Excel 2010 - Part I: Getting Started

By Joseph F. Lomax, Wayne Pearson, ENS Peter Ronald Bleday and John Schultz; all of the Chemistry Department, USNA.

If you work with both your browser (Internet Explorer) and the spreadsheet file (xlsx) open at the same time, you might find it easier to follow the instructions. If you are not comfortable doing this, just print out the Web file and use it off of paper.

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I. Introduction

What is Microsoft Excel 2010?

Microsoft Excel is a spreadsheet program. The version covered in this tutorial is Excel 2010. Excel 2010 is slightly different than Excel 2007 and quite different than Excel 2003. The function of a spreadsheet is to store and manipulate data, in particular numerical data. Once this is done, this data can be output in various useful forms such as tables and graphs. Though originally made for economics and business, spreadsheets are now widely used in scientific and engineering applications.

Why is spreadsheeting important to you?

As computer programs go, spreadsheets are not particularly fast number crunchers, and the programming you can do with them tends to be fairly elementary. However, when dealing with computers a large part of your time is spent not on crunching numbers or programming, but on formatting your output. This is where spreadsheets work particularly well. They are capable of taking your data, performing mathematical manipulations, and making a clear presentation of the data in graphical form. Thus, they provide a convenient method for analyzing all types of data (financial, inventory, laboratory, etc...) and producing high quality graphics. In addition, if you desire, you are able to make a 'quick and dirty' graph to check on the data input, the quality of data, and the strength of your mathematical relationship.

You will find that spreadsheets are often used in the Navy. As a JO, you might find that you are called upon to use a spreadsheet for training records, inventories or as a division officer's notebook. Those of you who are exploring engineering careers might find this as a frequently used tool.

EXERCISE 1 : Starting the Program

The first step in learning to use your new software is to start the Excel Program. You launch Excel by 1) SELECTING the Windows **Start** button; this will bring up a set of choices in a menu. 2) Drag your cursor over, **All Programs**. Another menu will appear to the right. 3) Drag your cursor over to **Microsoft Office 2010** and SELECT **Microsoft Excel 2010.**

Note that each file made by Excel 2010 has the extension **.xlsx** while each file made by Excel 2003

has the extension **.xls**. While Excel 2003 is now uncommon, you may need to save your Excel files in 2003 format if you will be sharing it with a person who still has Excel 2003 (for example your instructor). In this tutorial, we will describe files, as 'xls files' even though you may be saving them as 'xlsx files'.

The initial xls window may not fill your whole screen. This size is very useful if you want to use more than one application simultaneously (such as a Web Browser), however, often, it is desirable to have a larger working window (also called working environment) in Microsoft Excel.

The size of the working window is controlled by two sets of three small buttons on the top right of the window (circled with red and yellow). The ones on top (the Title Bar) control the whole Microsoft Excel program environment and the ones on the line that starts on the far left with File (the Menu Bar) control the environment of the particular xls file. If you have more than one file up at a time, each will have these three buttons on their own File Title Bar.
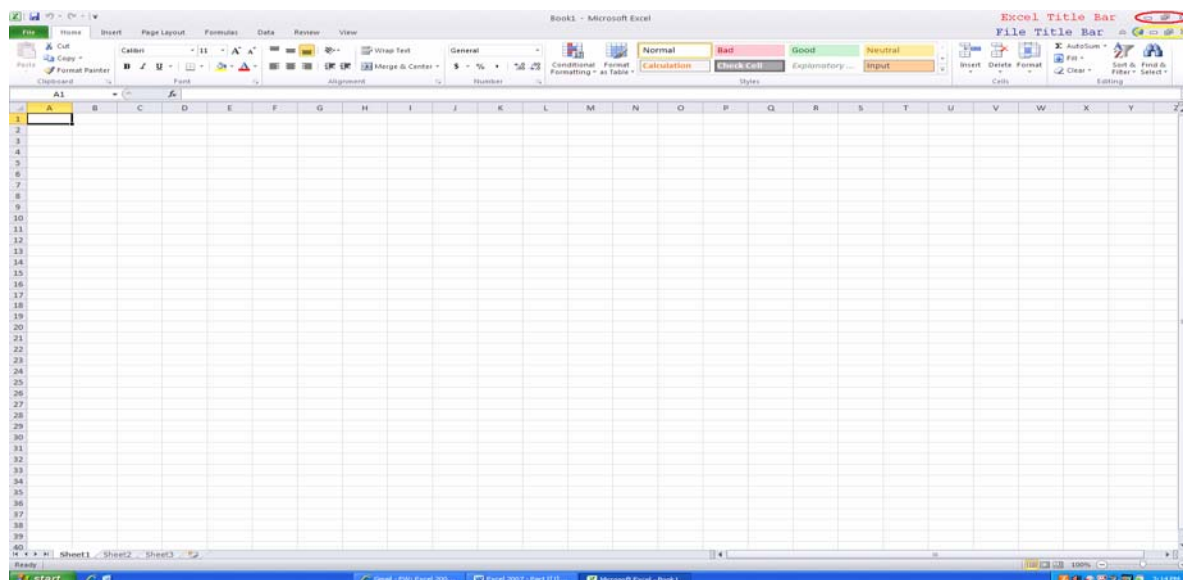
The left-most looks like an underline symbol. If you click on the box, the program/file gets small. This is called minimizing. From the Title Bar, the underline symbol minimizes *the program* to the Task Bar on the bottom of the screen. The name of the task always resides there even while the program is large. You will see it as the name of the program (Microsoft Excel) and a shortened version of the file name. When minimized, by SELECTING this Task, it will return the xls back to its previous size. This is called maximizing. Try minimizing, then maximizing the program.

If you minimize the file by SELECTING the underline on the second line (or the File Title Bar), this minimizes *the file* to a Task Bar within the Microsoft Excel program, this time as just a shortened version of the file name. Try minimizing, then maximizing the file.
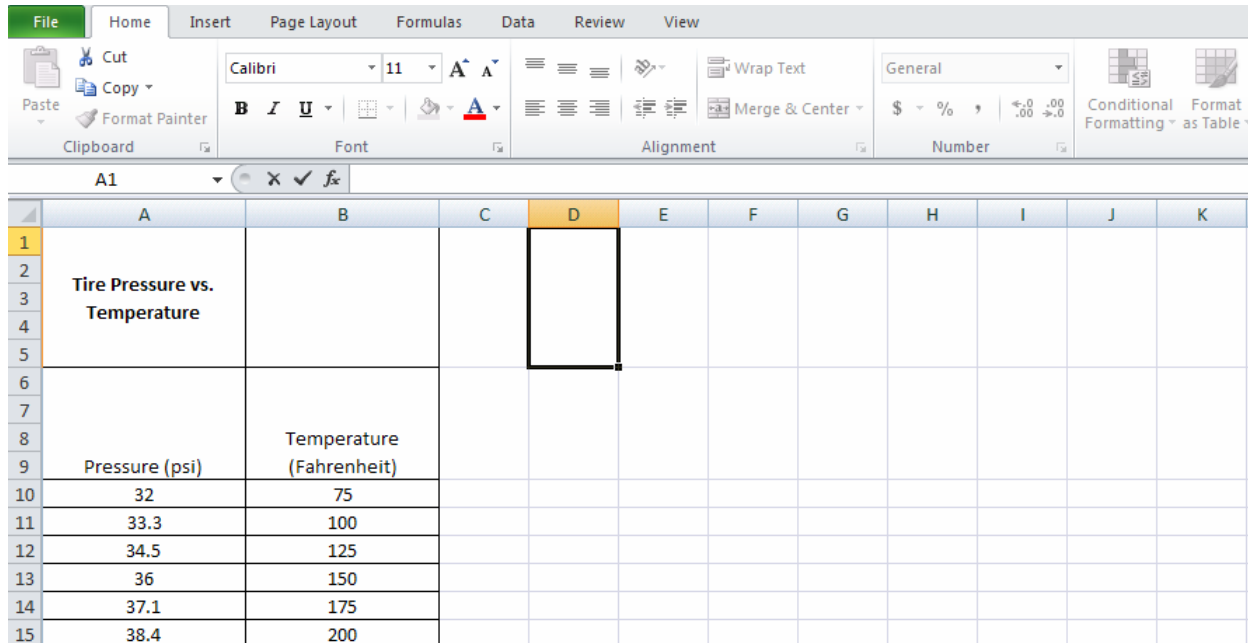
The center symbol is either a square with a heavy line on the top of the box or two smaller overlapping versions of this box. If the single box shows, SELECTING it will make the environment larger. If the two boxes show, SELECTING it will make the environment smaller. It is a toggle; give it

a try back and forth.

If you were to SELECT the 'X' on the right, the program would close. It is unnecessary to try this one right now. If your file has been changed since it was last saved, it will ask you if you wish to save the changes. If you have saved it or have not done anything to the file, it will close the program immediately.

Exercise 2: Entering Information

The following is data from an experiment performed to examine how the pressure of an automobile tire changes as a function of the temperature of the tire. Type the Data into your spreadsheet as shown.

Part A

Each spreadsheet program creates a 'Book' which is made of a number of 'Sheets'. The default has Sheet 1 - Sheet 3 available. You will be inputting data into what are called cells. Cells are addresses for information. In a spreadsheet book these address are defined by three parameters: 1) the sheet, 2) the column and 3) the row. When you open a new spreadsheet, it will default to Sheet 1, cell column A, cell row 1. In the image above, the cell D1 is boxed and is identified by its address just above the spreadsheet on the left. The book is on Sheet 1 (you can see the button sheet 1 highlighted on the bottom). There is a spreadsheet on each of the three sheets. Each spreadsheet has unlimited columns and rows, and though currently there are only three sheets, as many as you want can be added.

In these exercises, we will be working on only sheet 1. Assume that all cell address refer to this page. First, we will create labels in order to make your spreadsheet easy to interpret. SELECT the appropriate cell using your mouse and type in the labels

If you are within a cell, if you just start typing and the label will appear in the cell. It will not record

what you type until you tell it you are done. You can do this by 1) SELECTING another cell with your mouse. 2) You can hit the 'Enter' key on your keyboard. It will records what you have typed, and will move you to the cell just below in the same column. 3) Hitting an arrow key will record and move you to the corresponding active cell. If you type "Tire Pressure vs. Temperature" into cell A1 then hit the 'Enter' key, you will be all ready to type "Pressure (psi)" into cell A2.

Cell Label

A1 Tire Pressure vs. Temperature

A2 Pressure (psi)

B2 Temperature (degrees Fahrenheit)

Note that some labels appear to extend over more than one cell. Navigate to cell B1 by SELECTING it with your mouse or using the arrows on your keyboard. Try entering your alpha code into B1. You will notice the remaining digits overwrite the A1 entry in the spreadsheet area. You may wonder if your typing into cell B1 has erased some of cell A1. Arrow over to A1. You will notice that the whole text of the label shows again. You never lost it; it was just hidden on the spreadsheet window by cell B1. If you move back to B1 and press the Del key, the alpha code will be removed. As cell B1 is again empty, the full contents of cell A1 will reappear in the window.

Part B

Place the pressure data in the A column starting at cell A3. Remember, you can record the data and move down, both, by the 'Enter' key. Place the temperature data in the B column starting at cell B3.

Exercise 3: Formatting

Note that the trailing zeros have been dropped from some of the data entries. In order to show these zeros your will need to change the numeric format of the data blocks.

Part A

Highlight the block of data from A3 to A8 by placing the mouse cursor on A3. Hold down the left mouse button and DRAG the cursor down to A8. The block of data should now be highlighted.

Part B

Under the **Home** tab to the far left, you will find "Cells". Within Cells, go to the **Format** function. As shown below, a menu drops down, and at the bottom of that menu is **Format Cells**. The window that pops up is titled **Format Cells**. Since you have highlighted the set of cells from A3 to A8, inclusive, on sheet 1, the changes you make will only affect these cells. The other way to get to this menu is to highlight the entries hold your cursor over the highlighted block and click the RIGHT mouse button. A menu should appear. This is the Object Menu. Contained in this menu is "Format Cells". SELECT this and off you go to the same **Format Cells** menu.
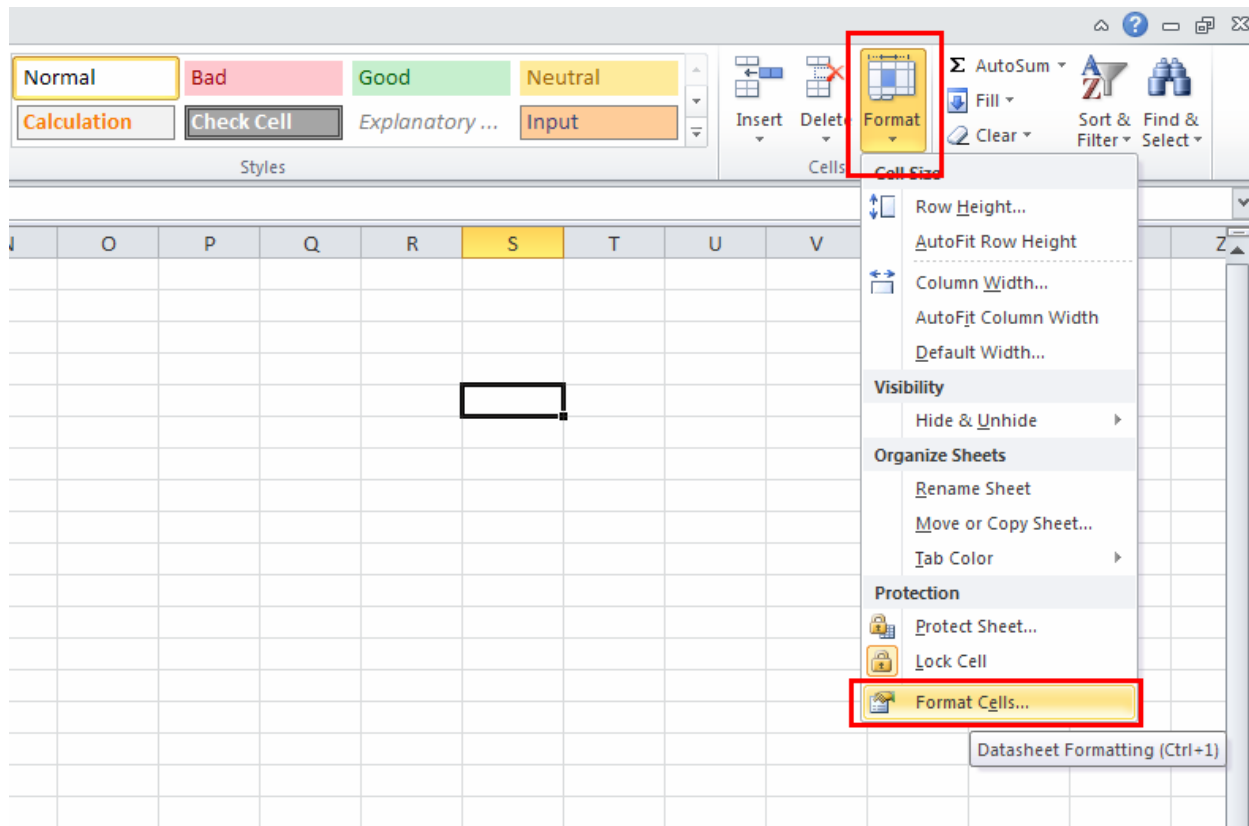
Part C

The Format Cells window has six folders with a menu on each. Each of the folders is labeled with a tab at the top. **Number** is the top or left-most folder. In this folder there is a list of categories. SELECT "Number" from this list. This will allow you to set the number of decimal places in your data. You will notice in the upper right of the **Sample** preview box is **32.00**. We wish to have one place after the decimal, so change the value of decimal places to **1** in the box that comes up towards the top on the right. This can be done by typing **1** in or hitting the down arrow to get to **1**. The preview box should now display **32.0**(see below).
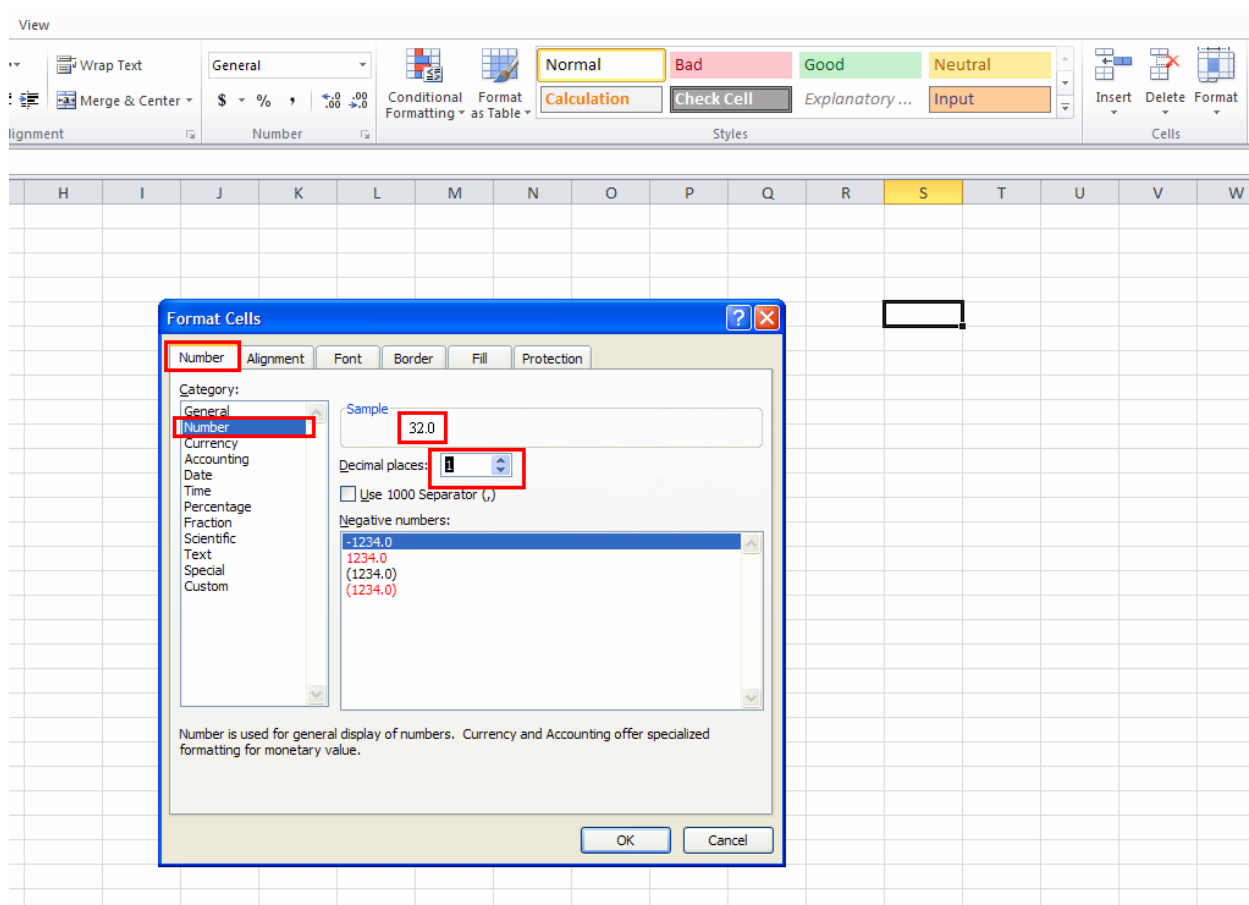
Part D

SELECT the **OK** button on the **Format Cells** menu to return to the main spreadsheet. The entries **32.0** and **36.0** are now properly displayed. Any value which is entered into this block will be displayed with one digit beyond the decimal point. This may seem an esoteric example in changing a format, but for a chemist, we are now satisfied that all of our pressures have the same number of significant figures after the decimal point.

Exercise 4: Saving a Spreadsheet

SELECT the file menu from the top left corner on the Toolbar. Select Save or Save As in the menu that appears. You will arrive at the same menu if you choose the Save or Save AS. Now, choose the **Save As** commands.

At the top it (most likely) will have: **Save File.** SELECT the box on the left labeled **Desktop**. Then SELECT the icon on the top (a yellow folder). This allows you to create a new folder. At the top give the folder the name **Chem**. Then at the bottom of this window enter the file name as "tutor1" and SELECT **Save** This is the working title for your spreadsheet book. Always change this title to something that will help you to remember what you were working on.

Note that the Notebook Title Bar (at the top of the Microsoft Excel window) indicates the filename along with the **.xlsx** extension which identifies it as an Excel 2010 file.

Exercise 5: Finding Your File

(a) If you have used the file recently, the quickest way to retrieve it is to go through File: Recent **Documents**. However, Windows will not allow too many files to accumulate in Recent **Documents**, and will purge address after a while. What 'a while' means is dependent upon usage.

SELECT the Windows **Start** icon. Select My Recent **Documents** and you should find tutor1.

(b) At the top left of the Windows environment is an icon titled **My Computer**. If you Double-click this (SELECTING twice the same icon in quick succession) you will find, among others, **(C:)**. You will find the folder **Chem** in the window that comes up, and double-clicking on it will reveal the contents. You should find tutor1.

(c) A final method of finding your file is to go to **Windows Start**. Go up to **Programs** over to **Windows Explorer**, within **(C:)**, you will find the folder **Chem** in the left-hand window. Double-clicking **Chem** , will bring up in the right-hand window that directory's contents. You should find tutor1.

Exercise 6: Closing and Opening a File

There are two common methods to close a file. In the course of closing the program, any file you have open will be closed. Or you can close a file without closing the program. These two actions are represented by the two X's in the upper right corner. The X in the very top right (in the Title Bar) will close the program, Microsoft Excel. If you have not saved the file since you have made any changes, it will ask you if you wish to save the file. The other X (in the Menu Bar or the File Title Bar) will close the file, but not the program. It will prompt you to save the file you have been working on.

Opening your file uses the same methods as finding the file. We can do this because Windows recognizes that any file with the extension **.xlsx** is a Microsoft Excel 2010 file. If we choose a **.xlsx** file, be it from **Documents, My Computer** or **Windows Explorer**, Windows will recognize that it is associated with Microsoft Excel. It will launch the program while opening the file.

Exercise 7: Turning a Data entry into a Graph in Microsoft Excel

There are two types of variables in a process. Independent and Dependent. The independent variable is the variable that is put on the X axis. In this case temperature is your independent variable. The dependent variable is placed on the Y axis. In this case pressure is your dependent variable.

Caution #1: Beware: Microsoft Excel 2010 has a decided preference for having Independent /X-data (that is data that will be plotted along the x-axis) to the left of the Dependent/Y-data. So even though one says, Y vs. X (in our case Pressure vs. Temperature), Excel 2010 gets fussy unless you input your data X to the left, Y to the right, in our case Temperature to the left and Pressure to the right. So we are going to use this opportunity to have you move the data and headings.

SELECT A2:A8. There will be a thick-lined box around the data. Move your cursor over the thick line and crossed double-arrows will appear. If you SELECT at this point, you will be selecting the

whole range, not just one cell. As you move your cursor, the whole range will move, so set this data off to the right side, for example in the D column. SELECT B2:B8, grab it by putting your cursor over the edge and drag it to the A column and drop it there by releasing the mouse button. Now take the Pressure data which you put in the D column, and move it to the B column. Excel 2010 may be unaware of its blissful state, but it is now blissfully unaware that it is ready to graph.

SELECT datain A3:B8. This takes care of both the X-axis data (in the column to the left) and the Y-axis data (in the column to the right). Just to the right of the Home tab, SELECT the **Insert** tab at the top of the xls window and click the **Down Arrow** underneath any of the chart icons (column, line, etc). Then click **All Chart types.** Now you are in the **Chart Wizard** Window (see below). This window allows you to chart your data.
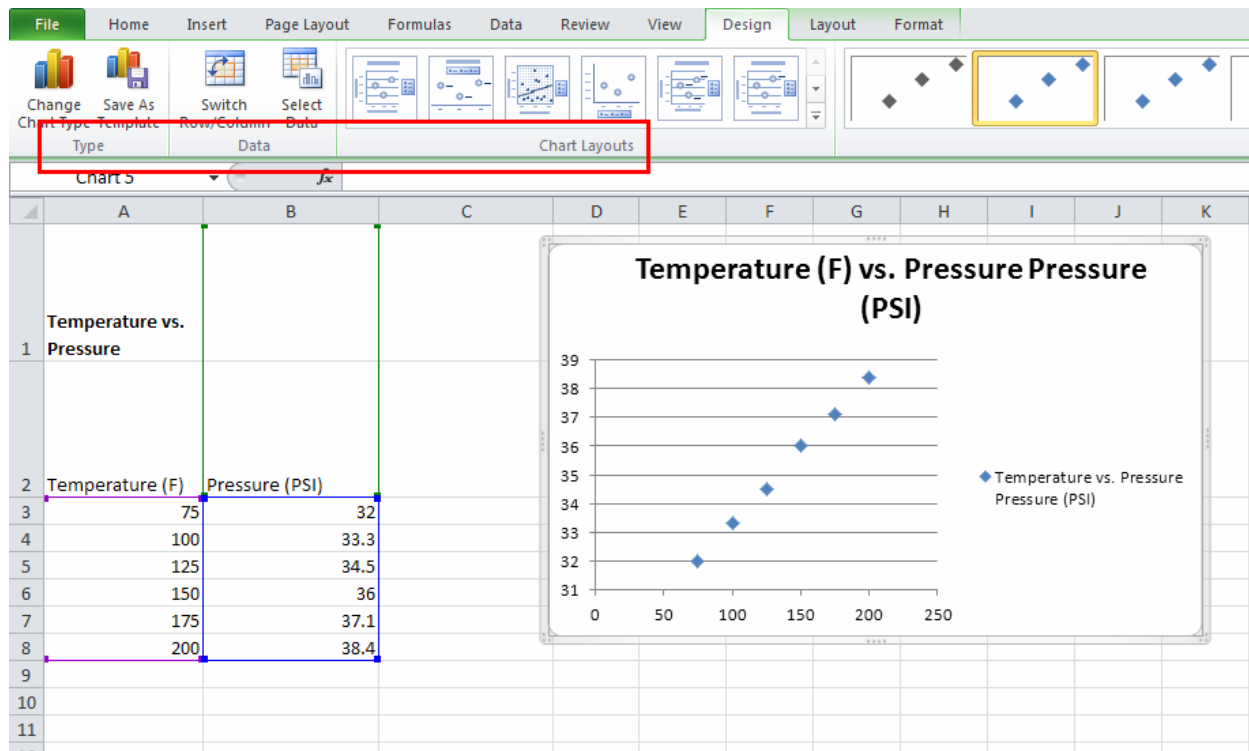
Step 1: For this particular set of data we want an **XY** chart. SELECT the chart **XY(scatter)** from the menu. Select the one with points only, do not pick the one with lines**.** We can add lines at a later date.

Caution #2: Beware: the default **Chart Type** is NOT what we want. We want an **XY** Chart.
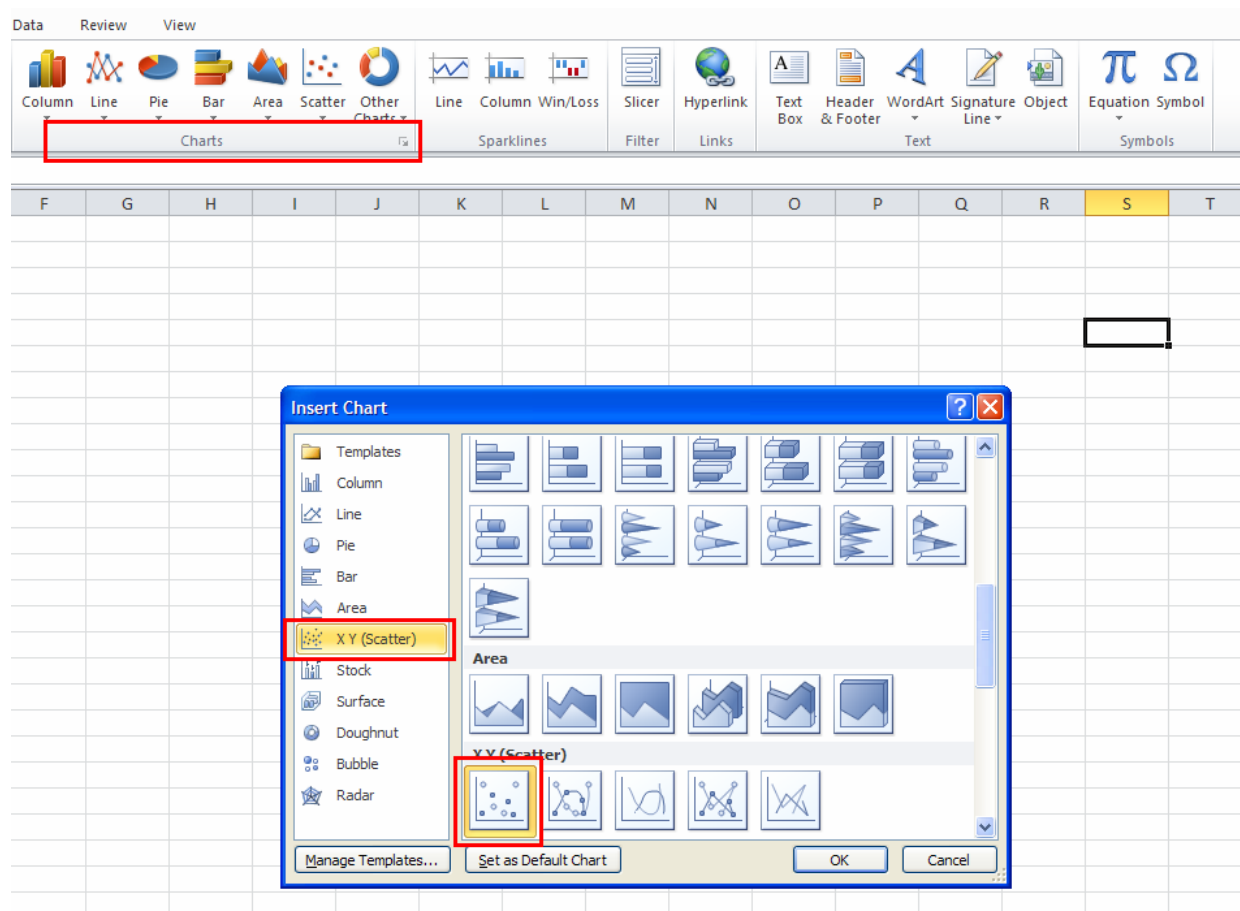
You should immediately see a chart pop up. The chart should look like what you see below.

To alter the chart you must first left click on the chart. Once that is done find the **Select Data** option on the top toolbar. From this option you can change your data ranges or change your series using the Edit menu. You know all that hassle we went to to keep the X-axis on the left? We could have changed it all in this Edit menu, but we will leave that method to you to figure out in your idle moments.

A series is a set of data that corresponds to other data with it. For example you have two series of data in this example. The first is your temperature series which is A3 to A8. The second is your pressure series which is B3 to B8. At the moment, you have only the pressure data selected. To SELECT temperature data as well, go to **Select Data**, then SELECT **Add Series.**

Exercise 8: Modifying a Graph

Excel gives you the opportunity to set your own graph size rather than insisting that you use their defaults. The scale on this graph is a little clumsy, the y-axis starting at 31 and ending at 39. Starting at 30 and going up by 2's to 40 would give a more pleasing look. As spreadsheets are all about ease of formatting, we might as well make the graph look good. We can adjust the attributes of the Y-axis and, later, the X-axis by calling up a window for each. We call up the Y-axis window by putting our cursor over the numbers along the Y-axis in the graph and clicking on the right button on the mouse. You will get a drop-down menu with "Format axis" at the bottom.
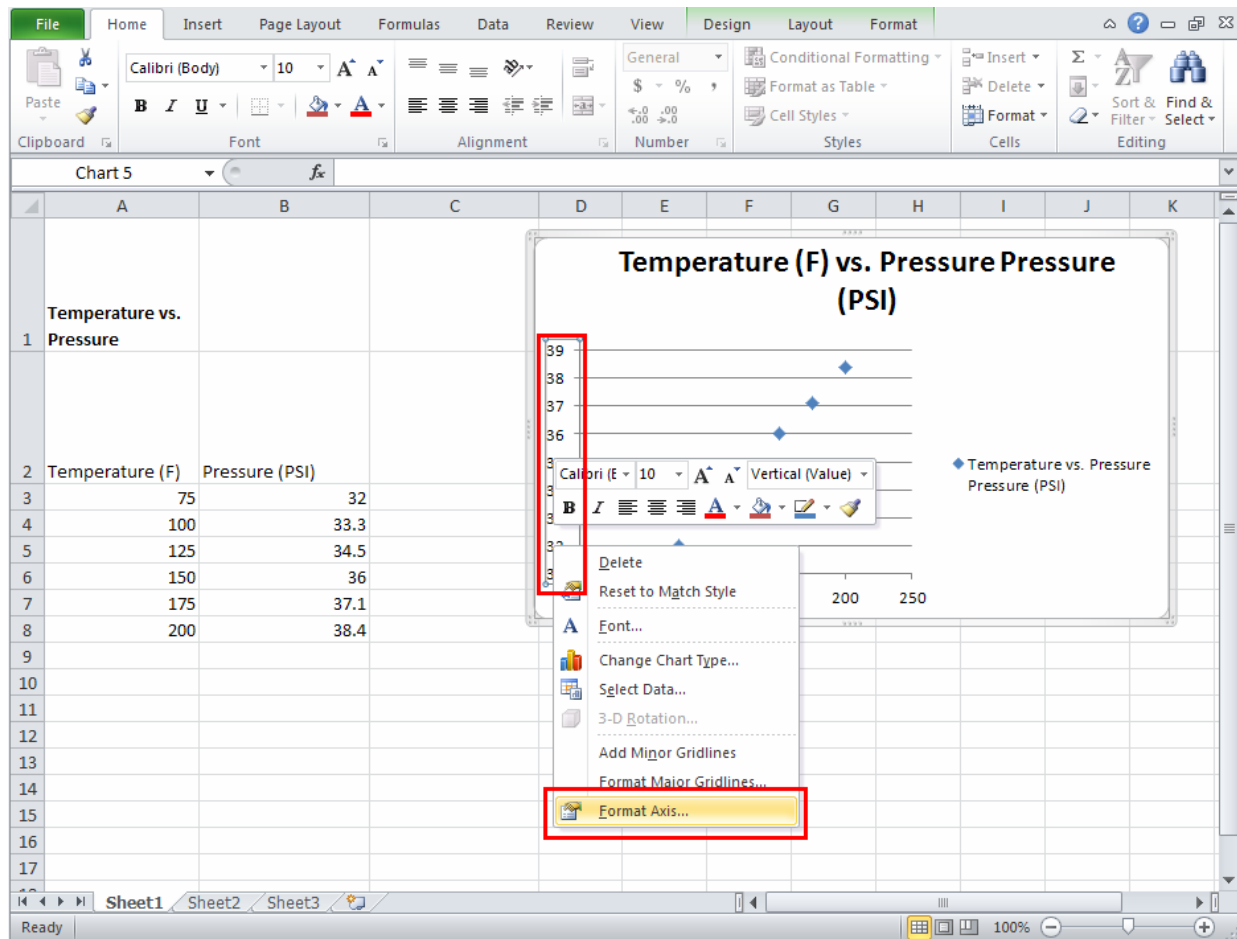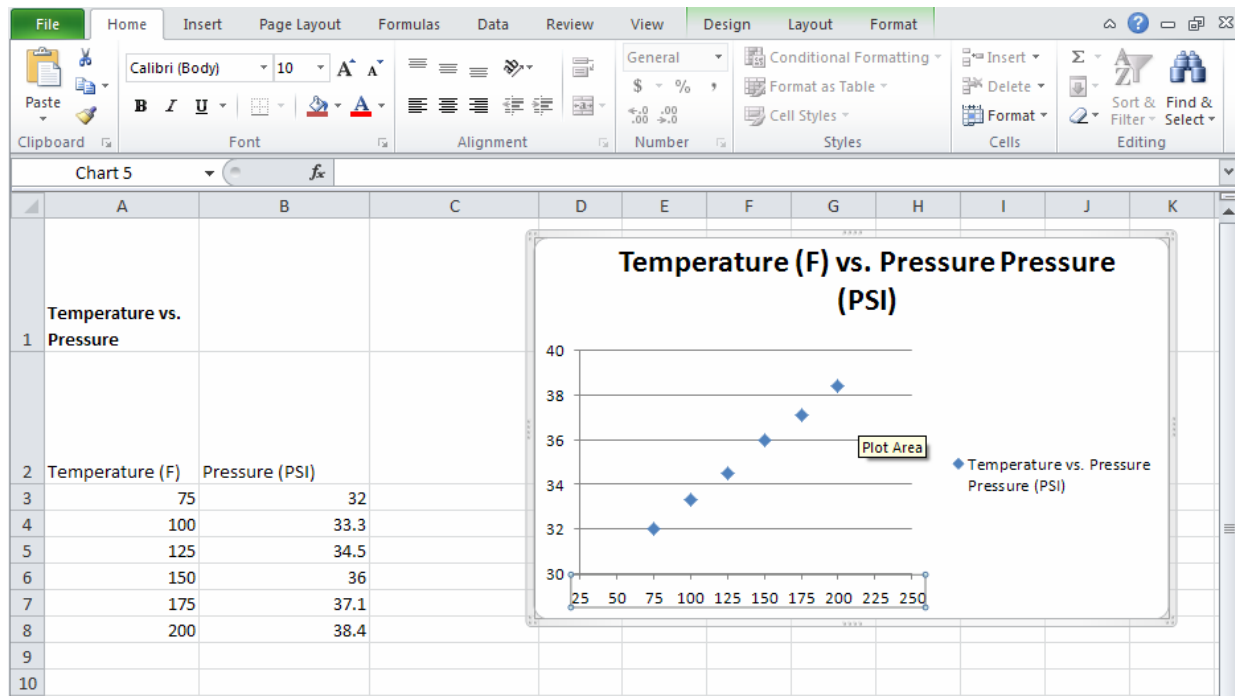
SELECT **Format Axis**. A window will come up with a number of options (see below circled in red). SELECT the **Axis options** tab. To change the minimum, first SELECT the **Fixed** (for "fixed axis" as opposed to an axis automatically chosen by the program), then change from 31 to 30. In the same manner, change the maximum from 39 to 40, and the major and minor units to 2 (area circled in blue). SELECT **Close**.

In the same way, move your cursor over the numbers on the X-axis and right-click. SELECT "Format axis" and modify the minimum to 25 (remember to SELECT **Fixed)**, the maximum to 250, and the major and minor units to 25. SELECT **Closed.**
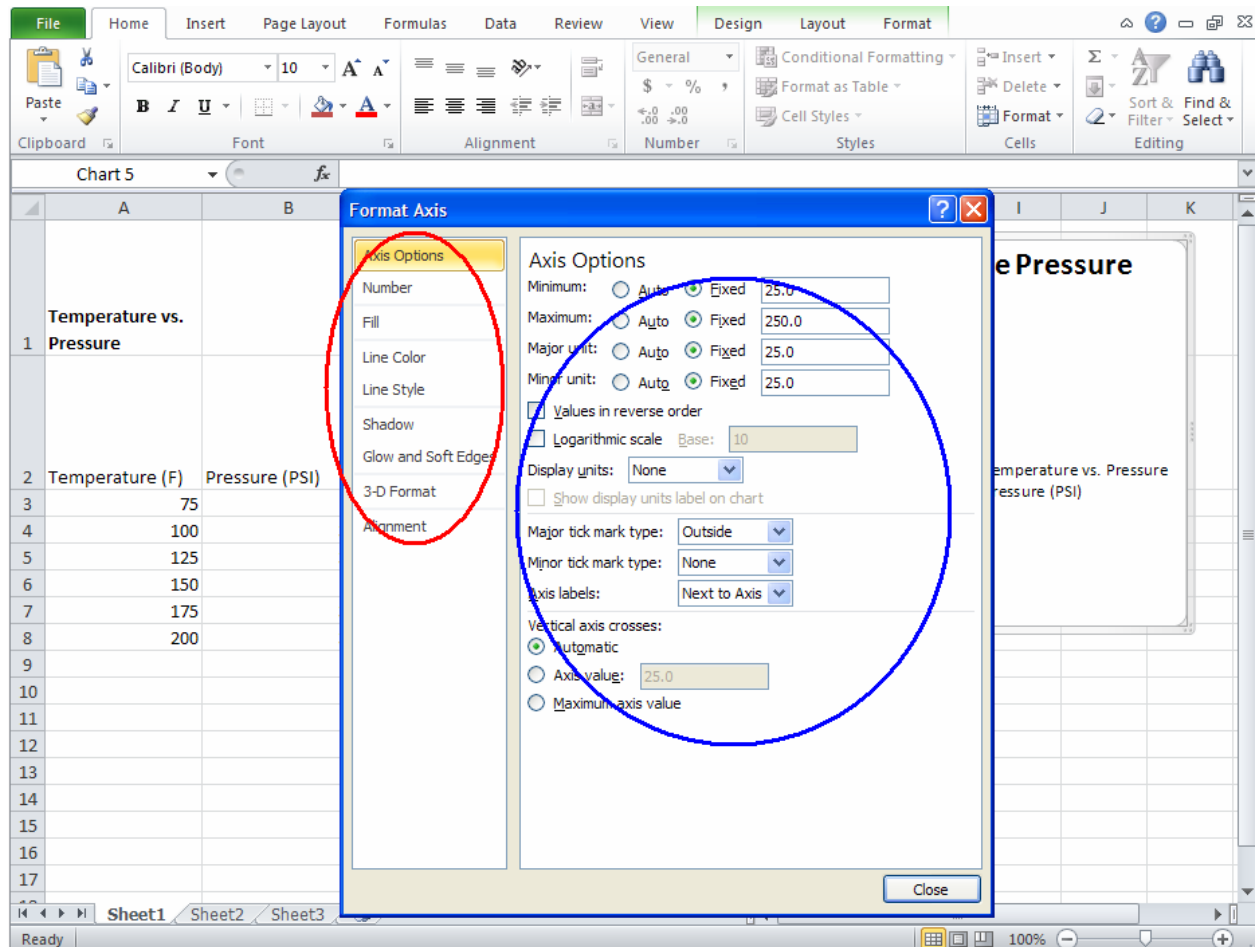
The final graph with no line and the modified X-axis and Y-axis scales should look like:

Chart 5

	A	B	C	D	E	F	G	H	I	J	K
1	Temperature vs. Pressure										
2	Temperature (F)	Pressure (PSI)									
3	75	32									
4	100	33.3									
5	125	34.5									
6	150	36									
7	175	37.1									
8	200	38.4									
9											
10											

Temperature (F) vs. Pressure Pressure (PSI)

◆ Temperature vs. Pressure Pressure (PSI)

Exercise 9: Printing

If you want to save your printer cartridge a bit, you can take away the background shading in the plot area. Having shading does look pleasant and you can make quite a number of effects, but it is a cartridge killer. To remove the background shading, right click on the background and a menu will come up. SELECT the **Format Chart Area** option and a window will come up. On the right side is **Area**. Change it from **Automatic** to **No Fill**.

To print the graph and spreadsheet data, highlight the spreadsheet data and the cells behind the graph. If you print this now, it will print both the spreadsheet and the graph. The easiest way to access the **Print** window is to use the downward triangle on the top left corner of the window. Click the triangle, and then click **Print Preview and Print.**

If you want to fit your graph and spreadsheet onto one printed page, in the Print window, select the Scaling tab and select **Fit Sheet to One Page**. This will force your output to one page. Sometimes you may have to change the orientation (Landscape vs. Portrait), margins, or scaling to ensure the printout is legible.
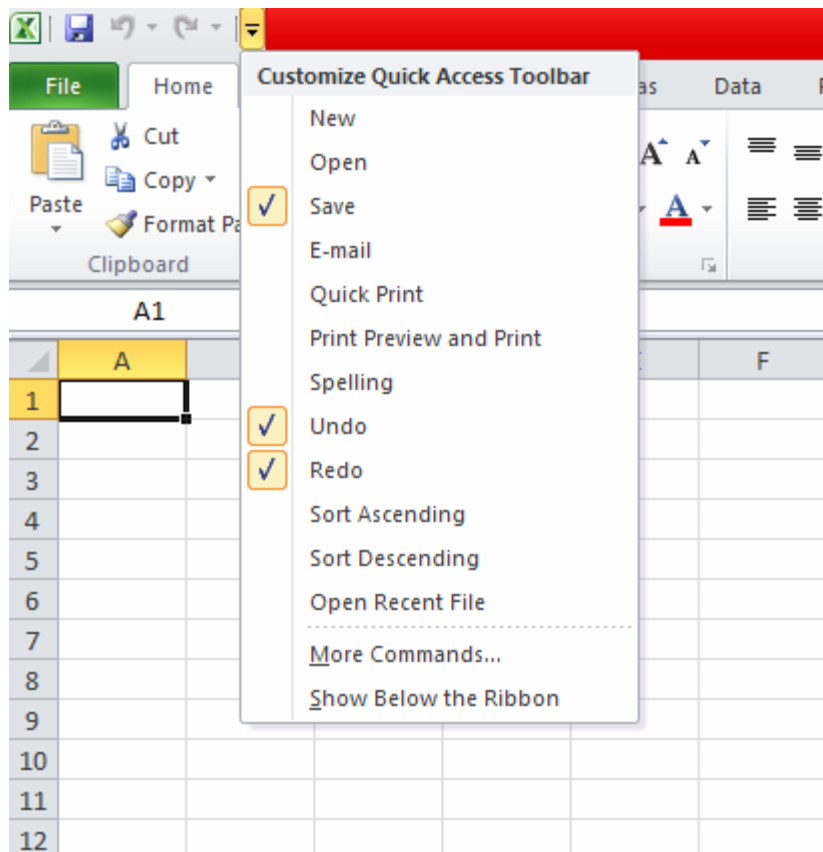
When you are ready to print, press the **Magnifying Glass** icon and print your document.
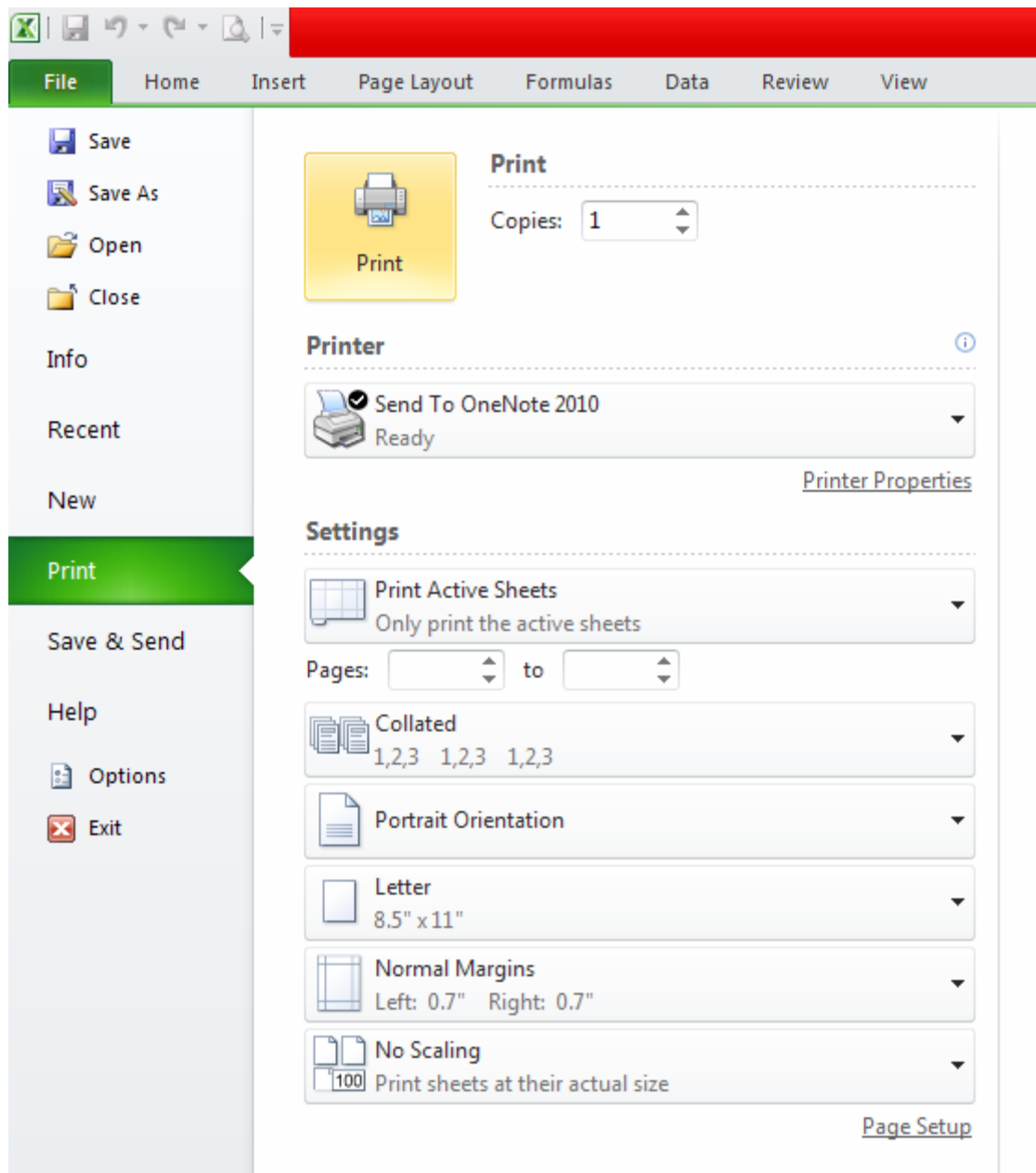
A **Print** window will appear. For our purposes, you can SELECT the **Print** command. If you printer is properly installed, on and functioning, you will get a printout. You can play with these and other parts of the **Print** window at your leisure.

This is the end of this Quick Start. You may want to save your file and exit Microsoft Excel.

This page was last revised on 23 Aug 2010.

If you have any problems or questions about the program, contact [Joseph F. Lomax](#).