Microsoft Excel 2013 is a software application that can be used as a spreadsheet for creation of small databases, data management, or for chart creation. The electronic spreadsheet portion of Excel allows the users to perform sophisticated calculations and the creation of formulas that automatically calculate answers. Data management capability allows the manipulations of lists of information such as names, addresses, inventory items, prices etc. The information created in an Excel spreadsheet or database can be used to create Excel charts.

This introductory workshop is designed to provide an overview of Excel's basic workspace and create a basic budgeting spreadsheet using functions, formatting, and worksheet formatting.

Required Skills

Before beginning, the following skills are required:

- Basic knowledge of software navigation (keyboard and mouse)
- Basic knowledge of ribbon vocabulary (tab, group, command)
- Basic knowledge of algebraic equations (order of operations, names of equations)

Agenda

- Create and save an Excel workbook
- Workspace Overview
- Entering data
- Essential formatting
- Basic formulas
- Basic functions
- AutoFill
- Cell References
- Page Layout and Printing
- Getting Help

Opening, creating, and saving your workbook

Starting Excel in Windows 7

1. Click on the start menu
2. Go to *All Programs > Microsoft Office 2013 > Excel 2013*

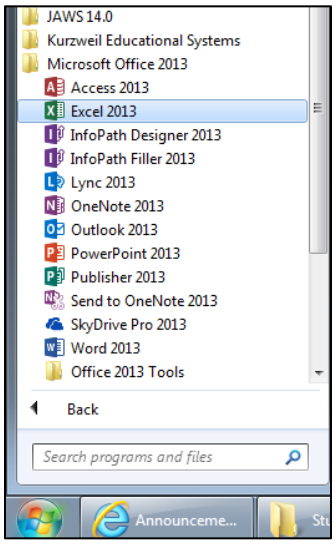


Figure 1 - Starting Excel from the start menu

Creating a New Workbook

1. Open Excel 2013

- In the welcome page, select *Blank workbook*

2. If you want to open a new workshop with Excel already open select *File > New > Blank workbook*

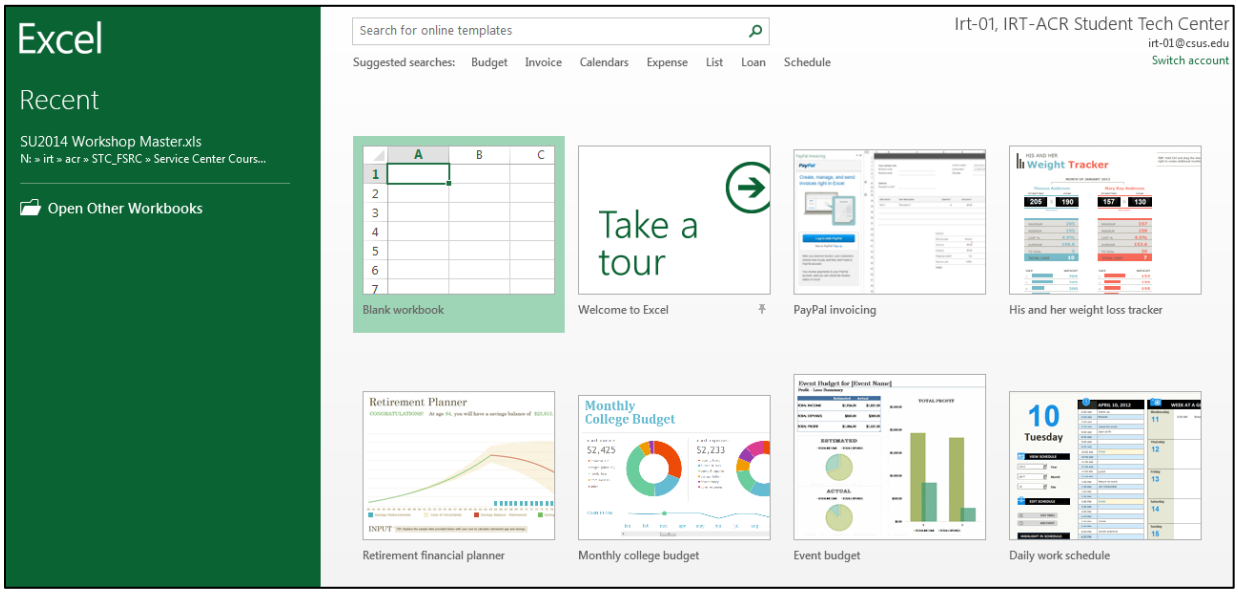


Figure 2 - Excel welcome screen

Activity: Start Excel and create a new workbook

Open an existing workbook

1. Select *File* from the top menu
2. Select *Open* in the left column group
3. Select *Computer > Browse*
4. Select the workbook within your computer and click Open

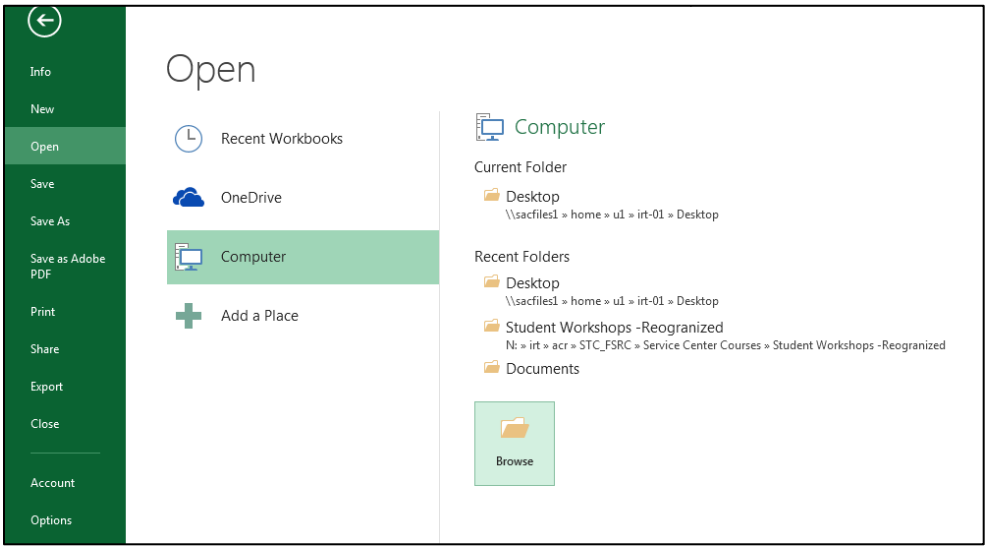


Figure 3 - Opening an existing workbook

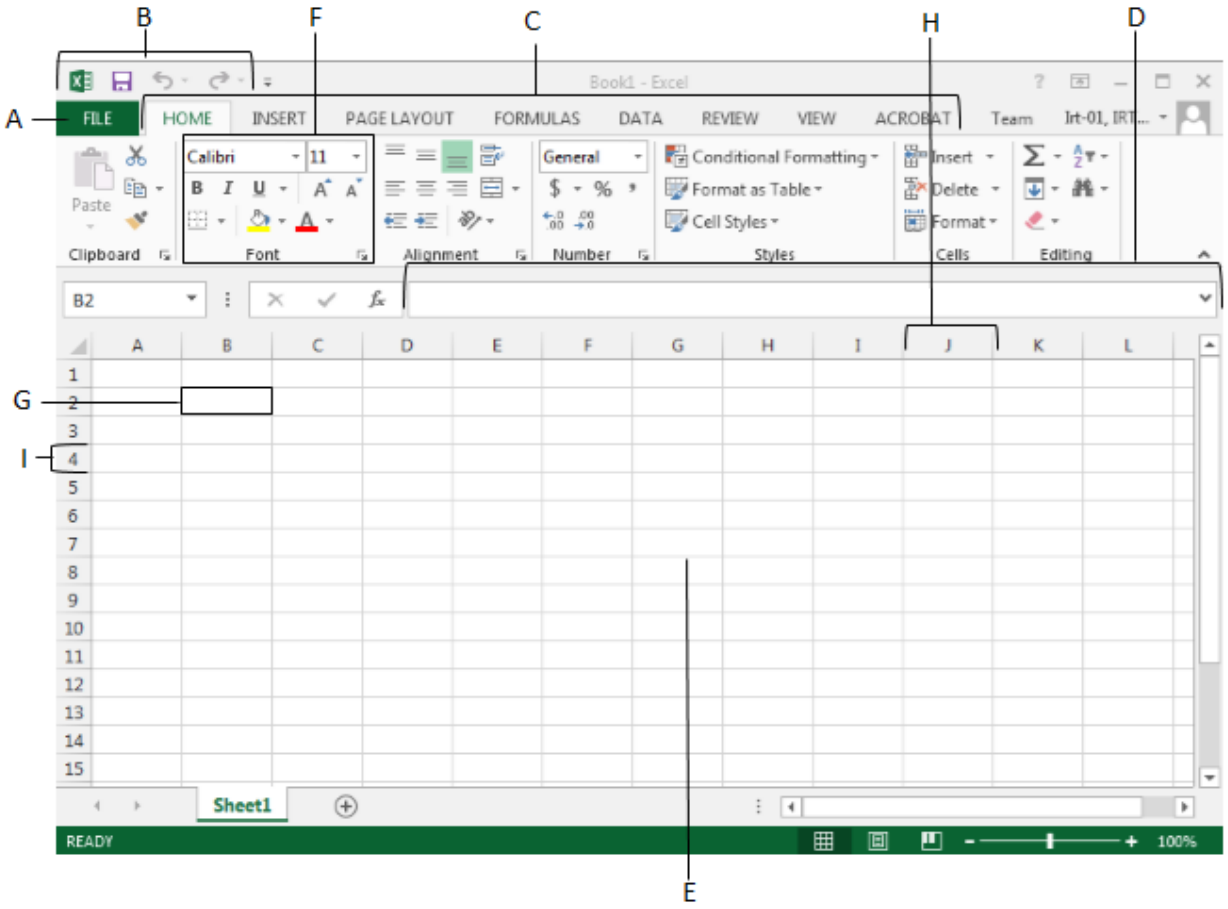
Activity: Have students open Budget_Demo_Student_ver.xlsx Instructor will open N:\irt\acr\STC_FSRC\Service Center Courses\AY14_15StudentWorkshops\Microsoft Office 2013\Excel 2013\Resources\budget_demo_instructor_ver.xlsx

Saving your workbook

1. Select *File* from the top menu
2. Select *Save As* in the left column group
3. Select *Computer* > *Browse*
4. Choose a location to save your file
5. Create a save file name and press *Save*
    - To save changes to an already created workbook select *File* > *Save* or press the *Ctrl* and *S* keys on your keyboard

Activity: Save document to the student's sac drive

Workspace Overview



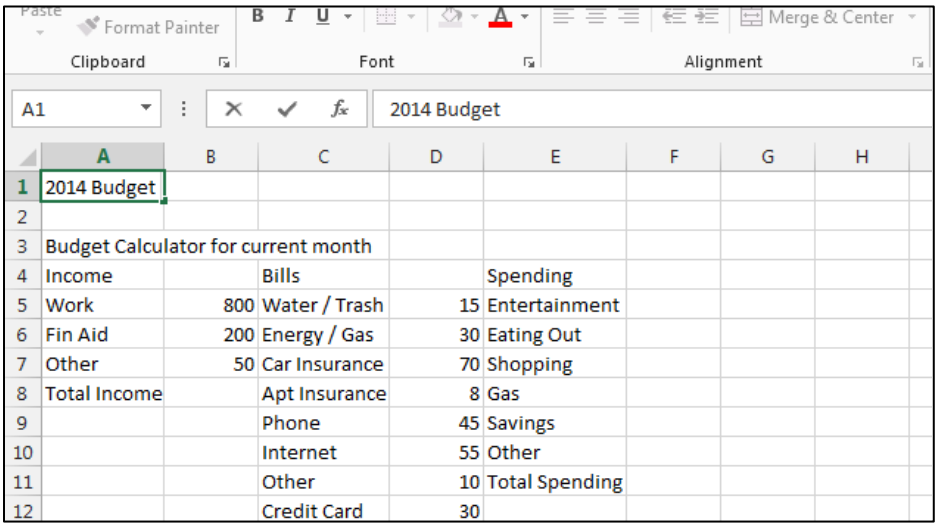
A. File Tab
B. Quick Access toolbar
C. Ribbon tabs
D. Formula bar
E. Worksheet area
F. Group
G. Cell
H. Column label
I. Row label

Entering data

Excel gives you different ways to edit the data in your worksheet. You can replace the entire contents of a cell or change or only a portion

1. Double click the cell to enter it
2. Type in your data
3. Press *Enter* or *Tab* (Enter to move down the column, Tab to move across the row)

Once you are done entering data, you can press the enter key or tab key to move to the next cell.



	A	B	C	D	E	F	G	H
1	2014 Budget							
2								
3	Budget Calculator for current month							
4	Income		Bills		Spending			
5	Work	800	Water / Trash	15	Entertainment			
6	Fin Aid	200	Energy / Gas	30	Eating Out			
7	Other	50	Car Insurance	70	Shopping			
8	Total Income		Apt Insurance	8	Gas			
9			Phone	45	Savings			
10			Internet	55	Other			
11			Other	10	Total Spending			
12			Credit Card	30				

Figure 4 - Entering data into Excel

Activity: Enter "2014 Budget and Spending" into cell A1

Basic Formatting

Using the formatting window

The format tool in Excel opens a window where you can change the category of a number (Number, Date, Currency, etc.), font, alignment, cell borders, color fills, and protections on selected cells.

To change the number category in a cell:

1. Select the cells you want to format
2. Make sure that the HOME tab is open in the ribbon
3. Go to the *Cells* group and select *Format*
4. A drop down menu will appear, select *Format Cells*
5. To change the Category of a number, make sure that the *Number* tab is open, Choose a new number category from the list (A sample will show to display what your new category will look like)
6. You can also change the decimal places as well
7. Press *OK* to apply your changes

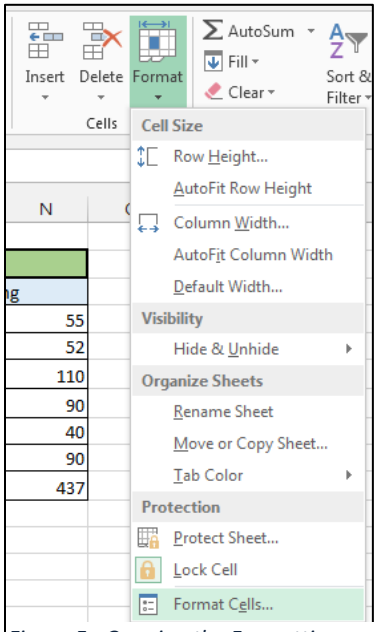


Figure 5 - Opening the Formatting Cells window

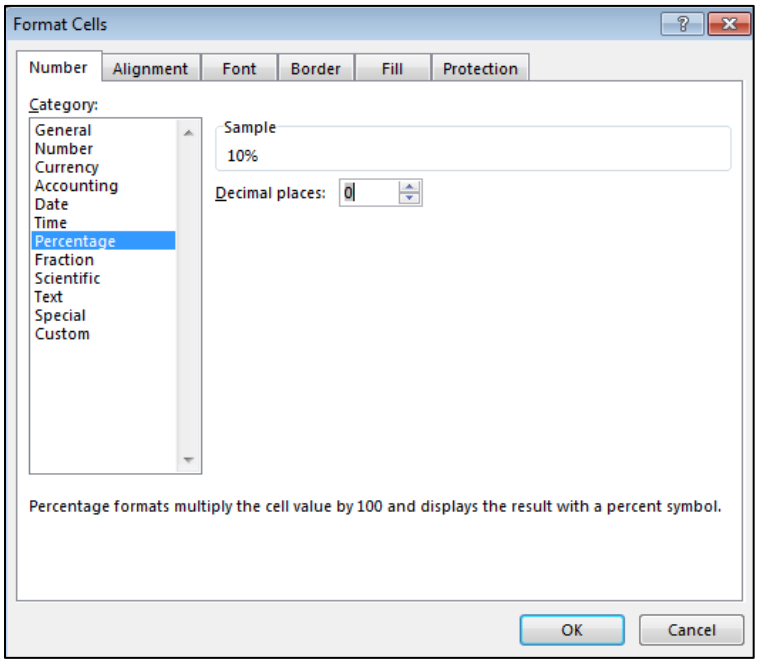


Figure 6 - The formatting cells window

Activity: format the percent column as *Percentage* and change the decimal places to 0. Format the other number columns as *Currency*

Creating a new worksheet

Creating a new worksheet in Excel can help organize your charts and graphs keeping your data separate from your charts and tables.

To create a new worksheet:

1. At the bottom of your worksheet you will find a worksheet tab
2. Click the ⊕ symbol and a new worksheet tab will appear, to go to that worksheet click the tab.
    - To rename your worksheet you can double click the worksheet tab or right click and select *Rename.* Start typing in the new name and hit *Enter* when you're finished.

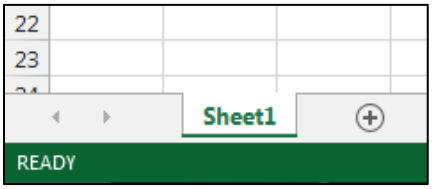


Figure 7 - Worksheet tab

Figure 8 - Renaming a worksheet

Activity: Create a new worksheet and rename it as "Practice"

Changing the width / height of columns and rows

Changing the width and height of columns helps improve the readability of your data

To change the size of a Row or Column:

1. Click on the row or column you want to manipulate
2. Move your curser to the border of that column until this symbol appears ✢
3. Click and drag in the direction you want to change size in

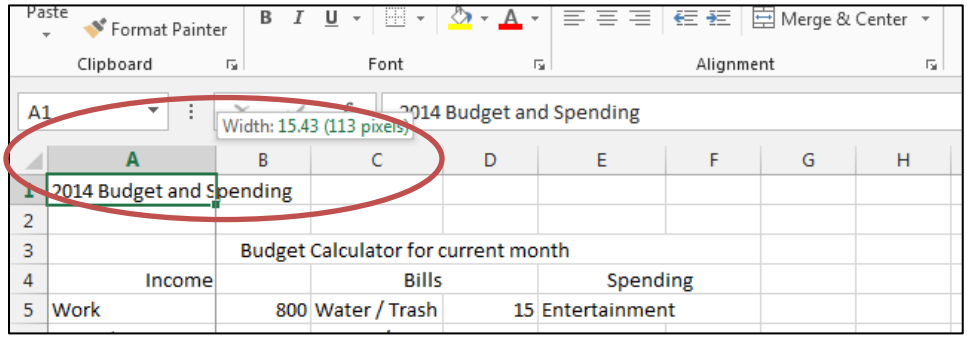


Figure 9 - Changing the width of a column

Activity: adjust the width of A1

Merging and Unmerging cells

In Excel 2013 you can merge two or more adjacent cells into one cell and display the contents of one cell in the merged cell. You can also merge the contents of several cells and display them in one cell. Merging cells disables sorting functionality. Merging cells can be used to create headings for tables and help make your worksheet look more professional.

To merge cells:

1. Click and drag to select the cells you want to merge
2. Go to the *Alignment* group in the *Home* ribbon and click *Merge & Center* (you can select more options on the drop down menu)
3. Your cells are now merged

To unmerge cells:

1. Select the cell you wish to unmerge
2. Go to the *Alignment* group and click *Merge & Center again* (you can select more options on the drop down menu)
3. Your cells are now unmerged

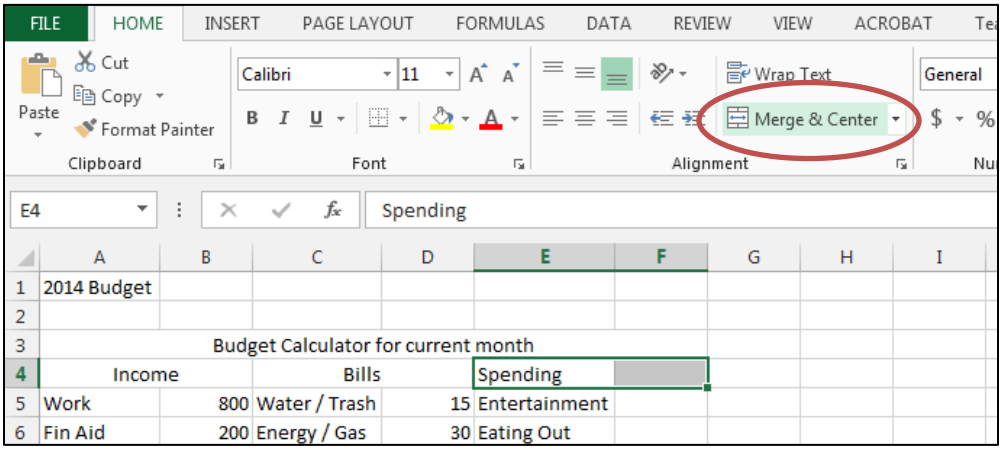


Figure 10 - Merging and unmerging cells

Activity: Merge and center all headers

Wrapping text

This option wraps all entries in your cell selection that spill over their right borders onto multiple lines within the current column width. Wrapping text help keep your work sheet more concise and focused.

To wrap text:

1. Select the cell(s) you wish to wrap

2. Go to the *Alignment* group and click *Wrap Text*
3. Your text is now wrapped in the cell

To unwrap text:

1. Select the cell(s) you wish to unwrap
2. Go to the *Alignment* group and click *Wrap Text* again
3. Your text is now unwrapped in the cell

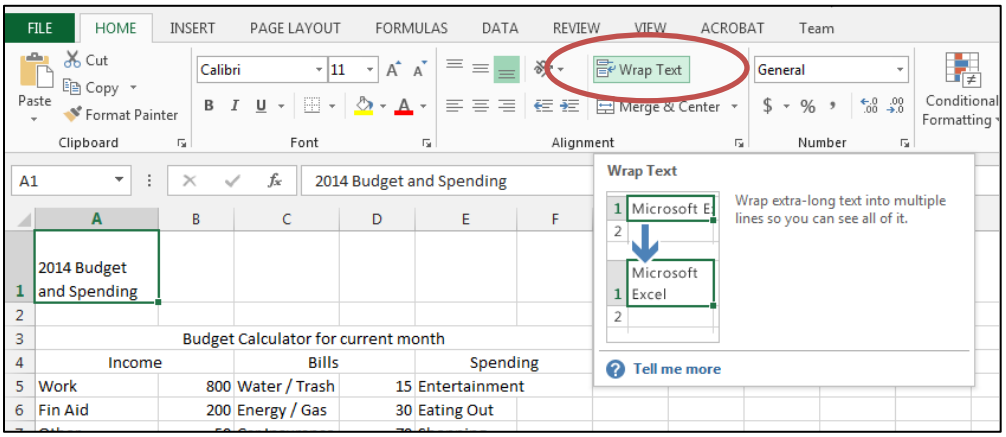


Figure 11 - Wrapping text

Activity: wrap the text for cell A1

Cell Formatting

There are many ways to format cells in Excel 2013, using the *Font* group in the *Home* ribbon you can change the format of text, add borders, and add background colors to cell.

To format the font:

1. Select the cell(s) you wish to format
2. Go to the *Font* group in the *Home* ribbon and use the various drop down menus to change the font, size, color, and font styles of your text.

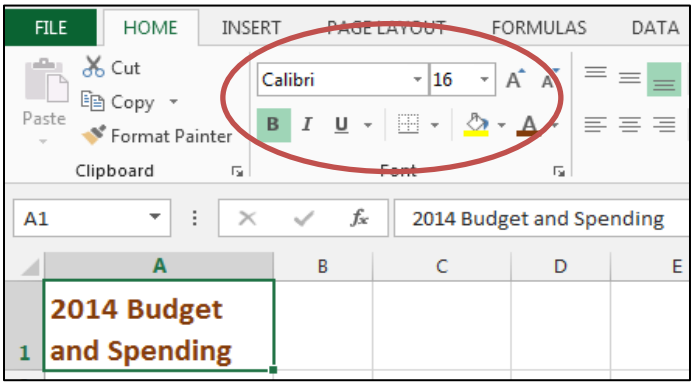


Figure 12 - Formatting font

Activity : Format the text of cell A1

To add a border to your cell:

1. Select the cell(s) you wish to format
2. Go to the *Font* group and click the button to add a simple border or use the drop down menu to select a more complex border.

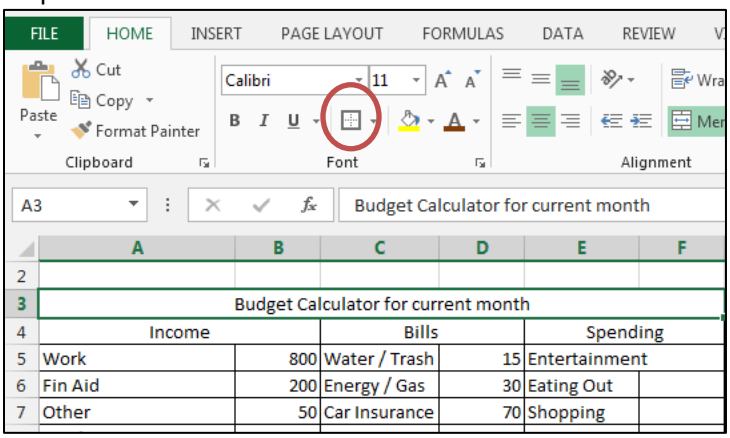


Figure 13 - Adding a border to cells

Activity: Add cell borders to all cells in the budget

To add background colors:

1. Select the cell(s) you wish to format
2. Go to the *Font* group and click the paint can button to add a default color fill, or use the drop down menu to select a different color

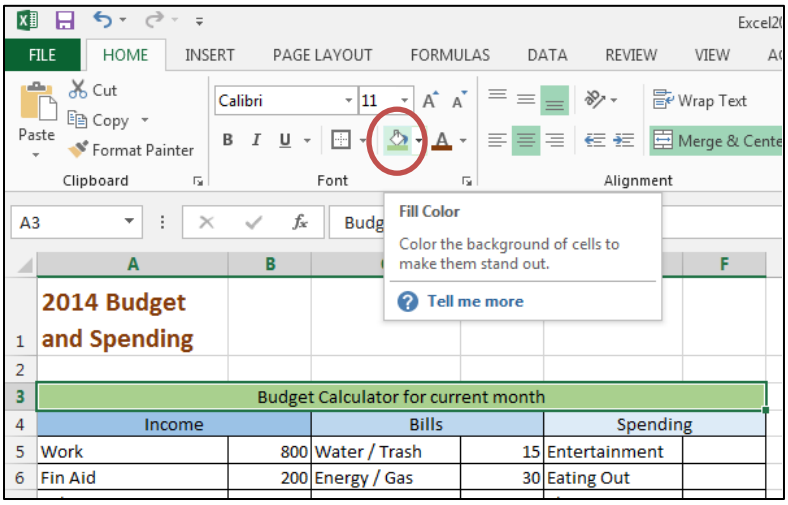


Figure 14 - Fill color tool

Activity: Add background color to the header cells

Copying and Pasting cells

Copying and pasting cell can save you time making new tables, you can paste not only data but also the formatting in cells

To copy and paste cells

1. Select the cells you wish to copy
2. Right click and select copy or type *Ctrl + C* on your keyboard
3. Right click the area of your worksheet where you want to paste your cells and select *Paste* or type *Ctrl + V*
4. When you paste the clipboard symbol will appear by clicking it you can clarify exactly what parts of the cell you want to copy over.

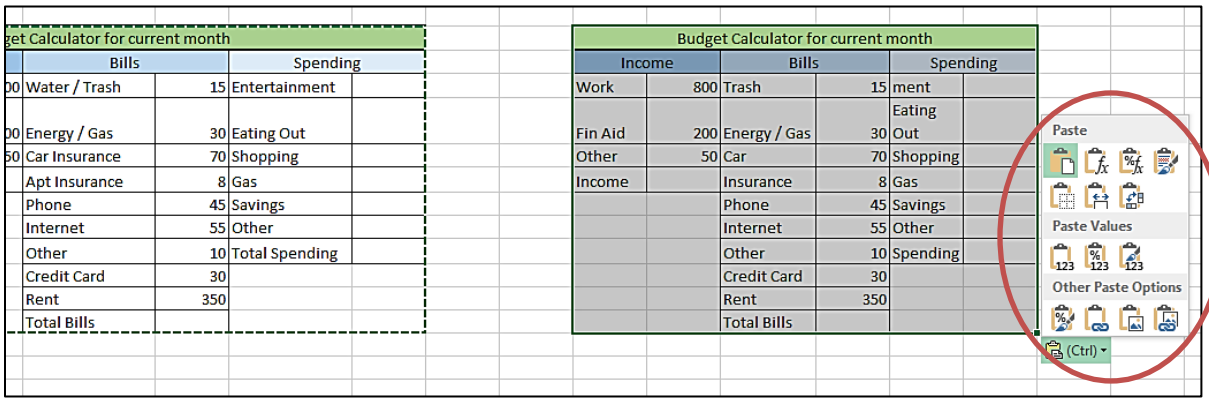


Figure 15 - Pasting cells with the paste options window displayed

Activity: Copy the cells from the budget and paste another copy two cells over. Rename the header: Actual Spending for current month

Hiding columns and rows

Hiding whole columns and/or rows can help make your data easier to comprehend by focusing your data in your worksheet.

To hide columns and rows

1. Right click the label of the row or column you wish to hide
2. A menu will appear, select *Hide*
3. The row or column is now hidden

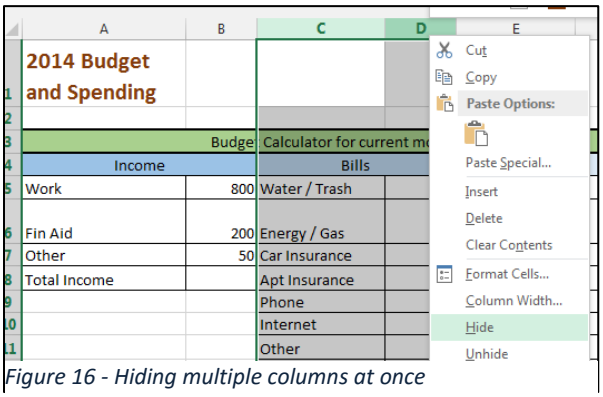


Figure 16 - Hiding multiple columns at once

To unhide columns and rows

1. Right click the hidden row/column indicator you wish to unhide
2. A menu will appear, select *Unhide*
3. The row or column is now visible

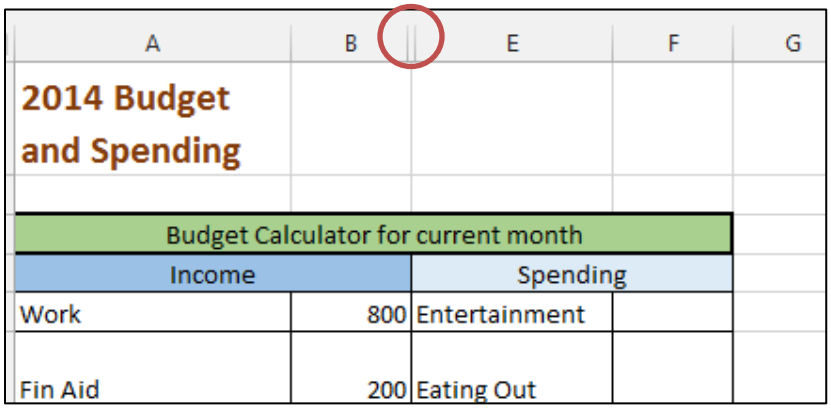


Figure 17 - The hidden column indicator

Activity: Hide and unhide the Bills columns

Changing Alignment

In Excel 2013 you can change the alignment of your text to the, right, center, top, and bottom of a cell(s). Changing alignment in cells can make your data appear more organized and less cluttered.

To change alignment:

1. Select the cell(s) you wish to align
2. Go to *Alignment* group and select the click the alignment symbol you wish to use (you can hover over a particular symbol for a definition)
3. Your text is now aligned to your liking

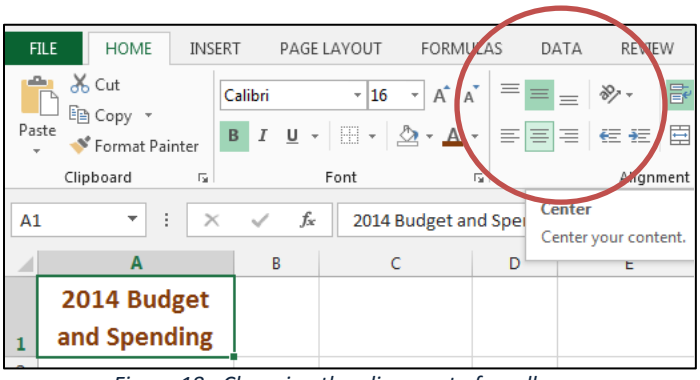


Figure 18 - Changing the alignment of a cell

Activity: Center align cell A1

Basic Formulas

A formula is an equation which performs calculations. A formula can perform a mathematical calculation, such as displaying the sum of 48+56, or a formula can calculate a value using cell references, such as displaying the sum of the values of cells A3 + B3. Formulas always begin with an equal sign (=).

Please Note:

- Oder of operations matter in Excel! Entering formulas in the wrong order will affect your output

1. Click the cell that you want enter a formula in
2. Type = (an equal sign)
3. For this example, type 48+56. Before the end of the next step the cell should read **=48+56**
4. Press Enter. The cell should now display 104.

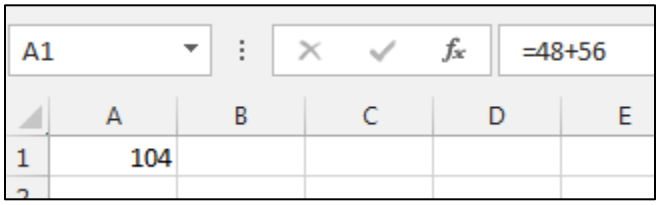
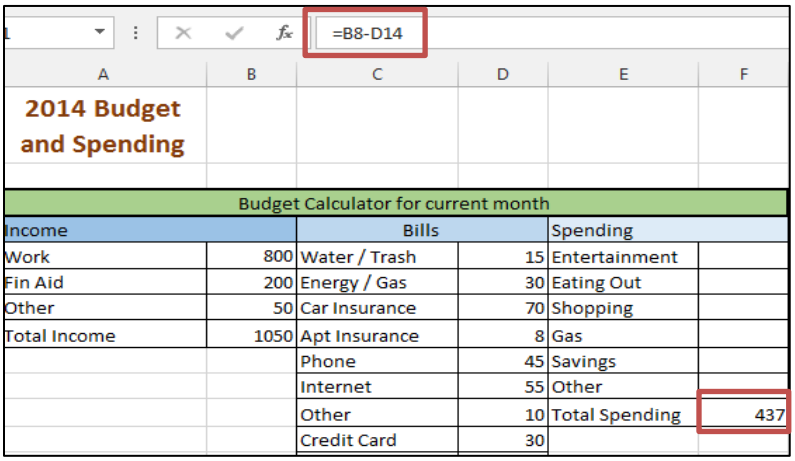


Figure 19 - Entering an equation in Excel

Please Note: Multiplication, subtraction and division are also basic formulas. For example;

Multiplication	**= 48 * 56** or **=A3*B3**
Division	**= 48/56** or **=A3/B3**
Subtraction	**=48-56** or **=A3-B3**

If you click on the cell you entered the formula in the formula bar will display the formula and the cell will display the solution



Activity: Go to the worksheet called: *Practice* and enter in a few basic formulas (ex: =5+7 =5*8 etc.)

Basic Functions

Excel 2013 function library comes with a vast assortment of functions. Functions are categorized so users can search and find them easily. Some examples include; payment calculation, degrees to Celsius conversion, averages and text search. We will only go over how to insert the most basic functions in this section.

AutoSum

AutoSum is a convenient shortcut that is used often by Excel users. The AutoSum feature adds up columns or rows quickly. It can also calculate averages, count numbers, find min and maxes. Data must be selected first, once it is, AutoSum will make your life easier.

1. Select a cell beside a row or under a column of data. (you can select a group of cells by selecting your first cell and holding the *Shift* key and clicking the last cell)
2. Go to the *Editing* group in the *Home* ribbon
3. Click the AutoSum button (alternatively you can click the drop down menu to display more functions)
4. Press the *Enter* key and your sum will be displayed.

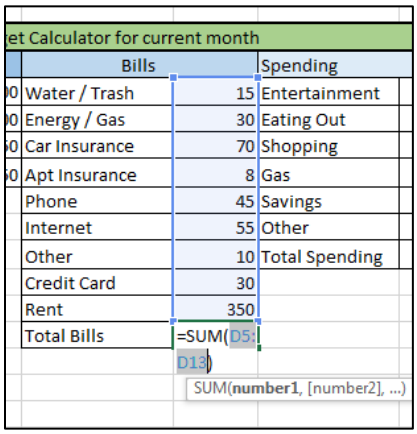


Figure 20 - Using AutoSum

Activity: Use AutoSum to sum up the *Bills* and *Income* columns

To insert a function

1. Click on a Blank cell once
2. Go to the FORMULAS tab to enter the *Formulas* ribbon
3. Find the *Function Library* group, at the left most side of the Ribbon click the *Insert Function* button
4. The *Insert Function* dialog launcher will appear. We're going to search for the function *PRODUCT*. Power is simply multiplication. Type product in the "*Search for a function"* field. Then click GO.
5. *PRODUCT* will show up as the first option in the *"Select a Function"* Field. Click *OK*
6. The *Function Arguments* dialog launcher will appear. It's where you will enter the data for the function. In the Number1 text field include your first number to be multiplied and add the second in Number2 (you can also put in cell locations). Then click *OK*.
7. The end result will show in the cell.

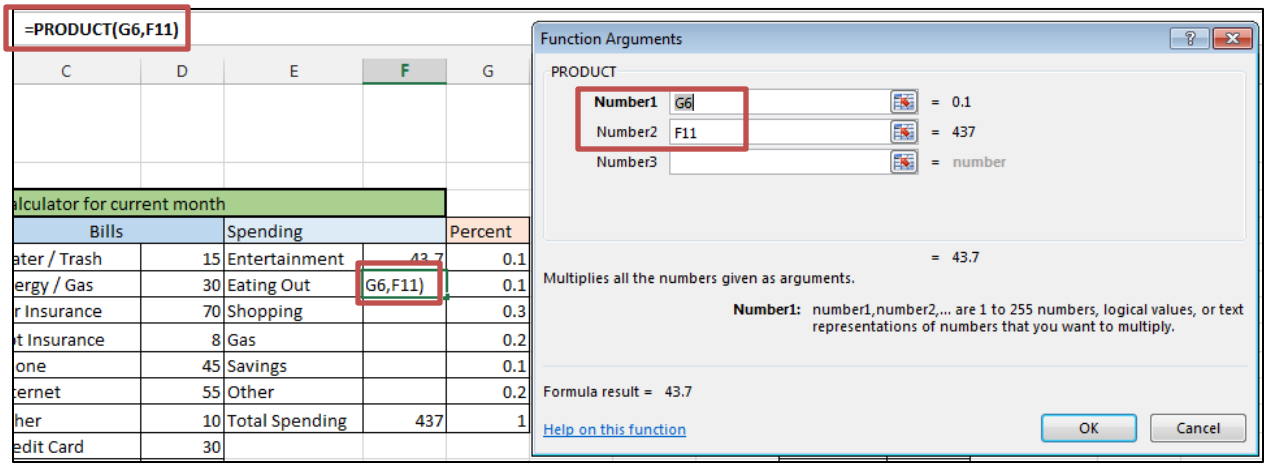


Figure 21 - Inserting a function

You can include many other functions another like to using an average function to create a new spending budget:

1. Follow the first three steps of "Insert a function"
2. The *Insert Function* dialog launcher will appear. We're going to search for the function *AVERAGE*. Power is simply multiplication. Type average in the "*Search for a function"* field. Then click GO
3. *AVERAGE* will show up as the first option in the *"Select a Function"* Field. Click *OK*
4. The *Function Arguments* dialog launcher will appear. It's where you will enter the data for the function. Select the Number1 box and click on the cell you want to include in this function, continue to add a new cell in each Number box.
5. The end result will show in the cell

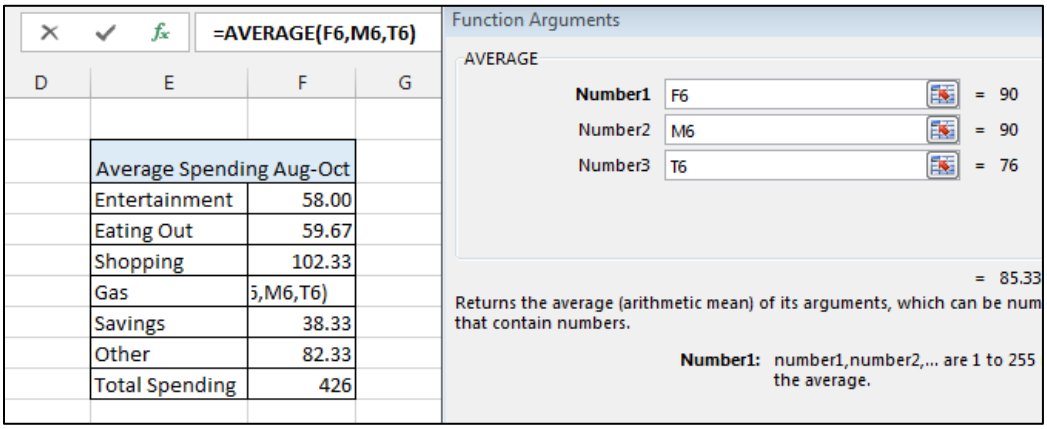


Figure 22 - Inserting an Average function

Please Note:

- To edit the function you have previously made, click the cell with the function in it and then click *Insert Function* and the *Function Arguments* window will reappear.

Activity:

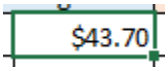
- On the *Budget* tab in the *Total Spending* cell, insert the a difference equation of total income – total bills (=B8-D14)
- Insert an Average function into cell F18 (Avg Entertainment) of the average entertainment spending (=AVERAGE(F5,M5,T5))

Using Auto Fill

The Auto Fill feature in Excel can save you time by allowing you to drag formatting, formulas, and functions into many different cells at once.

To use Auto Fill:

1. Click on the cell that you want to copy information or formatting from
2. Click and hold the green box that appears in the lower right-hand corner of the cell.



3. Drag the box over all the cells that you wish to copy onto
4. After your information has been copied the AutoFill prompt will appear, if you click on it you can select what parts of the cell you want to copy (formatting, text, or both)

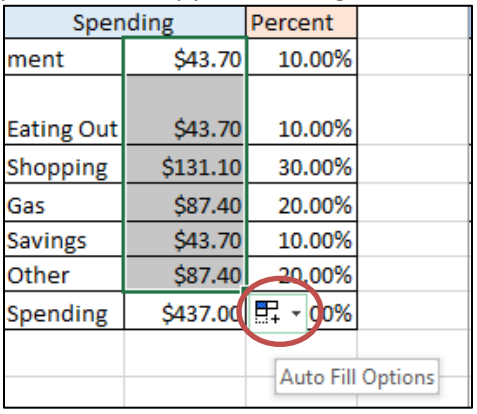


Figure 23 - Auto Fill Options

Activity: -Go to the *Practice* tab, type in Monday in one cell and drag it to use the auto fill feature to create the rest of the weekdays.
-On the same sheet type in 1, 2, 3 in corresponding cells, select all three cells and drag them over to create an auto fill counting to 10
-Redo the previous step but using odd numbers instead
- Go to the *Spending* tab in the *Avg. Spending* table drag the *Entertainment* value cell to the *Other* value cell (F18-24) and AutoSum in the total

Absolute Cell References

There are two types of cell references: relative and absolute. Relative and absolute references behave differently when copied and filled to other cells. Relative references change when a formula is copied to another cell. Absolute references, on the other hand, remain constant, no matter where they are copied.

By default, all cell references are relative references. When copied across multiple cells, they change based on the relative position of rows and columns. For example, if you copy the formula =A1+B1 from row 1 to row 2, the formula will become =A2+B2. Relative references are especially convenient whenever you need to repeat the same calculation across multiple rows or columns.

There may be times when you do not want a cell reference to change when filling cells. Unlike relative references, absolute references do not change when copied or filled. You can use an absolute reference to keep a row and/or column constant. An absolute reference is designated in a formula by the addition of a dollar sign ($). It can precede the column reference, the row reference, or both.

To change a cell reference in a formula:

1. Click into the cell that you want to change the reference for.
2. Go into the formula bar and add the $ symbol before the row and column name that you want make absolute =PRODUCT(F11,G5)
3. Press enter when finished changing the formula

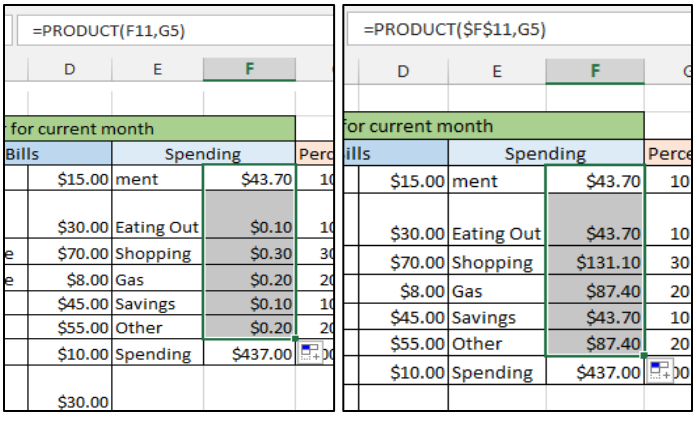


Figure 24 - Changing cell references is important!

Activity: -Go to the *Budget* tab and in cell F5 (entertainment spending) enter the function =PRODUCT(F11,G5) and drag it down to F10 (*Other)* and notice how the formatting is wrong. -Go back to cell F5 and change F11 from relative to absolute, the formula will now look like this: =PRODUCT(F11,G5) Redo the AutoFill to receive correct results

Page Layout and Printing

Workbook views

Displaying your document in different views can help with laying out a workbook as it will show you how your document will look before it is printed.

To access these workbook views:

1. Go to the VIEW tab in the navigation ribbon
2. In the *Workbook Views* group there are four different options to choose from
    - **Normal:** the default view in Excel
    - **Page Break:** displays where the page breaks will appear when your document is printed
    - **Page Layout:** displays how your printed document will look
    - **Custom Views:** Save your current display and print settings as a custom view
3. Click on the option you want to use

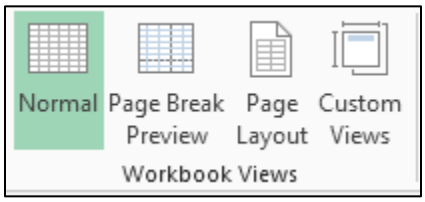


Figure 25 - Workbook views group

Please note:

- These options are also available at the lower right hand corner of the window:

Page Setup

In the Page setup group you can change the print settings of your document to get the layout you want before printing.

To access these settings:

1. Go to the PAGE LAYOUT tab in the navigation ribbon
2. In the *Page Setup* group there are many different options that will change your print layout
    - **Margins:** Set the margin size for your whole current document, or just a section
    - **Orientation:** gives your pages a portrait or landscape layout
    - **Size:** Choose a paper size for your document

- **Print Area:** Select or deselect an area on the sheet you'd like to print
- **Breaks:** Add a break where you want to the next page to begin in the printed copy. Your page break will be inserted above and to the left of your selection.

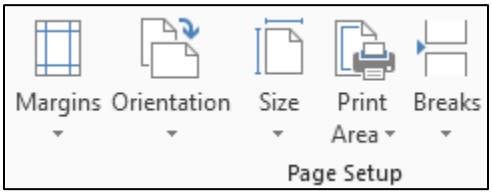


Figure 26 - Page Setup group

Printing your document

Make sure you to look at the page setup and page layout for your document before printing

To print your document:

1. Go to FILE and select *Print* from the left-hand menu
2. Check your settings and preview to make sure everything is correct
3. When ready select *Print*

Getting Help

Pop up descriptions

Excel 2013 has extensive help features, hovering over any option shows a description of what its function is

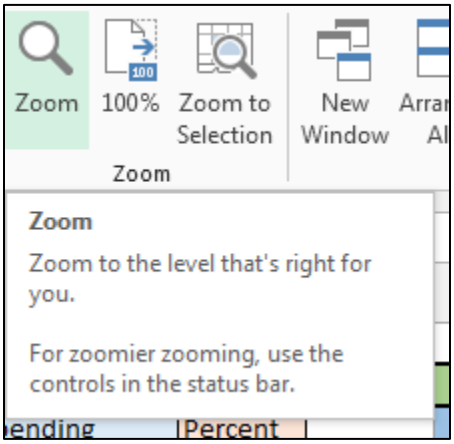


Figure 27 - Pop up descriptions

Accessing the Help menu

In the upper right hand corner of Excel's window clicking on the ? button opens the help menu where you can search specific topics, learn shortcuts, get training and learn the basics.

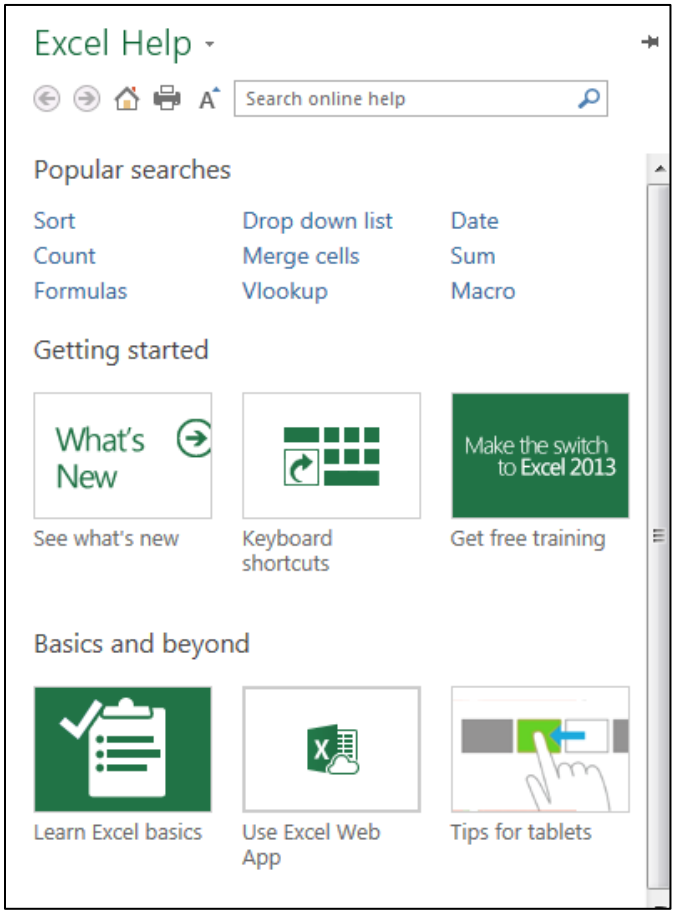


Figure 28 - Excel's help menu

What you have learned

1. Opening, creating, and saving your workbook
    - Save early and save often!
2. Navigating Excel
3. Entering Data
4. Formatting
5. Creating basic formulas
    - Don't forget the Order of operations!
6. Using basic functions
7. Absolute cell references
8. Using Auto Fill
9. Setting up page layout and printing
10. Getting help