Excel Basic: Create Formulas

Overview: Let Excel do your math for you! After an introduction to some basic functions, you'll use a spreadsheet format to create a very simple budget.

Student Skill Level: Basic

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

Length: 3 hours (with a 10 minute break)

Objectives
- The student will be able to understand the basics of using Microsoft Excel:
  - Understand the function of the File Tab
  - Use Ribbon, Tabs, and Groups to select commands
  - Select single cells and groups of cells in order to format them properly
  - Change Column Width
- The student will use these skills to set up a mock budget:
  - Decide how the spreadsheet will appear
  - Enter information using:
    - The keyboard
    - AutoFill
  - Create and edit formulas using the formula bar

This is the Example Budget we will create in this class.

|	A	B	C	D
1		January	February	March
2	Job 1	913.96	900.26	961.47
3	Job 2	1,996.02	560.28	426.91
4				
5	Total Income	2,909.98	1,460.54	1,388.38
6				
7	Rent	900.00	900.00	1,250.00
8	Telephone	125.00	135.00	450.32
9	Electric	560.23	400.85	235.85
10	Groceries	280.69	263.52	460.87
11				
12	Total Expenses	1,865.92	1,699.37	2,397.04
13				
14	Difference	1,044.06	(238.83)	(1,008.66)
15				

Open Excel

There are **two** ways to open Excel:

Double click on the icon on the desktop

OR

Click once on the icon and then press the **enter** key on the keyboard
The icon will turn **blue** and then a small hourglass will appear as the program opens.
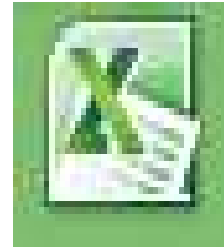
The File Tab on the Ribbon

Pictured here is part of the **File Tab** in Excel 2010. Clicking on this tab gives you access to some of the most powerful commands in Excel.

Save and Save As – to keep a copy of the workbook in the location of your choosing (hard drive, flash drive, etc)

Open – to find and re-open a previously saved workbook for editing

Close – shut down the current workbook

Info – information regarding the workbook including any possible compatibility issues (older to newer versions)
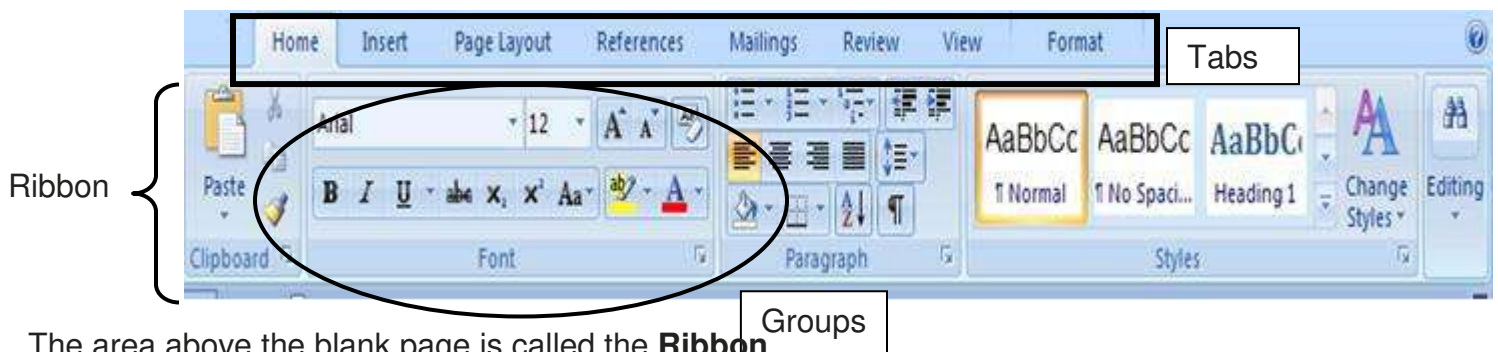
Recent – quickly re-open workbooks you have viewed or edited lately

New – create a brand-new workbook (allows you to choose a template if you want)

Print – get your workbook off the computer screen and on to paper!

The Ribbon, Tabs, and Groups

The area above the blank page is called the **Ribbon**.

To use commands and options available to you in Excel, simply click the **button** on the correct **Tab**: Home, Insert, Page Layout, References, Mailings, Review, View, or Format.

Buttons are arranged in **Groups**. In general, the most used commands are in the **Home** Tab. For example, it contains the **Clipboard** and **Basic Text Groups**.

Cut, Copy, Paste, Bold, Italicize, Underline, Center, Font Type: They're all included in these two groups.
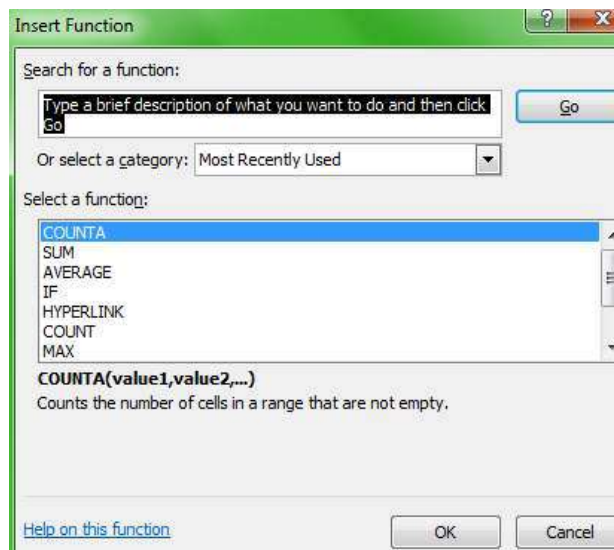
Special Note on the Ribbon: The Formulas Tab

Many people ask, "How do I find out what formulas to use in Excel?" There are really three ways to do this: use the Formulas Tab, the Help menu, or Google. A word on each:

Here's **part** of the Formulas Tab. Click the **Insert Function** button
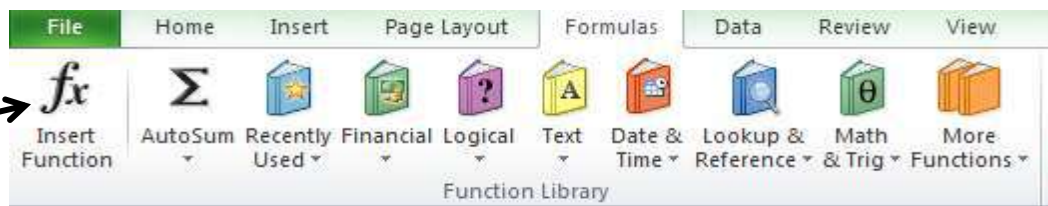
This is one way to find the name of a formula in Excel. All math functions are done by **name**.

The **Help menu** may also be used to search for formula names. Type your question in and, hopefully, it will display an answer.

Last, but not least, you may type your Excel question into the Google search engine. Be sure to be very specific with your question and Excel version, because Google will search the entire Web to find any answer pertaining to almost anything in your question. This can mean a lot of irrelevant answers!

The cursor, cells, and the formula bar

Cells are boxes in which the rows and the columns intersect. It (a cell) is bound on four sides like any other block. All types of information are kept in a cell – including numbers and text.
Cells are delineated by a letter (across top of worksheet) and a number (down the side). For example, cell G3 is selected on this sheet:

	A	B	C	D	E	F	G	H
1								
2								
3								

Cursor "marks the position where text or data can be entered, modified, or deleted" (HP). In Excel, the cursor is in **both** the **cell** and the **formula bar**. What is shown in the cell is not always what is in the formula bar – as we will see as we practice.

Formula bar is the place where formulas are entered; formulas are "use[d] to add, subtract, multiply or divide the values in a spreadsheet" (Author Unknown). It's located directly **below** the **Ribbon** with an "fx" at the start:

This is important because the formula bar is where you will make corrections to virtually anything in the cells.

Click once in the proper **cell** then click once in the **formula** bar. You will see the **cursor** in the bar, and then you are ready to make corrections (with the **Backspace** or **Delete** keys)

Select Cells

Before performing any task in Excel, you must select the cells you want to work with. Selected cells appear highlighted on your screen.
<u>**To select one cell:**</u>
Click the cell you want to select
The cell becomes the active cell and displays a thick border
Use **Scroll Bars** to move up and down or across the worksheet
TAB brings you across rows to the right
Enter moves you down the column
Shift/TAB brings you across columns to the left
Arrow keys bring you up, down, left, or right across cells
**Page Down** brings you to the next page of worksheet
Page Up brings you to previous page of worksheet
CTRL/Home brings you to cell A1 at the beginning of worksheet
<u>**Selecting a Group of Cells:**</u>
Position the mouse over the **first** cell you want to select
Click and hold the mouse button and drag the mouse to highlight all the cells you want to select (a thick black line will surround the selected cells with the first cell in **white**, the rest **blue**)
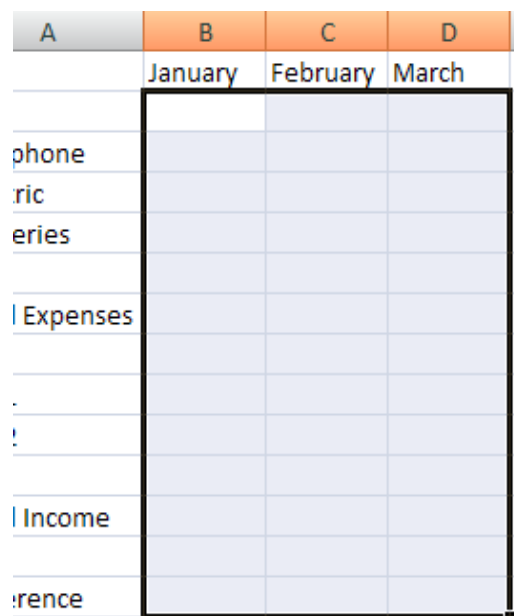
AutoFill

**AutoFill** is used on **patterns** of numbers or text in cells.

Enter the start of a sequence (**January**)
Position the mouse cursor over the **bottom right corner** of the cell (mouse turns into a plus sign (**+**))
Click and hold the mouse button and drag the mouse cursor (**+**) over the cells you want to receive your data
The cells will be outlined in gray and the results appear in small type
Let the mouse button up and the cells will automatically fill with your data
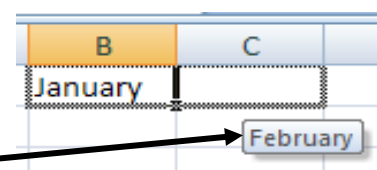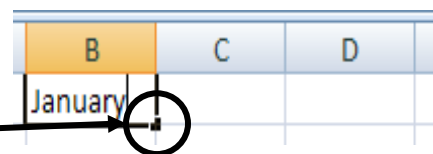
Note: **AutoFill** will also fill in a number or text sequence **you** create, or **known sequences** (for example, days of the week or months of the year)

	B	C
	January	February
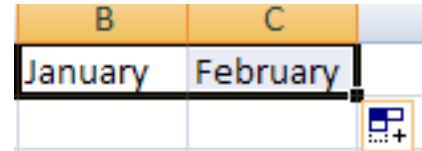
………**Practice**……..

Click cell A2. Type **Job 1**

Now use the **Enter key** to continue typing the income labels

Please type in **four types** of expenses (we're only using four different expenses in this class)

Click cell B1. Type "January." Use **AutoFill** to complete the sequence of months in Row 1, if you haven't already.

	A	B	
1		January	Febr
2	Job 1		
3	Job 2		
4			
5	Total Income		
6			
7	Rent		
8	Telephone		
9	Electric		
10	Groceries		
11			
12	Total Expenses		
13			
14	Difference		

Change Column Width

Total Expenses now hangs over our **January** column. Correct this by changing the column width (first, make sure you're in an empty cell):
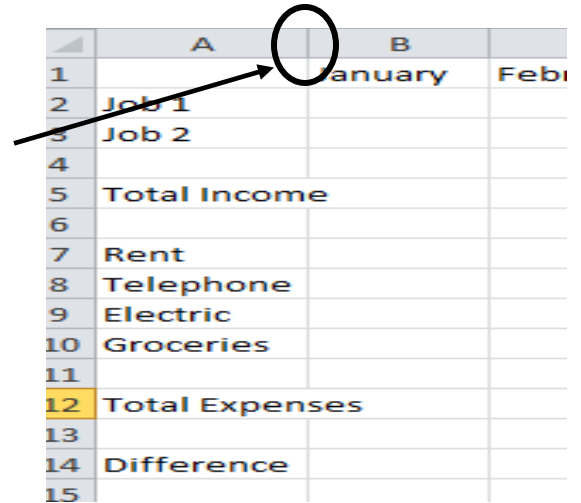Position the mouse indicator over the right edge of the column heading. (The **column heading** is between the letters at the top of the column.) You will know you're in the right place when the cursor appears as such:

↔

Click and hold the mouse button, dragging the column edge until the dotted line displays the column width you want.
OR
Position the mouse indicator over the right edge of the column heading and double click.

	A	B	
1		anuary	Febr
2	Job 1		
3	Job 2		
4			
5	Total Income		
6			
7	Rent		
8	Telephone		
9	Electric		
10	Groceries		
11			
12	Total Expenses		
13			
14	Difference		
15			

Format Cells (for numeric values)

REMEMBER to select the cells you wish to format FIRST. Since we're entering data into cells B2 to D14, we will use the mouse. Your spreadsheet should look like this:

| A	B	C	D
	January	February	March
Job 1			
Job 2			
Total Income			
Rent			
Telephone			
Electric			
Groceries			
Total Expenses			
Difference			

Once you have selected the proper cells, go to
the **Home** Tab, find the **Cells Group**, and click
Format.
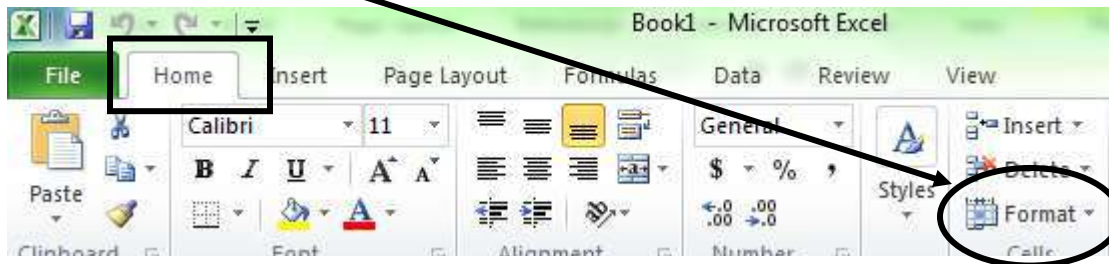
Click **Format Cells** at the
bottom
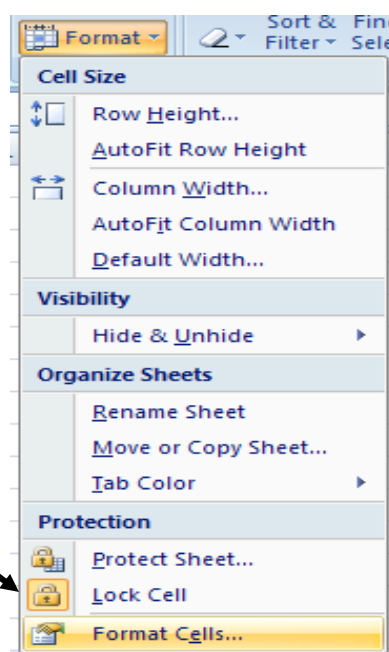
In the **Format Cells** Dialog box, select:
Number – click on the word (under Category)
Use 1,000 Separator – click checkbox
Red (negative numbers) – click on the red
colored number
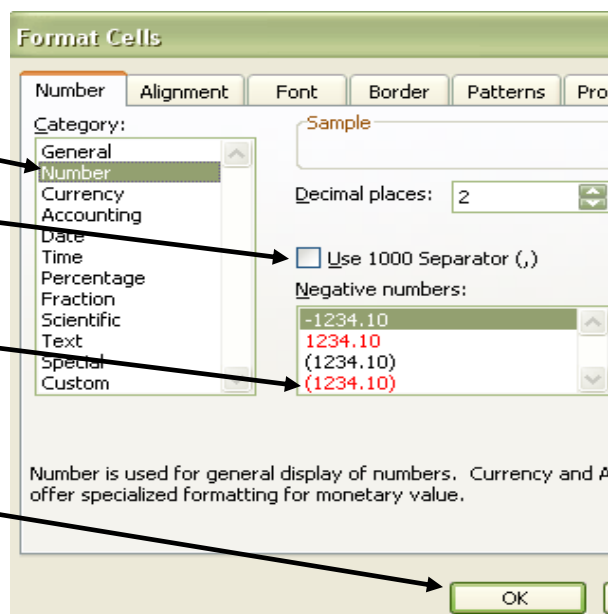
Click **OK**

Enter Numeric Values (Expenses Only)

As we look at our example budget, we may quickly note that some expenses are in a monthly format, while others are generally weekly. **Rent**, **Telephone**, and **Electric** bills are usually due **once a month**, while **Groceries** may be a weekly or biweekly expense.

To account for this, we may enter the numeric values for **Rent**, **Telephone**, and **Electric**.

Use the **Tab** and **Enter** keys to move from one cell to the next.

Note the formula bar – it displays one number for each cell (**B7** is **900** and nothing more). Please enter values now. **Leave Groceries blank.**

	B7				fx	900
	A	B	C	D		
1		January	February	March		
2	Job 1					
3	Job 2					
4						
5	Total Income					
6						
7	Rent	900.00	900.00	1,250.0(		

Formulas

There are many different kinds of formulas. **ALL** formulas in Excel begin with an **equal sign (=)**.
We will enter formulas **manually** (meaning we won't use the Formula Wizard).
We will create several simple formulas. These formulas are the building blocks of every other one you may use in Excel, including:

Adding **numbers** (starting with our **Groceries** expense and moving to **Job 1** and **Job 2**) (Cells B10, B2, B3)
Using the SUM formula with **cells** (not numbers!) (Cells B5 and B12)
Using a subtraction formula (with cells) (Cell B14)

Formulas with Numeric Values – January only

Remember to type the equal sign ("=") in front of all formulas!

We'll practice with **January** together; you may move on to the other months on your own in class.

We can use Excel to account for weekly expenses, even in the monthly format of our budget, by using an **addition formula with numbers**.
For each grocery expense, we see a string of numbers added together in the formula bar, NOT a single number.
So in our first **Grocery** cell, **B10**, we see:
=80+56+102.34+42.35

	fx	=80+56+102.34+42.35
B	C	D	E
January	February	March	
come			
900.00	900.00	1,250.00	
ne	125.00	135.00	450.32
560.23	400.85	235.85	
es	280.69		

Remember, you may simply take your weekly shopping receipts and add them together by:

Clicking once on the cell
Clicking once in the formula bar
Typing in a **plus sign** and the **amount spent** on groceries that week

Perhaps we had a New Year's party and needed to account for an extra grocery trip. We would click on cell B10 and add the new expense. Our formula would add it together:
=80+56+102.34+42.35**+92.75** (displaying **373.44** in cell B10)

No need to wait until the end of the month! Excel will add, subtract, multiply, or divide any numbers and display the result in the cell you choose.

SKIP UP TO JANUARY JOBS (Income) (we'll cover **Totals** later)

Our **jobs (income)** may be tallied in the same manner. Most people are paid weekly or biweekly. To achieve a "monthly" format, we may simply create a simple addition formula in cell **B2**:
=250.23+250.10+213.62+200.01
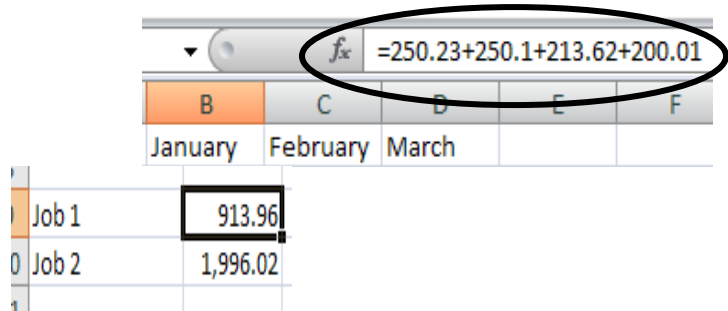
Again, the results will display as a single number in cell B2. You will see the formula in the formula bar. Please create another formula for Job 2 in **January only** (you may practice the rest later)

Formulas with Cell Values – January only

Creating formulas with numbers works well, as long as there's a small amount (as in our example) and only one cell to deal with. Some formulas work better based on **cells** rather than individual numeric values. Using **cell references** instead of "hard" or unchanging numerical values allows us to correct mistakes, add numbers, add cells containing other formulas, or even add rows or columns and Excel will **automatically correct** any formula containing those specific cell references. This is the fun of using the spreadsheet!

In our example budget, the **totals** and **differences** are easily calculated using built-in Excel formulas. Remember, there are no spaces in any formula and capitalization does not matter.

Excel uses the following:

= – remember all formulas start with the equal sign
FORMULA NAME – we will use the SUM formula with cell references to get our answer (totals)
(– open parentheses tells Excel that a cell reference follows – "B3" as an example
: or **,** – "through" colons tell Excel to see the reference as a group, commas or math symbols indicate non-continuous cell references **You may also use math symbols (+ - * /) for non-continuous cell references. We'll see this in the difference formula**
) – closed parentheses tells Excel that the cell reference has ended

EXAMPLE FORMULA: =sum(b2:b3) is read in "English" as follows: "Equal sign, sum, open parenthesis, b2 through b3, close parenthesis"

Look at the following examples for January:
For **Total Expenses**, our formula in cell **B12** will be as follows:

=sum(b7:b10) Note the equal sign, name of formula, and continuous cell reference – with the parentheses and colon. We also see a blue square around the cells being added. This is a nice visual reference we can use to be sure we're adding the right numbers.

Once we press the Enter key, we see the formula in the formula bar and the answer displayed in the cell itself.

7	Rent	900.00	90
8	Telephone	125.00	13
9	Electric	560.23	40
10	Groceries	280.69	
11			
12	Total Expenses	=sum(b7:b10)	

January's **total income** is in cell B5:
=sum(b2:b3)

COUNTA

	A	B	Feb
1		January	
2	Job 1	913.96	
3	Job 2	1,996.02	
4			
5	Total Income	=sum(b2:b3)	

Formulas – Mixed (Cell References and Math Symbols)

The **difference** formula is a combination of cell references and math signs:
=(b5-b12)
This takes into account non-continuous cells and allows Excel to correct the answers if needed.

f_x	=(B5-B12)
C	D

14	Difference	1,044.06
15		

Once the difference formula is in place, change **any** number (including any number we entered in the **Grocery** formula) in the January column – if you've entered the formula correctly, your answer, in cell B14, will change!

…….Practice…….

Please use the remaining class time to practice creating formulas for February and March. Remember to change your cell references as you create the totals and differences!
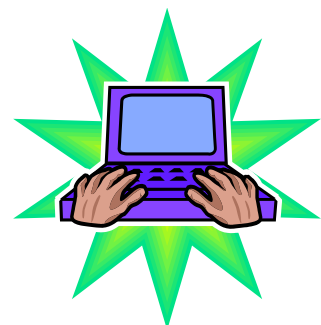
Resources
These items are available in the NIOGA Library System!
Contact your local library for assistance!

Call Number	Author	Title	Date
005.54 HARV	Harvey, G	Excel 2010 for Dummies	2010
005.369 MCFE	McFedries, P	Teach Yourself Visually: Excel 2010	2010
005.446 RATH	Rathbone, A	Windows 7 & Office 2010 for Dummies	2011
005.369 SHOU	Shoup, K	Office 2010 Simplified	2010
005.54 SYRS	Syrstad, T	Using Microsoft Excel 2010	2011
005.369 WEVE	Weverka, P	Office 2010 All-in-one for Dummies	2010

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