

How to use Microsoft Excel 2007

Microsoft Office Excel is a powerful tool used to create and format spreadsheets. Spreadsheets allow information to be organized in rows and tables and analyzed with automatic mathematics. Spreadsheets are commonly used to perform many different types of calculations.

If you have any questions, feel free to ask a TLC staff consultant for assistance during staffed hours at your center.

In this tutorial, learn how to:

- Navigate Cells
- Manipulate Data
- Use Formulas and Functions
- Create Charts and Tables



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Getting Started

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Definitions

Workbook vs. Worksheet – when you open Excel, a new file is created called Book 1 (until you name it differently). It is called “Book” because it is a Workbook that is initially made up of three Worksheets (accessible from the tabs in the lower left corner of your excel window - see Fig. 1). Think of a three ring binder with three sheets of paper in it. As with a binder, you can:

- **Add sheets to your Workbook:** Insert > Worksheet, or click on the new worksheet tab to the right of the tabs for your existing worksheets
- **Delete worksheets:** by right-clicking on the tab of the worksheet you wish to delete, then selecting “delete”
- **Re-arrange them:** by clicking on the worksheet tab and dragging it to the location you desire
- **Rename worksheets:** by double-clicking on the worksheet title

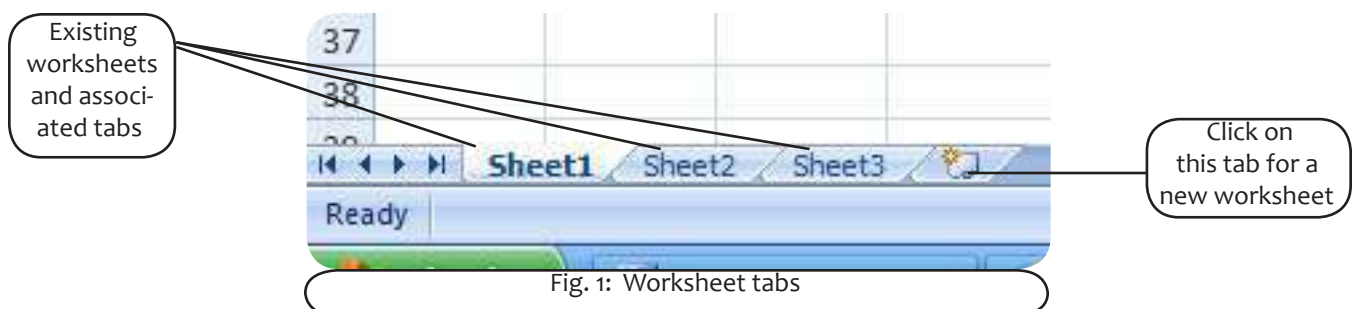
Cell – cells are the basic rectangular building blocks of a spreadsheet. They are assigned an address, generally referred to as a cell reference, according to their column and row (e.g. the cell in column B at row 3 is referenced as cell B3).

Row – rows travel horizontally and are numbered.

Column – columns travel vertically and are assigned letters.

Formula – a mathematical formula used to calculate a result based on data from one or more other cells. Often they consist of some combination of the standard mathematical operators (+, -, *, /) (e.g.: $=(A1+A5)/B13$), but they may also include functions (see below). When you type a formula into a cell, that cell will generally display the result obtained by the formula, rather than the formula itself.

Functions – pre-written formulae that perform common (and not so common) calculations, such as summation and averaging. You can combine many functions and operators in a single formula to obtain more complex results (e.g.: $=SUM(A1:A13)$).



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Ribbon

The **Ribbon**, a panel that houses the command buttons and icons, organizes commands as a set of **Tabs**, each grouping relevant commands (see Fig. 2 below). Each application has a different set of tabs which expose the functionality that application offers. For example, while Excel has a tab for the Graphing capabilities, Word does not feature the same; instead it has tabs to control the formatting of a text document. Within each tab, various related options may be grouped together. The Ribbon is designed to make the features of the application more discoverable and accessible with fewer mouse clicks as compared to the menu-based UI used until Office 2007. It is not possible to remove the Ribbon or replace it with menus with the normal Office 2007 functions. However, the Ribbon can be hidden.

*Additionally, the **file button** has been replaced by the Microsoft office sign in the upper left corner and is called the “**Office Button.**”

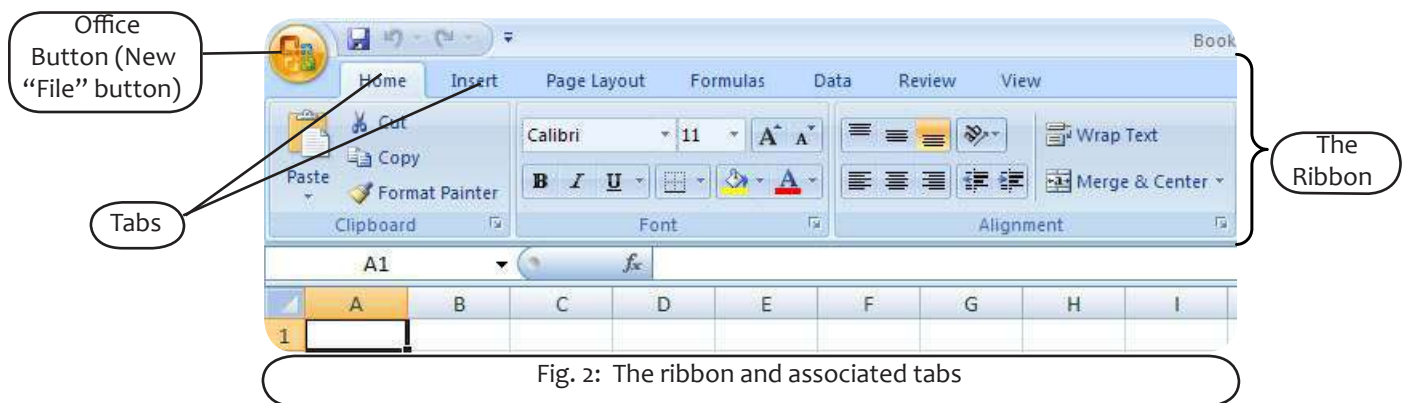


Fig. 2: The ribbon and associated tabs

Navigating Cells

<i>To select:</i>	<i>Do this (If you are left-handed use Right click in place of Left):</i>
a single cell	Left click on it
a range of adjacent cells	Drag from the first cell to the last cell, or click on the first cell, hold the Shift key and click on the last cell (scrolling if necessary)
non-adjacent cells or ranges	Hold CTRL (Windows) or Command (Mac) key and click or drag
an entire row or column	Left click on the row or column heading
all cells	Left click on the blank header in the upper left corner
the next cell to the right	Use the Tab key
the next cell down the column	Use the Enter key
the A1 Home cell	Press Ctrl + Home keys together
the last cell in a sheet	Press Ctrl + End keys together
the cells around the active cell	Press Ctrl + Shift + 8 keys together (Select Region)

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Data

Entering Data/Text

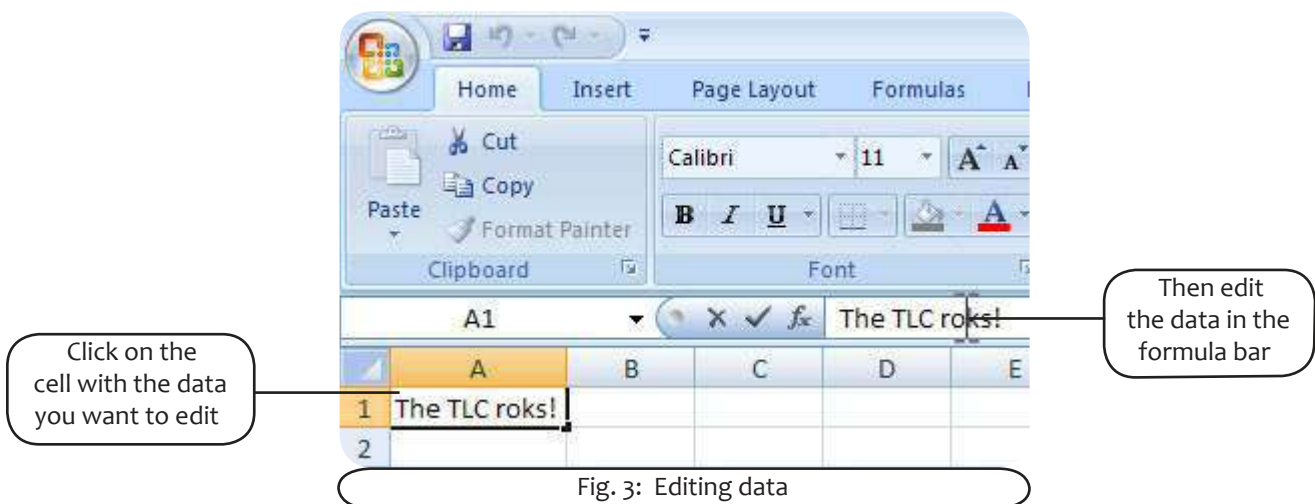
Just click on the cell and type away! You can also copy text or data from another source (a word document, another cell, etc.). Just right-click on the cell and select “Paste.” If you are working on a Mac (or for whatever reason cannot right-click), go to the “Home” tab on the ribbon and select “Paste.”

Important: if you are copying data that was produced in excel using a formula, especially if you are copying it to a different sheet or book, make sure you paste only the data, not the formula. To do this, copy the cell(s) as usual, then right-click on the cell where you would like to paste the number(s) and select “Paste Special.” A box will pop up with a number of different options. Under the Paste section, click on the bubble that says Values and then click OK. This is very important when you are transferring data from one sheet to another sheet or book, because the formula will reference cells in the new sheet that may have different numbers or no numbers at all. This will alter your data to reflect the data in the cells that the formula recognizes.

Editing Data/Text

If you want to entirely replace the data that you previously entered into the cell, just click on it and type the new data. The old data will automatically be erased.

If you want to edit data in a cell, click on the cell, then go up to the formula bar and edit the data that appears there (see Fig. 3). If you want to delete part of your entry, just use the “backspace” key as usual. If you want to delete the entire contents of a cell (or multiple cells), select the cell(s) you want to clear and press the “delete” key.



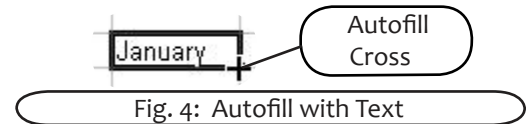
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Autofill

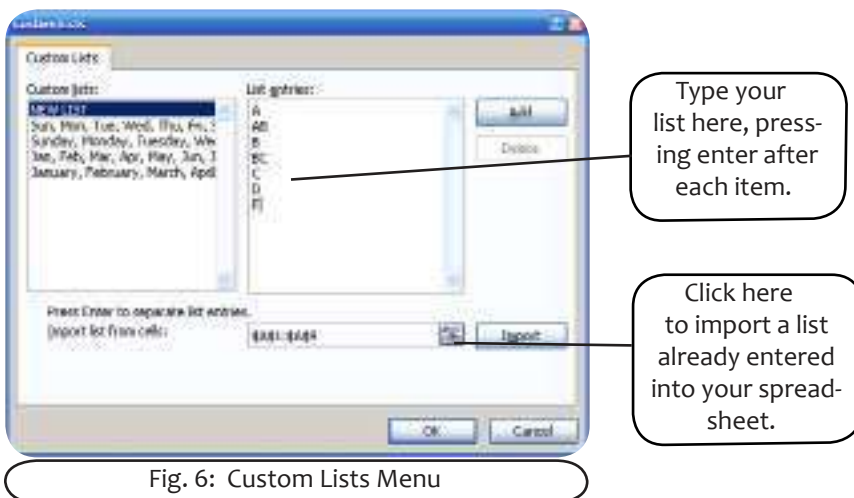
Autofill allows you to quickly fill data in a series (e.g. months, days of the week, or a numeric series) into adjacent cells.

Using Autofill with a text series

To use the Autofill function with text, type in the first word of the series (e.g. January), then rest your mouse on the bottom right corner of that cell. The cross will switch from white to black: this is the autofill cross (see fig. 4). Click and drag the series down or across the number of cells you would like to fill with this series.



Excel knows how to Autofill months (January or Jan) and days of the week (Monday or Mon). You can teach Excel to Autofill other text series. First, click on the Office Button and choose “Excel Options” in the lower right corner of the menu. In the “Popular” category (the one that appears automatically), click on “Edit Custom Lists...” (see fig. 5).



When the Custom Lists window appears, select “New List” in the column on the left (it will probably already be selected) and type your whole list in the column on the right (see fig. 6). You can also import a list you have already typed into cells by clicking on the import symbol (see fig. 6), selecting the list you wish to import, and pressing “Enter.” Click “OK,” and from now on you can type the first letter of the list, and just autofill the rest!

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Using Autofill with a numeric series

You can also use Autofill to quickly enter numeric patterns (e.g. 1, 2, 3 or 10, 20, 30) into adjacent cells.

To use Autofill with numeric patterns, enter the first two values in the series, one value in one cell and the next in the cell immediately below or to the right. Now select (highlight) both cells, release your mouse button, then rest your cursor on the bottom right corner of the selected area so you see the Autofill cross. When you see the Autofill cross, click and drag down or across the cells you want to fill, then release the mouse button.

Controlling Your View Of Data

Auto Size: You may have noticed that sometimes data extends beyond the width of the column. In order to be able to see all of the data, you must widen the column. To do this, go to the header row and place your mouse in between the columns (e.g. on the line that separates the letters A and B). You will notice that your mouse becomes a black double arrow. If you double click on this arrow, the column will automatically size itself to fit the longest string of data in a cell. However, this does not adjust automatically so you may have to Auto Size again after adding more data.

Freeze Panes: Freeze Panes is a useful feature when you are working with a large document that has many rows and columns. By freezing a certain row or column (usually the header and/or first column), you make it visible wherever you are in the document. For example, if you have a document with 100 rows, you can't see the header row when you're at cell A100. To solve that problem, click on the row below the one that you would like to freeze. To freeze the header row or first column, go to the Ribbon and click on the View tab. Then, click on the arrow below the "Freeze Panes" button and select "Freeze Top Row" or "Freeze First Column." By selecting "Freeze Panes," you can freeze all rows and columns above and to the left of the cell you have selected.

Reveal Formulae: If you want to see and/or print all of the formulae in a spreadsheet (as opposed to the values) there is a really handy shortcut. Simply press Ctrl + ~. To return the view to displaying values, press Ctrl + ~ once again.

Sorting and Filtering

Sorting data is simply a way of automatically re-ordering rows on a spreadsheet to put them in a more useful order. For instance, you might sort an address book alphabetically by last name, or a list of items you'd like to buy from most expensive to least expensive.

Start by selecting the data you want to sort. It's important to select all the columns in the data, not just the column you want to sort by. For instance, if you have a list of items in one column, with the prices in the next column, you would select both columns before running the sort. If your sheet has a "header row" at the top with labels for your columns (like "name," or "price") it's a good idea to include that row in your selection as well, as you'll see in a moment.

Once you have your data selected, click on the Data tab in the ribbon and then select Sort. This will cause the sort window to appear (see fig. 7). If your data has a header row, be sure "My data has headers" in the upper right corner is checked. Excel will then use your labels in the "Sort by" drop-down menu in-

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stead of the usual (unhelpful) “Column A,” “Column B,” etc. Now you can use the “Sort by” box to select the column you’d like to sort the data by, then use the “Sort On” drop-down menu to select how you would like to sort the data (“Values” means numeric order for a list of numbers and alphabetically for a list of words). If you want a way to sort data in case of a tie, click on “Add Level” in the upper left corner. This will add another set of similar options below your original sorting criteria.



Another way to organize data is to filter it. A filter only displays data that meet a certain criteria, such as all records for a certain day. To do this, go to Data tab > Filter. A dropdown arrow will appear in the header cell of each column of your worksheet. Click on the arrow and select the criteria that you would like to use as a filter (e.g. April 10th). The worksheet will now display only the records from that day. You can also use the AutoFilter tool to display the top or bottom 10 numbers in a column, only records with blank spaces in that particular column, records that have a value greater than a certain number in the column that you are filtering, etc. These options are all available under the dropdown arrow that you will see after going to Data tab > Filter.

Formulas

Select the cell that the formula result is going to be displayed in. The formula can be constructed in the formula bar or typed directly into the cell in which you want the formula to begin. You must always put the = sign before a formula, as this is how Excel recognizes what you are entering as a formula. Autofill helps you fill in formulae quickly once you have constructed one in a cell. In order to Autofill, select the cell with the formula. Place your cursor so the small black cross appears in the lower right corner of the cell (+). Once that cursor is visible, simply drag your formula down the column (or across the row as the case may be). Autofill will change the cell references accordingly. (E.g.: If the formula in A3 is =A1+A2, when you drag that formula over to B3 then the formula becomes =B1+B2.)

Operation:	Sign:	Example:
Addition	+	=A1+B1+C1+D1
Subtraction	-	=A1-A2
Multiplication	*	=C4*C5
Division	/	=C4/D4
Combination	()	= A1*(B1+C1)

Note that cell references can also change automatically when you copy and paste a formula using the clipboard, unless you use an absolute cell reference (see below).

Cell References

There are two different types of cell references:

- **Relative Cell References:** cell references that change when the formula is autofilled into different cells, as in the example above.

- **Absolute Cell References:** if you don't want a certain part of your cell reference to change when you copy the formula to a new cell, you need to put a \$ in front of the row and/or column part of the reference.

E.g.: If the formula in A3 is =\$A\$1+A2, when you drag that formula over to B3 the formula becomes =\$A\$1+B2.

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Autosum

The AutoSum button allows you to quickly insert the SUM function. It is located in two places on the ribbon: on the right end of the “Home” tab in the editing section, and on the far left of the “Formula” tab. Select the cell where you want to put the total and then click on the AutoSum button. Excel will insert the SUM function and take a guess as to what cell range you’d like to sum by listing the first and last cell in the sum, separated by a colon. Check to make sure the cell range is correct, then press enter to accept the function.

Functions

Excel has created hundreds of functions that prevent you from having to write out complex or repetitive formulae yourself. Functions can be inserted by clicking on the function symbol (see fig. 8) to the left of the formula bar (see fig. 9). Functions can also be inserted by clicking on the “Insert Function” button on the “Formula” tab or jumping to any of the subcategories of functions on that tab (see fig. 10). Yet another way to insert a function is to type the equals sign into a cell and begin to type the name of formula. A drop down menu will appear, from which you can select the formula.



Fig. 8: Function Symbol

Functions can also be 'nested'; that is inserted into larger functions by using the appropriate amount of brackets. =AVERAGE(SUM(B2:F2), SUM(B3:F3))

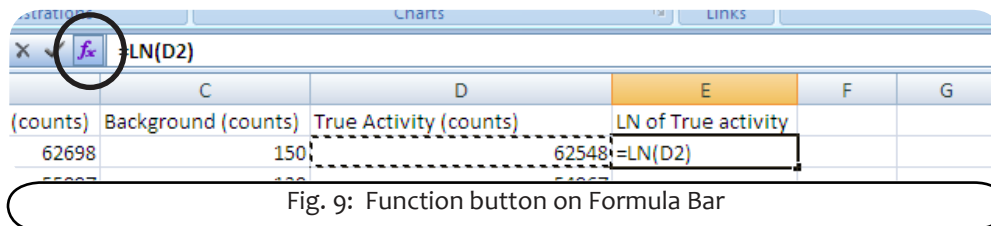


Fig. 9: Function button on Formula Bar

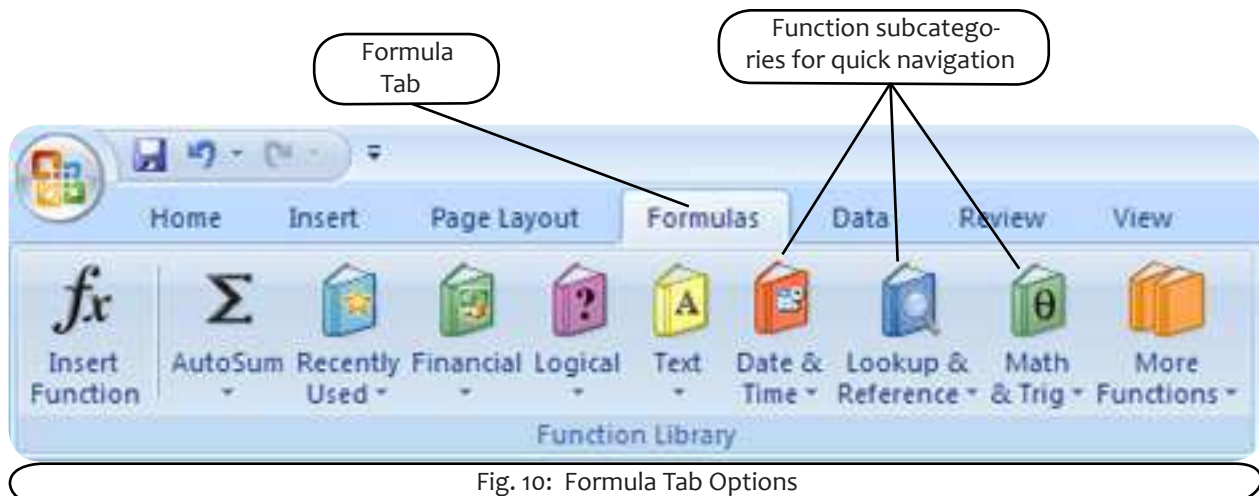
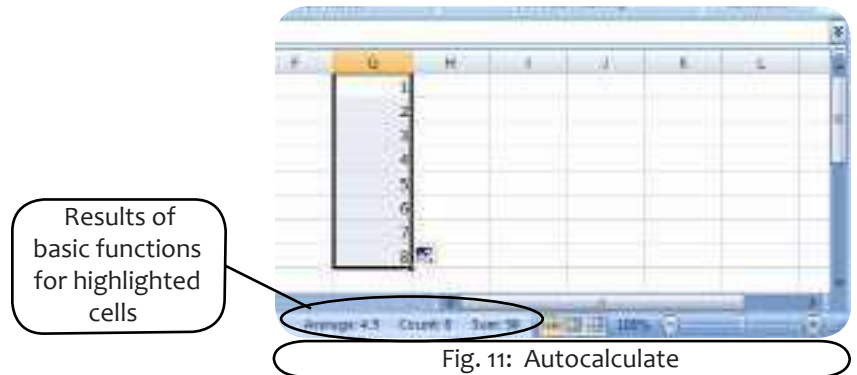


Fig. 10: Formula Tab Options

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Autocalculate

Excel will automatically perform calculation on a set of cells that you select and display the results on the status bar in the bottom right of your window (see fig. 11). The default calculation is the SUM function, but you can change the calculation by right-clicking (Win) or Control + clicking (Mac) on the AutoCalculate result.



Name Manager



Name Box with new name for highlighted cells

You can use Name Manager to name a group of cells, and therefore only type one name when you want to perform a calculation with that group. This can be useful when you are performing many different calculations on the same set of numbers, especially when you want to perform these calculations across multiple sheets. To do this, select the cells you would like to name and name them in the “name box” next to the formula bar (see fig. 12). You can then perform any function on these cells (on any page of your workbook) by just typing the name you gave the cells instead of referencing the cell numbers (ex: =sum(Days)). You can edit the names you gave the cells and change which cells they refer to by clicking on “Name Manager” on the “Formula” tab.

Fig. 12: Naming Groups of Cells

Charts

A full discussion of Excel’s many charting options is beyond the scope of this handout. However, it is fairly straightforward to create a simple chart (and some complicated ones) using the chart wizard. Just highlight the data you wish to base your chart on (including header rows, if you have any) and click on the Insert tab and you will see the available charts there. When you click on a type of chart, you will be prompted to select a subtype of chart. Once you have done so, the chart will appear on your spreadsheet. Three additional tabs will also appear on your ribbon (see fig. 13), through which you can alter your chart by adding titles, changing data points, and many other options.

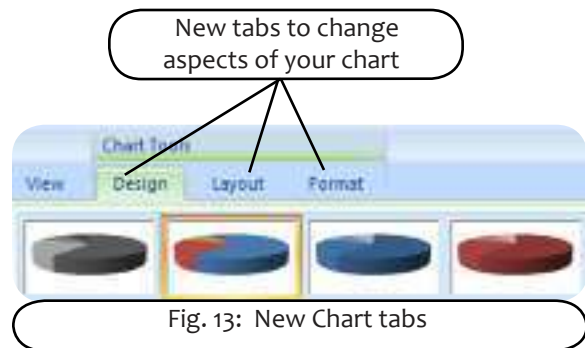


Fig. 13: New Chart tabs

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Pivot Table

A pivot table is a great reporting tool that sorts and sums independent of the original data layout in the spreadsheet. It is an interactive representation of a data table. One can rearrange the data and choose what to display and what to hide. The best way to find out what a pivot table can do is to create one. Let's try an example:

Inserting a Pivot Table

First, set up categories and create some data (See Table 1):

Table 1: Original Data

Who	Week	What	Amount Spent
Joe	3	Activities	\$18
Beth	4	Food	\$17
Janet	5	Activities	\$14
Joe	3	Food	\$12
Joe	4	Activities	\$19
Janet	5	Car	\$12

Now choose any cell in this table and choose the **Insert tab > Pivot Table**. Excel will select all of the cells in your table, and this range will appear next to **Table/Range** in the pivot table menu. At the bottom of this window you can choose where you would like the Pivot Table to be placed: new sheet or in an existing sheet. If you select **Existing sheet**, you can choose the Pivot Table's location by selecting or typing the name of the cell that you would like the top left corner to be. Click **OK**.

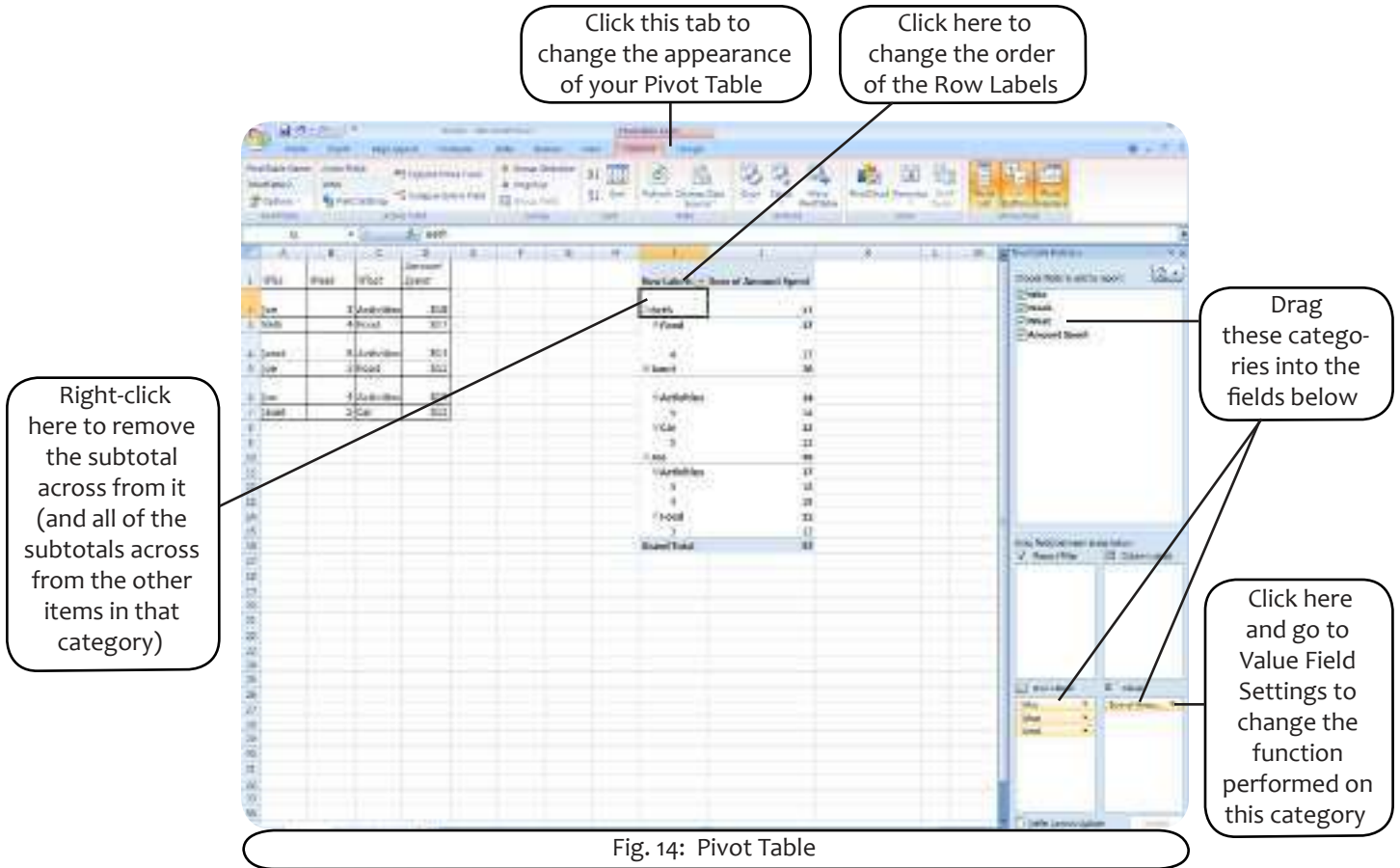
Arranging data on the table

Drag the headers Who, Week and What into the **Row Labels** area, and the Amount header into the **Values** area. (Leave the Column area blank for now.) To change the placement of an item, drag the header title to the desired area. If the Amount tag does not show "Sum of Amount", click on it, select **Value Field Settings**, and choose the **Sum** option. You can use different functions other than sum, such as (sum, average, count, etc.) by changing this. Clicking on the arrows next to the headers gives options of showing/hiding specific data and reorganizing items in the column. Right-clicking on the row labels in the pivot table allows you to remove subtotaling for that category. You can also change the look of your Pivot Table by selecting the Design tab on the Pivot Table Tools portion of the ribbon.

Let's try another example. This time, drag Who into the Row Labels field, What into the Column Labels field and Amount into the Values field. This sorts your data in a different way. You can change the order of the columns the same way you changed the rows: by clicking on the arrow next to Column Labels.

See fig. 14 (next page) for clarification of these steps.

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Troubleshooting

Common sources of errors are parentheses that don't match or missing arguments for functions. If your formula is free from those errors, here are some error values you might get:

#####	There is nothing wrong with your formula; the cell simply isn't big enough to display the result. Widen the column.
#DIV/o	You are trying to divide by zero <ul style="list-style-type: none"> Correct the divisor If the divisor is a cell reference, check to make sure the cell isn't empty
#NAME?	There is a name in the formula that Excel doesn't recognize. <ul style="list-style-type: none"> If you used a natural language name, check the spelling If you typed in a function, check the spelling or verify that the function exists. If you are performing operations on text, enclose the text in double quotation marks
#REF!	A cell reference is not valid. Check to make sure your formula references the right cells.
#VALUE!	The formula uses the wrong type of operand or argument. Check to see that you're not performing math operations on labels or that arguments or functions that need to numeric are not referring to cells containing labels. This can also happen if you try to perform an impossible mathematical function (ex: taking the square root of a negative number).

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Printing

The page breaks can be changed on an Excel spreadsheet so that it prints a bit nicer. This can also help to reduce the number of pages that get printed.

1. First, check out how it is currently set to print with **Microsoft (MS) Office Button > Print > Print Preview**.
2. If you want to change the page breaks, go back to the document and click the **View** tab > **Page Break Preview** button.
3. Now you will see the spreadsheet broken up by blue lines with a page number in each region (see fig. 15).
4. You can move these dashed lines by clicking on them and dragging them to change the page breaks.

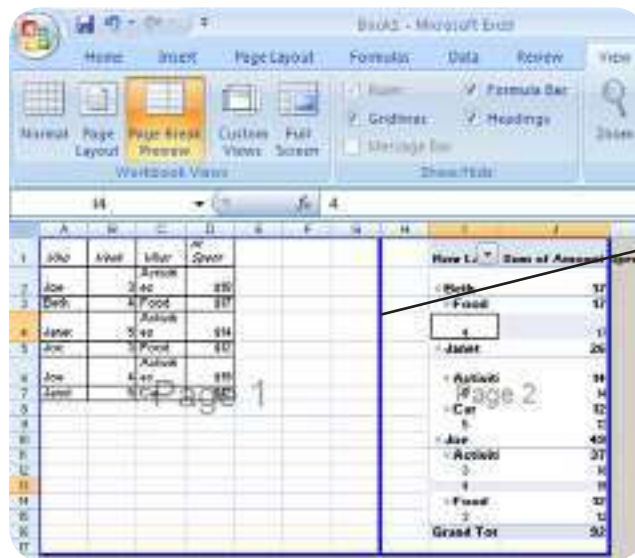


Fig. 15: Page Break Preview

Printing Only Part of the Spreadsheet

1. Highlight the area that you want to print.
2. From the menu bar, select **Page Layout > Print Area > Set Print Area**
3. Now when you go to **MS Office Button > Print Preview**, you will see only the area that you highlighted.
4. To go back to printing the entire document, use **Page Layout > Print Area > Clear Print Area**

Printing a Section on Each Page

If you want to print a section of your spreadsheet on every page you print (for example, printing the titles of your columns on every page in a long list of data), go to **Page Layout > Print Titles**, and select or type the name(s) of the row(s)/column(s) you would like to repeat on each page.

We hope this Quicktip has been helpful for you. If you have any further questions, please visit any TLC during staffed hours (Sun-Thurs 8pm-11pm, Fri 1pm-3pm). If you have any comments on this quicktip, please go to:

<http://www.tlc.housing.wisc.edu/feedback.php>