Microsoft Excel

Level 1 and Beyond the Basics
(Level 1, 2, 3)

Prepared by Joanne Swensrude
Know It Sooner
Computer Training
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Please refer to our website for a copy of the exercises used in this manual. They are on the Downloads tab, Excel.

Thank you for participating today. I hope to see you again soon!

Joanne Swensrude
Instructor
Know It Sooner Computer Training
www.knowitsooner.com
Joanne@knowitsooner.com
780-940-6772

Watch for this symbol! It will tell you a wonderful time saving trick!

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Excel Level 1

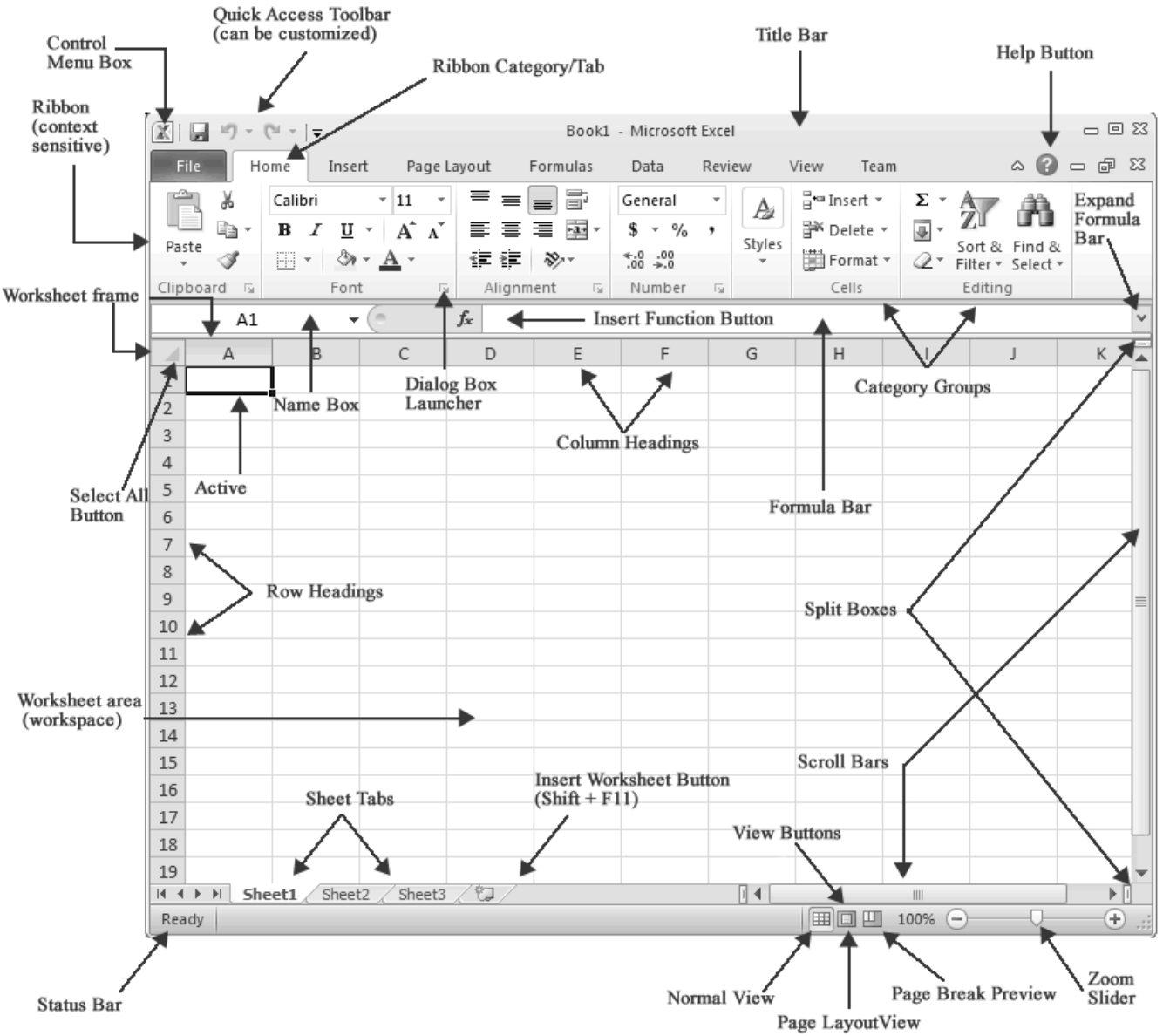
Introduction

Excel Screen

The Excel worksheet file, also referred to as a workbook, is an electronic spreadsheet that consists of a grid of columns and rows. There are 16,384 columns, labeled A through Z, AA through AZ, BA through BZ, and so on to XFD. There are 1,048,576 rows, starting at 1.

Each Excel file can also include over 255 worksheets. The worksheet name, which defaults to Sheet 1, Sheet 2, and so on, appears on a tab at the bottom left of the workbook.

The following diagram is of a standard Excel screen. Your version may look slightly different.



Some of the main components of the screen are discussed below.

Quick Access Tool Bar	Provide tools to access commonly used functions.
Ribbon	This holds many tabs that hold time saving buttons. For example, the Page Layout tab contains commands relating to setting up your print job. If you double click on one of the ribbon tabs, the ribbon will be minimized in order for you to maximize your work space. Double click it again to bring it back to normal size.
Active Cell	Highlighted by a rectangle. The address of the current cell appears in the **Name Box**. For example, A1 or C5.
Column Headings	Columns are given letters of the alphabet as names.
Row Indicator	Rows are given numbers as names.
Sheet Tab	Identifies the Current Worksheet.
Formula Bar	Contains the cell contents. This will either be a label, number or formula. Appearing to the left of it is the Insert Function button (***fx)***, used for creating functions.

To add a button to your Quick Access Bar (the toolbar near the Office button or File menu), simply right click the button or menu item and choose Add to Quick Access Toolbar.

This bar stays on your screen whenever you're in the program, it never disappears!

Excel Cursors

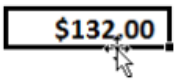
1. Selection Cursor:

Click and drag to highlight multiple cells with this cursor, or click in a cell to select the single cell.

2. Autofill Handle:

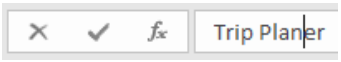
Click and drag to fill in the other cells with content. It works differently depending on what you drag. For example, if you Autofill January, you will fill in the other cells with February, March, etc.

3. Move Cursor:



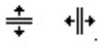
Click and drag the contents of the selected cell to any other cell.

4. Selection Bar (I-Beam):

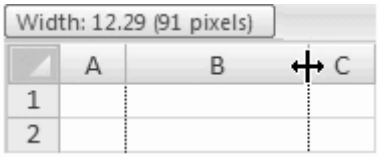


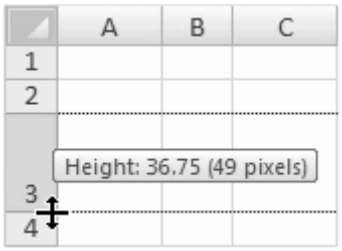
Click to place the cursor into the Formula bar so that you can edit an equation or function.

5. Column Width/Row Height Sizer:



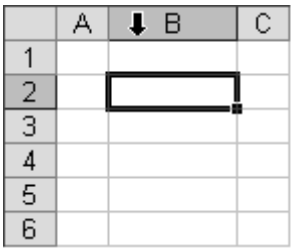
Click and drag in between columns or rows to resize them.

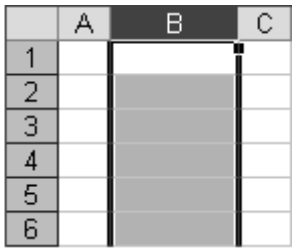


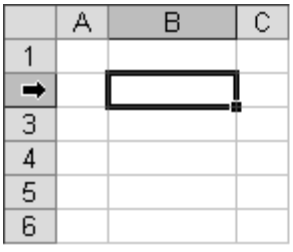


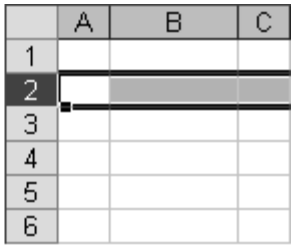
Double click when you see this arrow and it will automatically size your column or row to accommodate the largest entry!

6. Select Whole Column or Row:









Click right on the Column heading or Row number to select the entire Column or Row.

Creating a Spreadsheet

Worksheets are created by entering data into cells. Excel recognizes three types of data: **Labels (text), Numbers, and Formulas.**

Labels

Labels are usually titles or comments. i.e. headings. As you type entries they first appear in the format line. Once you press <Enter> or an **arrow key** they will appear in the **actual** cell.

- Labels can begin with any character except those characters which begin numbers & formulas.
- Labels can display across multiple columns if the columns are empty. If cells to the right of the label are blank, Excel displays the part of the label that overlaps those cells. If cells to the right of the label contain data, Excel truncates (cuts off) the label for cell display.
- If the first character of the data is ', A-Z, a-z, Excel assumes the entry is a label.

Numbers

Numbers are composed of digits and, if necessary, a leading minus sign and/or a decimal point.

- Numbers are automatically Right Justified.
- Numbers can also be aligned to the left, right or centre.
- Do not include any spaces or text in numbers.
- Numbers start with one of the following:

  1, 2, 3, 4, 5, 6, 7, 8, 9

- Numbers are considered to be values.

Formulas

Formulas are entries that calculate data. The result of a formula is a value.

The calculation can be a simple mathematical operation, such as subtracting one number from another, or a more complicated operation, such as determining a mortgage payment.

- Formulas are used rather than typing in actual numbers.
- Are arithmetic expressions referencing other cells.
- Formulas usually start with =
- Make sure you begin the formula where you want the answer to be.
- When entering the formula by the pointing method, you will need to press <Enter> only once, at the very end of the formula.
- You can also type in only the cell reference after = (i.e. =B4) if you just want the contents of one cell to be in another. (i.e. carrying forward a total).

<u>Arithmetic Operators</u>

Simple Formulas
Always start with an = sign
+ Addition
- Subtraction
* Multiply
/ Divide

Order of Operation	
1.	(brackets)
2.	* /
3.	+ -

Examples:

=A1 + A2
=A4 * 7%
=D14-D15
=(B3 + B4) /2
=B10+B11-B12

Creating a Formula

Open TRIP PLANNER.XLSX

	A	B	C	D	E	F
1	Trip Planner					
2						
3	Expense	Quantity	Price	Subtotal	GST	Total
4	Flight	2	350			
5	Hotel	7	150			
6	Car Rental	1	399.99			
7	Fuel	7	20			
8	Meals	21	10			
9	Entertainment					
10	Misc					
11						
12	Total Cost					

1. In cell D4, we will multiply the quantity by the price to calculate the subtotal of that expense.

   On a calculator, you could input: 2 X 350

   In Excel, we would enter an equal sign and substitute the numbers for cell names: =B4 * C4 and press Enter.

2. Since the next three cells (D4:D10), will have relatively the same formula, click on cell D4 and find the Autofill handle on the bottom right corner of the cell and click and drag down to cell D10.

   This copies and adjusts the formula down to the other cells!

3. Change the contents of cells B4. Notice the annual cost changes for that magazine.

NOTE: You can also use the Point and Click Method to enter a formula.

To create =B4*C4:
- Click on cell D4
- Type the = sign on your keyboard
- Click on cell B4
- Type the * sign on the keyboard
- Click on C4
- Press Enter

4. Create the other formulas:
   GST (E4): =D4*5%
   Total (F4): =D4+E4

Totaling Cells (SUM function)

It is very easy to total a column or row of numbers.

1. Click on the cell where you want the total to go. (D12)

2. Click on the AUTOSUM tool on the Home tab on your Ribbon.

3. Excel "guesses" at which cells you wanted totaled. If it is correct, just press <enter>. If not, click and drag over the cells you want included in the total. (B2:B6). You will normally want to include the blank cell so that if you ever insert a row between this range, the formula will automatically adjust to include the new entry.

	A	B	C	D
1	Trip Planner			
2				
3	Expense	Quantity	Price	Subtotal
4	Flight	2	$ 350.00	$ 700.00
5	Hotel	7	$ 150.00	$ 1,050.00
6	Car Rental	1	$ 399.99	$ 399.99
7	Fuel	7	$ 20.00	$ 140.00
8	Meals	21	$ 10.00	$ 210.00
9	Entertainment			$ -
10	Misc			$ -
11				
12	Total Cost			=SUM(D4:D11)
13				SUM(**number1**, [nur

4. The formula should be as follows: SUM(D4:D11). The word SUM is an example of a function. This particular function adds the cells specified in the brackets. The part in brackets indicates this is a range of cells.

5. Autofill this formula over to add up the other columns (GST and Total).

	A	B	C	D	E	F
1	Trip Planner					
2						
3	Expense	Quantity	Price	Subtotal	GST	Total
4	Flight	2	$ 350.00	$ 700.00	$ 35.00	$ 735.00
5	Hotel	7	$ 150.00	$ 1,050.00	$ 52.50	$ 1,102.50
6	Car Rental	1	$ 399.99	$ 399.99	$ 20.00	$ 419.99
7	Fuel	7	$ 20.00	$ 140.00	$ 7.00	$ 147.00
8	Meals	21	$ 10.00	$ 210.00	$ 10.50	$ 220.50
9	Entertainment			$ -	$ -	$ -
10	Misc			$ -	$ -	$ -
11						
12	Total Cost			$ 2,499.99	$ 125.00	$ 2,624.99

To quickly see your formulas, try CTRL ~ (also referred to as CTRL TILDE). This command will show your formulas so you can troubleshoot your spreadsheet or keep an eye on your formulas to make sure they are working the way you want them to! Press it again to hide your formulas when you're done.

(The ~ key is on the top left corner of your keyboard, next to the 1 key.)

Practice:

On the Practice tab at the bottom, create formulas to calculate the annual cost of each magazine as well as the GST and total.

Do an AUTOSUM for the number of issues and autofill it for all of the columns

Enter a formula to calculate how many magazines you would have to read per day, week and year. The results are below.

Format the cells as either Accounting ($) or Comma (,). Adjust the numbers if necessary 

	A	B	C	D	E	F
1	Magazine name	# of issues	Cost per issue	Annual Cost	GST	Total
2	People	52	$ 4.00	$ 208.00	$ 10.40	$ 218.40
3	Sports Illustrated	26	$ 2.50	$ 65.00	$ 3.25	$ 68.25
4	Martha Stewart	12	$ 5.00	$ 60.00	$ 3.00	$ 63.00
5	Globe and Mail	360	$ 0.50	$ 180.00	$ 9.00	$ 189.00
6						
7	Total	450	$ 12.00	$ 513.00	$ 25.65	$ 538.65
8						
9	# of Reads/Day	1.23				
10	# of Reads/Week	8.65				
11	# of Reads/Month	37.50				

The Formulas:

	A	B	C	D	E	F
1	Magazine name	# of issues	Cost per issue	Annual Cost	GST	Total
2	People	52	4	=B2*C2	=D2*5%	=D2+E2
3	Sports Illustrate	26	2.5	=B3*C3	=D3*5%	=D3+E3
4	Martha Stewart	12	5	=B4*C4	=D4*5%	=D4+E4
5	Globe and Mail	360	0.5	=B5*C5	=D5*5%	=D5+E5
6						
7	Total	=SUM(B2:B6)	=SUM(C2:C6)	=SUM(D2:D6)	=SUM(E2:E6)	=SUM(F2:F6)
8						
9	# of Reads/Day	=B7/365				
10	# of Reads/Wee	=B7/52				
11	# of Reads/Mont	=B7/12				

Autofill

To copy a formula or a value to the next cell or range of cells you can use the Autofill feature. This feature only works for cells that are adjacent to the cells you wish to copy. Excel will evaluate whatever you have selected and intelligently fill in the cells.

You can quickly fill cells with several types of data based on adjacent cells. When you click in a cell, notice that the lower-right corner is a black square.  This is called the **fill handle**.

When you point to the fill handle the mouse pointer changes to a black cross. +

Click and drag the black cross to an adjacent cell to fill in the adjacent cell.

Text and numbers are copied to the adjacent cells. The cell references in formulas are adjusted to reflect the new cell location.

Examples:

If I type the following and Autofill across some cells:	I will get:
Jan	Feb, Mar, etc
January	February, March, etc
Mon	Tue, Wed, Thu, etc
Monday	Tuesday, Wednesday, Thursday, etc
Quarter 1	Quarter 2, Quarter 3, Quarter 4, Quarter 1, etc
Store 1 *	Store 2, Store 3, Store 4, etc
1st District*	2nd District, 3rd District, 4th District, etc
Elephant	Elephant, Elephant, Elephant
1000	1000, 1000, 1000
1/1/2008	1/2/2008, 1/3/2008, 1/4/2008, etc

*note: can be any word

This will overwrite whatever was in those cells so be careful when doing this!

Autofill Options

The Auto Fill Options  button appears just below your filled selection after you fill text or data in a worksheet. When you click the button, a list appears to give you options for how to fill the text or data.

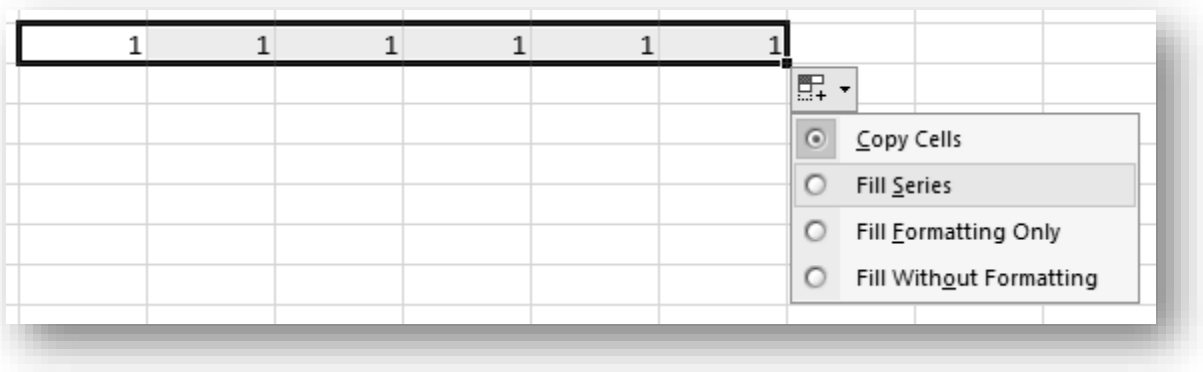
The available options depend on the content you are filling and the format of the text or data you are filling.

You will see a number of Autofill Options when you click on the box at the end of an Autofill action.

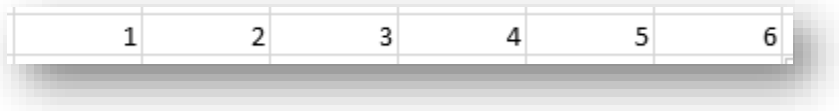
One of the AutoFill options may be to 'Fill Series.' By choosing this option, you will continue a series based on a pattern. For example, if you 'Fill Series' from a cell that contains the number 1, the next filled cell will be 2, the next 3, and so on for the number of cells filled. This forms a series in the filled cells where each subsequent number is the previous number plus 1.

1. Type 1 into a cell.

2. Autofill it to a few adjacent cells.



3. Use the Autofill options to specify it to Fill Series. It will increment each number by 1!

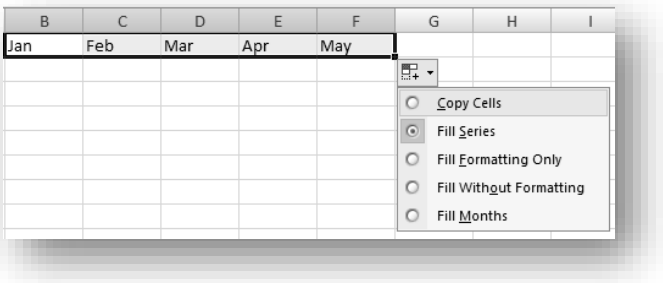


In the next example, we will do the opposite -stop it from incrementing.

4. Type Jan into a cell and press Enter.

5. Click on that cell. Place the mouse pointer on the black box on the lower right comer of the cell (Autofill)

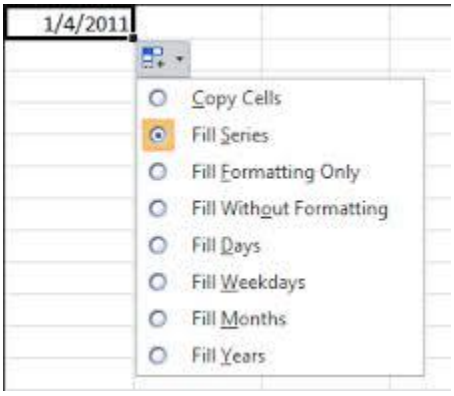
6. When it changes to a black cross, click and drag it across or down a few cells. Watch the navigator as you are dragging.



7. If you had wanted it to simply fill the cells with Jan, then you would use the Smart Tag Autofill Options to specify "Copy Cells" to override the default (Fill Series).

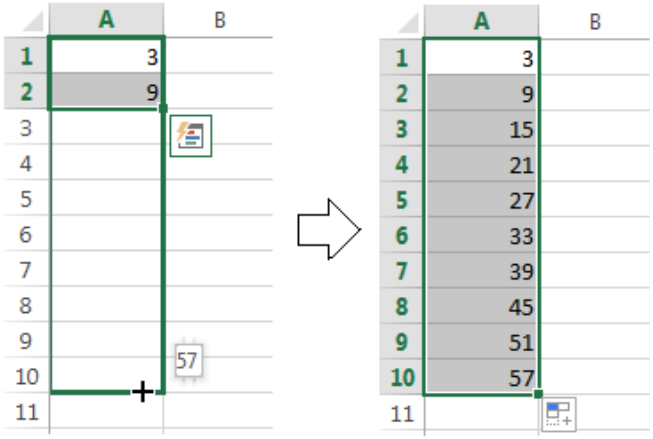
B	C	D	E	F
Jan	Jan	Jan	Jan	Jan

8. Try it with a date and you will see even more options!



Autofilling a Pattern

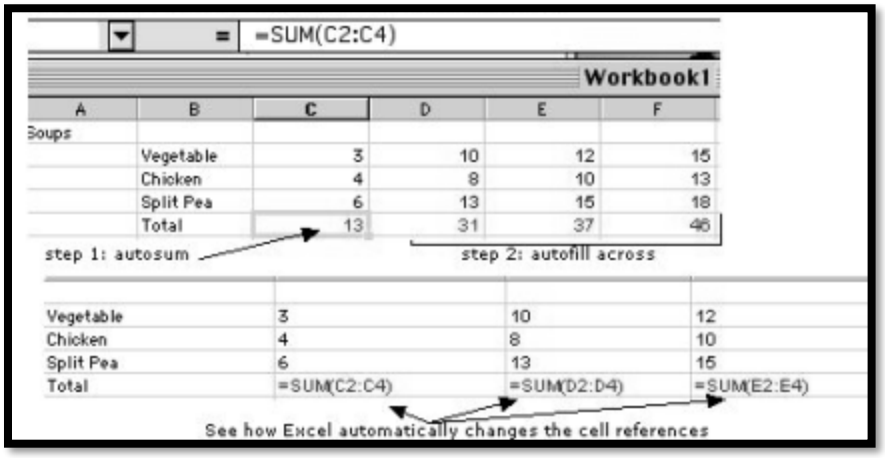
If Autofill doesn't give you the pattern you're looking for, you can create a pattern.



1. Type the first two entries in, for example if you want to increase each number by 6 starting at 3.
2. Then type 3 in one cell, then 9 in the next cell.
3. Next, select those two cells, let go of the mouse and autofill the selected cells to the cells you want the new numbers to go into.

Autofilling Formulas

When autofilling a formula, Excel automatically adjusts the formula.



Editing Cells

Changing information in existing cells can be done in one of three ways:

1. If you are entering data in a cell, and have not yet pressed the <Enter> key, then <Backspace> over the incorrect keystrokes.

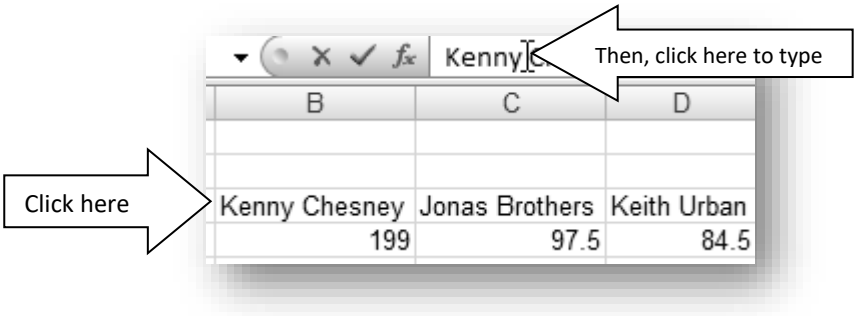
2. Retype the cell information. This method is used to edit cells with very few characters i.e. numbers (12334). It will overwrite anything already entered into that cell.

3. Go into <Edit> mode.

   - Double click on the cell and make the changes to the cell - OR
   - Click on the cell you want to edit and then click on **the formula bar - OR**
   - Press <F2> and make the changes to the cell.

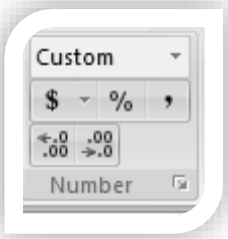
   - This can be extremely useful for cells containing long labels or numbers, or complicated formulas. Type the new information and press Enter. The previous contents of the cell will be replaced.

   - While in an edit mode, either the mouse or keyboard can be used for cursor movement.



Formatting Cells

Formatting Numeric Cells



There are a few buttons on the ribbon that make formatting a breeze. You never need to worry about typing a dollar sign, a comma or zeros after your decimal place.

For example, you could just type 10 into a cell and have it appear as $10.00.

	Accounting Style - Formats selected text to display with a dollar sign and two decimals
	Percent Style - Formats selected cells to display percent with no decimal places
	Comma Style - Formats selected cells to display commas in large numbers as well as two decimal places
	Increase Decimal - Increases the number of decimals displayed after the decimal point
	Decrease Decimal - Decreases the number of decimals displayed after the decimal point

1. Select a cell with a number in it.

2. Click on the button with the Dollar sign on it.
   See how it adds two decimal places and a dollar sign.
   If it's 1,000 or higher, it will add a comma.
   If it contains a zero, it will show up as a dash.

$	1,000.00
	1,000.00
$	-

3. Click on the Comma button. It looks the same but loses the dollar sign.

4. If you do not desire that many decimal places, you can use the Increase Decimal or Decrease Decimal buttons to get the result that you want.

If you would like to get the number back to the way it was typed in, click on the Number Format drop down box and choose General. It may display Text, Custom, Accounting, etc.

Formatting Date Cells

As long as you enter a valid date into a cell so that Excel recognizes it to be a date, you can have it display any way you like. You can tell how your computer is set up by typing in a date that is only valid one way, for example Christmas. Only one of the following is valid: 12/25 or 25/12.

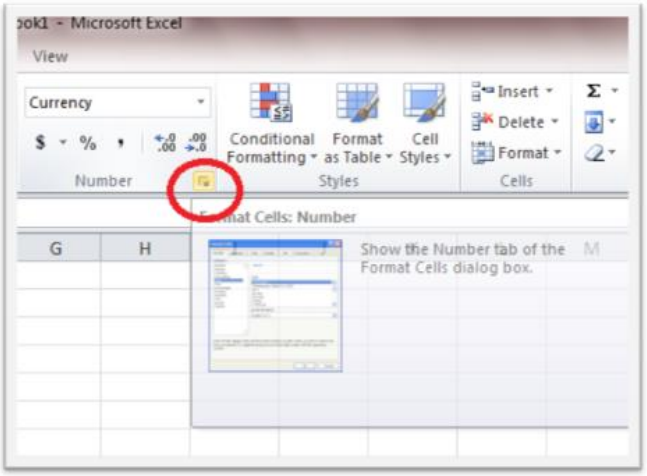
If the computer is set up for month/day/year, then 12/25 will display as 25-Dec. Otherwise, it will show up as 25/12 and will not be recognizable as a date to Excel.

If you do this test and decide you don't like the way your computer is configured, you can go in to the Control Panel of Windows and choose Regional and Language settings (this might be worded differently depending on which version of Windows you have) and make the change there.

Once you're familiar with the format of how you can enter the date in, then you can change how it is displayed. For these examples, we will assume the computer is set to month/day/year.

For example, if I type in 12/25/03, I can have it display any of the following ways, just to list a few:

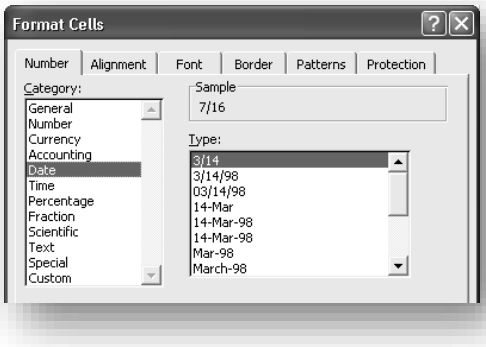
- December 25, 2003
- Dec 25, 2003
- 12/25/03
- 25/12/03
- 25-Dec-2003
- 25-Dec-03



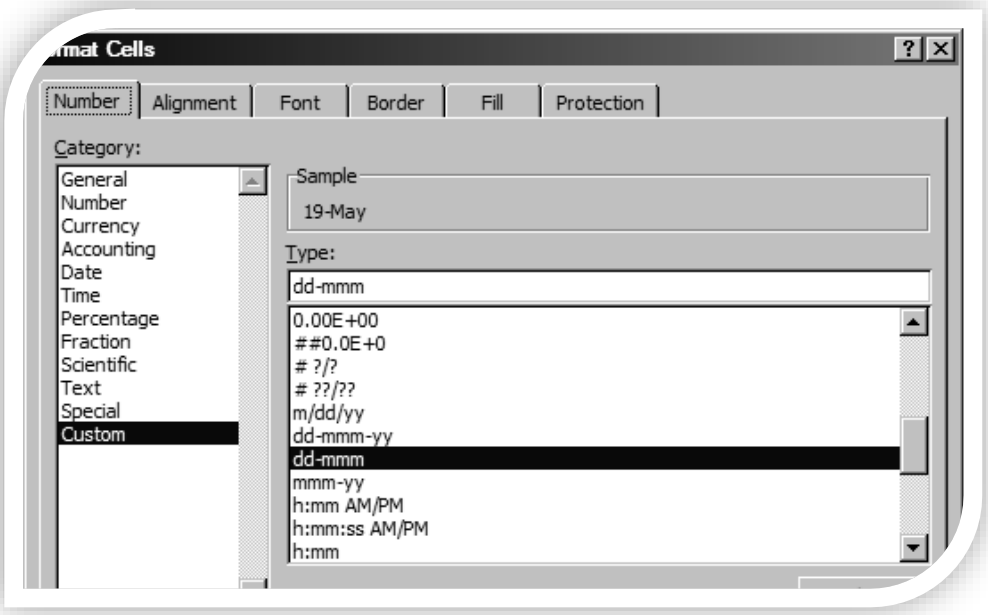
1. Select the cells containing the dates.

2. You can choose from the formats listed in the Number Format box on the toolbar or bring up the Format Cells dialogue box by clicking on the dialogue box launcher on the Home tab.

3. Click on the Date Category on the left. It will display some types for you to choose from on the right side. If you click on one, you will see a sample of it at the top of the box.



4. If it doesn't list the format you want, click on the Custom category on the left and you can type in your own format using placeholders.

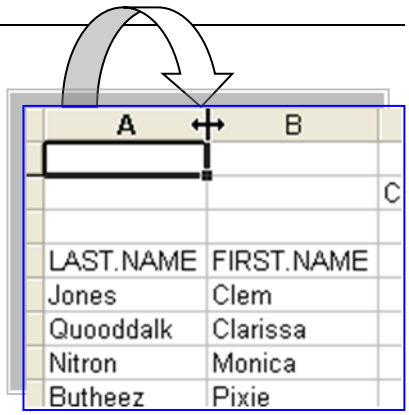


The following table lists some examples.

Format	Result
m/d/yy	1/1/03 9/15/03
mm/dd/yy (extra zeros are added if necessary)	01/01/03 09/15/03 12/01/03 12/25/03
mm/d/yy	02/1/03 12/25/03
dd-mmm-yyyy	24-Dec-2003 01-Jul-2003
mmm d/yy	Dec 1/03 Dec 25/03
mmm dd, yyyy	Dec 01, 2003 Dec 25, 2003
ddd, mmm dd, yyyy	Sun, Apr 04, 2010 Thu, Dec 25, 2003
dddd, mmmm d, yyyy	Sunday, April 4, 2010 Thursday, December 25, 2003

Try right clicking on a range of cells to see some great options!
One is **Format Cells** which will also bring this dialogue box up!

Working with Columns and Rows



Column Widths and Row Heights

There are a few different ways to change your column width.

Autofit

Position your mouse pointer between two columns.

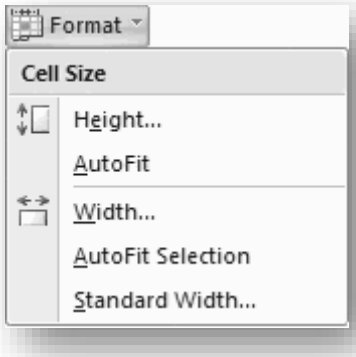
Double click when you see the double headed arrow. This makes the column on the left of your mouse pointer as big or small as it needs to be to accommodate all the information in it.

To change several columns, select the columns first, and then do the autofit on the last one of the selected columns.

Manually Size

With the same arrow, click and drag to manually size a column. To make several columns the same size, select the columns, then drag the last column and they will all be that same size.

Specify a Width

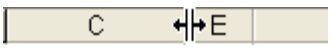


If you know the width that would like to make the column(s), select the column(s) and choose Format, Column Width from the Home tab. Type in a number for the selected columns.

Hiding a Column

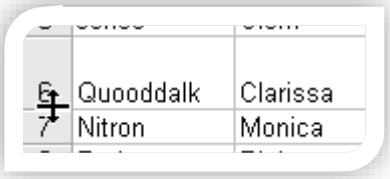
Sometimes it is necessary to hide a column. With the same arrow as discussed above, click and drag it to the left until it is size 0.0. You can also right click and choose Hide.

Unhiding a Column

To unhide a column, take your mouse pointer to the line where the column should be and watch for it to become the same type of arrow you use to size and hide columns except that it will have a white line in the middle of it. Click and drag to the right when you see it and it will make the column visible again. 

Row Height

Basically all of the above information is the same procedure as with rows. If you move your mouse pointer to the line between two rows and click and drag, it will change the size of the above row.



Inserting and Deleting

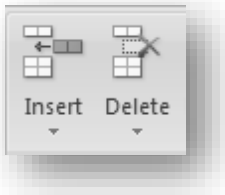
To insert a row or column, select the row or column you want to move down or over to the right. If you want to insert more than one, select the number of columns or rows you want to insert first.

If there is a blank row before a total row, select the blank row and choose Insert. This should adjust the SUM formula so that it includes the new row.

	A	B	C	D	E	F
1	Trip Planner					
2						
3	Expense	Quantity	Price	Subtotal	GST	Total
4	Flight	2	$ 350.00	$ 700.00	$ 35.00	$ 735.00
5	Hotel	7	$ 150.00	$ 1,050.00	$ 52.50	$ 1,102.50
6	Car Rental	1	$ 399.99	$ 399.99	$ 20.00	$ 419.99
7	Fuel	7	$ 20.00	$ 140.00	$ 7.00	$ 147.00
8	Meals	21	$ 10.00	$ 210.00	$ 10.50	$ 220.50
9	Entertainment			$ -	$ -	$ -
10	Misc			$ -	$ -	$ -
11						
	Total Cost			$ 2,499.99	$ 125.00	$ 2,624.99

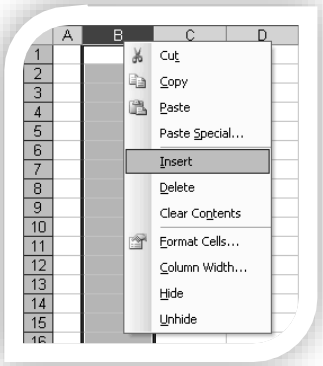
1. Select a row or column.

2. On the Home ribbon tab, click on the Insert or Delete button. This will insert additional rows or columns or delete selected ones.



If you don't have a column or row selected, just a cell, it will delete just the cell you are on and may ask if you should shift the cells below it up or the cells to the right of it over.

Try right clicking on a range of cells and the Insert or Delete command comes up. Whichever option you choose will apply to whatever you have selected.



ie. Select a row, then Insert, it will give you a new row. If you had a column selected, it will insert a column.

If you just have one cell selected, it will insert a cell and push all the other cells down. Be careful with that!

EXERCISE

LOAN CALCULATOR.XLS.

1. Format the appropriate cells to look like the following:

	A	B	C	D	E	F
1			Apr 4, 2010			
2	PRINCIPAL	$ 24,000.00				
3	INTEREST	12.00%		$ 533.87	MONTHLY MORTGAGE	
4	LOAN TERM	60				
5						
6						
7		$ 23,000.00	$ 23,500.00	$ 24,000.00	$ 24,500.00	$ 25,000.00
8						
9	11.00%	$ 500.08	$ 510.95	$ 521.82	$ 532.69	$ 543.56
10	11.25%	$ 502.95	$ 513.88	$ 524.82	$ 535.75	$ 546.68
11	11.50%	$ 505.83	$ 516.83	$ 527.82	$ 538.82	$ 549.82
12	11.75%	$ 508.72	$ 519.78	$ 530.84	$ 541.90	$ 552.96
13	12.00%	$ 511.62	$ 522.74	$ 533.87	$ 544.99	$ 556.11
14	12.25%	$ 514.53	$ 525.72	$ 536.90	$ 548.09	$ 559.27
15	12.50%	$ 517.45	$ 528.70	$ 539.95	$ 551.20	$ 562.45
16	12.75%	$ 520.38	$ 531.69	$ 543.01	$ 554.32	$ 565.63
17	13.00%	$ 523.32	$ 534.70	$ 546.07	$ 557.45	$ 568.83

2. Type the date into cell C1 in the following format: m/d/yy. For example 3/17/08. Format it to a date format you like. For example, have it appear Mar 17, 2008. Try typing another date overtop.

Saving a Worksheet

Saving your work is one of the most important tasks you perform. Saving a worksheet file copies worksheet data from computer memory to a file on disk. If you do not save a worksheet file, the data is lost when you close the file or end Excel. It is a good idea to save the worksheet file often during the work session.

There are three ways to save new worksheets.

1. Save (on your toolbar or in the File menu)- opens the Save As dialog box and allows the user to type in a name. (A default name appears in the text box but can be overwritten by typing in a new name.) On a previously named file it will overwrite the file with the new information.

   Excel automatically puts on the extension XLSX.

2. This can also be done by pressing <Ctrl S>.

3. Choose **Save As** from the File menu button- does the same as Save on a brand new worksheet but creates a new file on a file that already has a name.

Note…if you open an old spreadsheet saved in the previous version, it will automatically save back to that same version/format.

If you create a new spreadsheet, it may be set to save in the new Excel format. This may cause problems if you are sharing spreadsheets with users who do not have this version (ie. clients, vendors, etc) as they may not be able to open them. You can use the Save As option to see the list of choices you have. Excel 2003 is readable by anyone with Excel but if you are using any new features of Excel they will be lost.

You may be interested in saving your spreadsheet as a PDF. This will allow anybody with or without Excel to view it. Typically, they will not be able to make changes to it. Look in the Save as Type box in the Save As screen to choose this file format.

Formula Exercises

Open EXERCISES – EXCEL BASICS.XLS

1. There are multiple exercises to do, each one in a different sheet at the bottom. You will see the instructions within the sheet.

2. After you have followed all of the instructions, you may click on the completed version of the exercises to compare your answers.

Additional Practice on Your Own:

1. Create a budget for yourself! It could look something like this. Be sure to put formulas in to do the calculations.

	A	B	C	D
1	**My Monthly Budget**			
2				
3	***Expense Type***	***Quantity***	***Cost***	***Total***
4	Mortgage	2.00	$ 500.00	$ 1,000.00
5	Utilities	1.00	$ 150.00	$ 150.00
6	Fuel	4.00	$ 50.00	$ 200.00
7	Groceries	2.00	$ 200.00	$ 400.00
8	Phone	1.00	$ 75.00	$ 75.00
9				
10	***Total Expenses***	$ 675.00		
11				
12	***Income***	$ 2,500.00		
13				
14	***Left Over***	$ 1,825.00		

2. Use Excel to track RSVPs the next time you plan event whether it be work related or personal. It could be a birthday celebration, dinner party, staff luncheon, a course you're organizing, etc.

3. Create a spreadsheet to track your user IDs and passwords. Make sure to password protect this spreadsheet!

4. Create a spreadsheet using one of the templates (File New) such as a calendar.

5. Create a spreadsheet for a trip you are planning on taking or have already taken. Include the cost of transportation, accommodation, meals and entertainment. Calculate what the total cost will be for the trip. Add an extra night to see how it affects the total. Upgrade your hotel room. Insert a row for travel insurance and see your Total Cost increase.

Relative vs Absolute References

Relative References

Open GOLF TOURNEY LIST.XLS

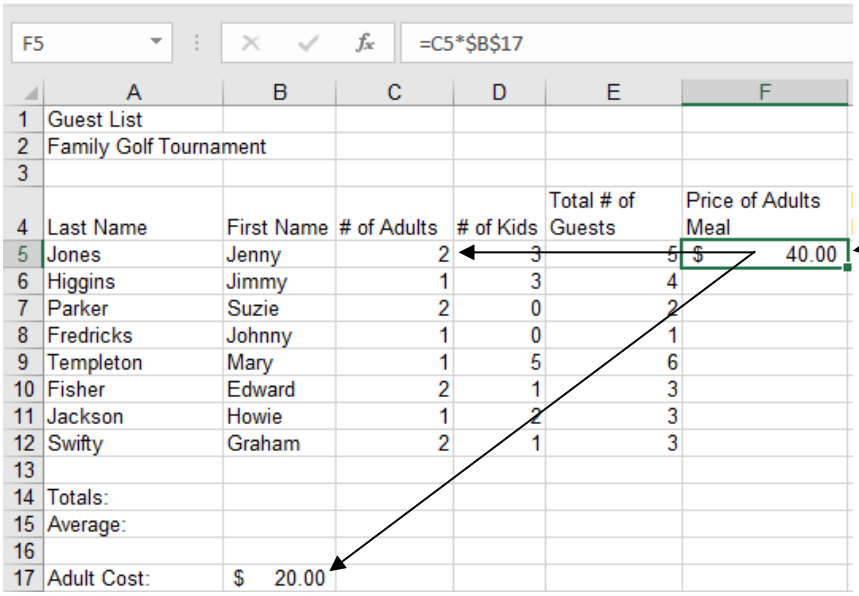
1. Enter the formula to calculate the Total # of Guest in E5. (=C5+D5)

2. Autoflll the formulas down to the other guests. Notice that all the formulas changed. (ie. C6+D6, C7+D7, etc)

   This is called a Relative Reference.

Absolute References

Sometimes you don't want the cell reference to change when it's copied. You need to make it "absolute" before it's copied so that it remains constant.



	A	B	C	D	E	F
1	Guest List					
2	Family Golf Tournament					
3						
4	Last Name	First Name	# of Adults	# of Kids	Total # of Guests	Price of Adults Meal
5	Jones	Jenny	2	3	5	$ 40.00
6	Higgins	Jimmy	1	3	4	
7	Parker	Suzie	2	0	2	
8	Fredricks	Johnny	1	0	1	
9	Templeton	Mary	1	5	6	
10	Fisher	Edward	2	1	3	
11	Jackson	Howie	1	2	3	
12	Swifty	Graham	2	1	3	
13						
14	Totals:					
15	Average:					
16						
17	Adult Cost:	$ 20.00				

*=C5*$B$17*
will keep B17 constant
but will change C5 to C6
when copied down

In this example, we are using cell B17 to hold the price of the adult's meal rate. In the formula in cell F5, we will reference the cell name containing the price, instead of the actual number ($20.00). This makes it easy to update if you think the price will change at a later date – all you would have to do is update one cell (B17), rather than all the formulas if you had typed the number into the formula.

To make a cell reference absolute, press the **F4** key after you've typed the cell reference. For example, to type the formula in cell F5 in the above exercise, type:

1. **=C5*B17** and press the **F4** key. Press Enter.

2. Autofill it down.

You will see dollar signs go around the B17 reference. Now when you copy that formula down to the next cell, the C5 will change to C6, but the B17 will not change because you have made it absolute.

Common Functions

Excel functions are built-in formulas that perform specialized calculations automatically.

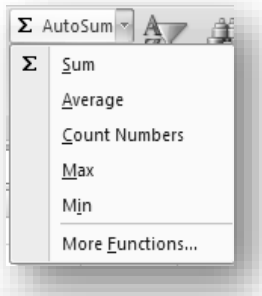
Common functions are:

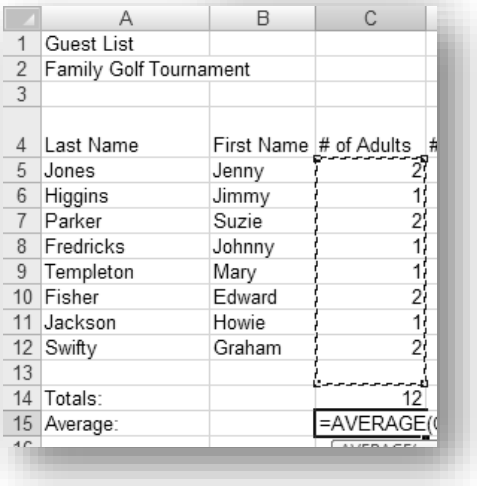
Function	Explanation	Syntax	Example
=SUM	Totals a range	=SUM(RANGE)	=SUM(C5:C10)
=AVERAGE	Averages a range	=AVERAGE(RANGE)	=AVERAGE(C5:C10)
=MIN	Lowest value in a range	=MIN(RANGE)	=MIN(C5:C10)
=MAX	Highest value in a range	=MAX(RANGE)	=MAX(C5:C10)
=COUNT	The number of values in a range (must be numbers present in the range in order to be counted)	=COUNT(RANGE)	=COUNT(C5:C10)
=COUNTA	The number of values in a range (if there is anything typed into the range, it will be counted)	=COUNTA(RANGE)	=COUNTA(B5:B10)

AVERAGE, MAXIMUM, MINIMUM, COUNT

The Autosum button has a drop down arrow that will allow you to choose the most common functions as listed above. If you want other functions not listed there, you will use the Paste Function tool.

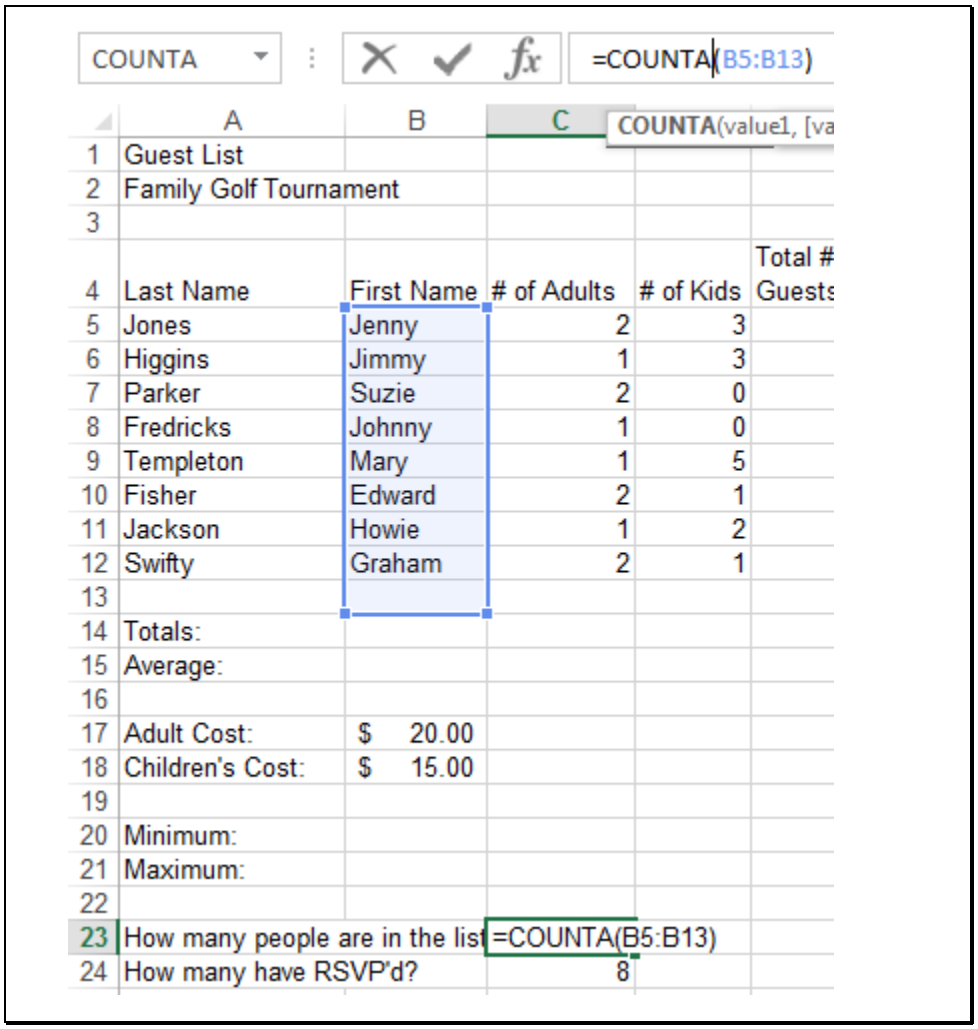
1. Click where you want the function to go (C15). In this example, we'll create an Average.
2. Click on the drop down arrow beside the Autosum tool
3. Choose the function you want to determine.
4. Next, it allows you to specify the range of cells to evaluate. You can either click and drag over the cells or type them in. When you are finished, press the Enter key.





	A	B	C
1	Guest List		
2	Family Golf Tournament		
3			
4	Last Name	First Name	# of Adults
5	Jones	Jenny	2
6	Higgins	Jimmy	1
7	Parker	Suzie	2
8	Fredricks	Johnny	1
9	Templeton	Mary	1
10	Fisher	Edward	2
11	Jackson	Howie	1
12	Swifty	Graham	2
13			
14	Totals:		12
15	Average:		=AVERAGE(

If you are doing a COUNT on non-numbers, ie. Names, you will have to add the "A" to the count to change it from COUNT to COUNTA. Follow the same steps as COUNT, just add the "A" right before you press Enter



	A	B	C	D	E
1	Guest List				
2	Family Golf Tournament				
3					
4	Last Name	First Name	# of Adults	# of Kids	Total # Guests
5	Jones	Jenny	2	3	
6	Higgins	Jimmy	1	3	
7	Parker	Suzie	2	0	
8	Fredricks	Johnny	1	0	
9	Templeton	Mary	1	5	
10	Fisher	Edward	2	1	
11	Jackson	Howie	1	2	
12	Swifty	Graham	2	1	
13					
14	Totals:				
15	Average:				
16					
17	Adult Cost:	$ 20.00			
18	Children's Cost:	$ 15.00			
19					
20	Minimum:				
21	Maximum:				
22					
23	How many people are in the list		=COUNTA(B5:B13)		
24	How many have RSVP'd?		8		

NOTE: When you are specifying a range to include, make sure you include any blank cells that may be filled in at some point. The blank cell is where you would go to insert a new row, should you wish to add data. If the blank cell is included in your formula, your formula adjusts automatically to include the new row!

Completed (after clearing cells C10:C11):

	A	B	C	D	E	F	G	H	I	J
2	Family Golf Tournament									
3										
4	Last Name	First Name	# of Adults	# of Kids	Total # of Guests	Price of Adults Meal	Price of Kids Meal	Subtotal	Gratuity	Cost per Employee
5	Jones	Jenny	2	3	5	$ 40.00	$ 45.00	$ 85.00	$ 11.05	$ 96.05
6	Higgins	Jimmy	1	3	4	$ 20.00	$ 45.00	$ 65.00	$ 8.45	$ 73.45
7	Parker	Suzie	2	0	2	$ 40.00	$ -	$ 40.00	$ 5.20	$ 45.20
8	Fredricks	Johnny	1	0	1	$ 20.00	$ -	$ 20.00	$ 2.60	$ 22.60
9	Templeton	Mary	1	5	6	$ 20.00	$ 75.00	$ 95.00	$ 12.35	$ 107.35
10	Fisher	Edward	2	1	3	$ 40.00	$ 15.00	$ 55.00	$ 7.15	$ 62.15
11	Jackson	Howie	1	2	3	$ 20.00	$ 30.00	$ 50.00	$ 6.50	$ 56.50
12	Swifty	Graham	2	1	3	$ 40.00	$ 15.00	$ 55.00	$ 7.15	$ 62.15
13										
14	Totals:		12.00	15.00	27.00	$ 240.00	$ 225.00	$ 465.00	$ 60.45	$ 525.45
15	Average:		1.50	1.88	3.38	$ 30.00	$ 28.13	$ 58.13	$ 7.56	$ 65.68
16										
17	Adult Cost:	$ 20.00								
18	Children's Cost:	$ 15.00								
19	Gratuity %	13.00%								
20										
21	Minimum:		1.00	-	1.00	$ 20.00	$ -	$ 20.00	$ 2.60	$ 22.60
22	Maximum:		2.00	5.00	6.00	$ 40.00	$ 75.00	$ 95.00	$ 12.35	$ 107.35
23										
24	How many people are in the list		8							
25	How many have RSVP'd?		8							

	A	B	C	D	E	F	G	H	I	J
1	Guest List									
2	Family Golf Tournament									
3										
4	Last Name	First Name	# of Adults	# of Kids	Total # of Guests	Price of Adults Meal	Price of Kids Meal	Subtotal	Gratuity	Cost per Employee
5	Jones	Jenny	2	3	=C5+D5	=C5*$B$17	=D5*$B$18	=F5+G5	=H5*$B$19	=H5+I5
6	Higgins	Jimmy	1	3	=C6+D6	=C6*$B$17	=D6*$B$18	=F6+G6	=H6*$B$19	=H6+I6
7	Parker	Suzie	2	0	=C7+D7	=C7*$B$17	=D7*$B$18	=F7+G7	=H7*$B$19	=H7+I7
8	Fredricks	Johnny	1	0	=C8+D8	=C8*$B$17	=D8*$B$18	=F8+G8	=H8*$B$19	=H8+I8
9	Templeton	Mary	1	5	=C9+D9	=C9*$B$17	=D9*$B$18	=F9+G9	=H9*$B$19	=H9+I9
10	Fisher	Edward	2	1	=C10+D10	=C10*$B$17	=D10*$B$18	=F10+G10	=H10*$B$19	=H10+I10
11	Jackson	Howie	1	2	=C11+D11	=C11*$B$17	=D11*$B$18	=F11+G11	=H11*$B$19	=H11+I11
12	Swifty	Graham	2	1	=C12+D12	=C12*$B$17	=D12*$B$18	=F12+G12	=H12*$B$19	=H12+I12
13										
14	Totals:		=SUM(C5:C13)	=SUM(D5:D13)	=SUM(E5:E13)	=SUM(F5:F13)	=SUM(G5:G13)	=SUM(H5:H13)	=SUM(I5:I13)	=SUM(J5:J13)
15	Average:		=AVERAGE(C5:C13)	=AVERAGE(D5:D13)	=AVERAGE(E5:E13)	=AVERAGE(F5:F13)	=AVERAGE(G5:G13)	=AVERAGE(H5:H13)	=AVERAGE(I5:I13)	=AVERAGE(J5:J13)
16										
17	Adult Cost:	20								
18	Children's Cost:	15								
19	Gratuity %	0.13								
20										
21	Minimum:		=MIN(C5:C13)	=MIN(D5:D13)	=MIN(E5:E13)	=MIN(F5:F13)	=MIN(G5:G13)	=MIN(H5:H13)	=MIN(I5:I13)	=MIN(J5:J13)
22	Maximum:		=MAX(C5:C13)	=MAX(D5:D13)	=MAX(E5:E13)	=MAX(F5:F13)	=MAX(G5:G13)	=MAX(H5:H13)	=MAX(I5:I13)	=MAX(J5:J13)
23										
24	How many people are in the list?		=COUNTA(A5:A13)							
25	How many have RSVP'd?		=COUNT(C5:C13)							

Exercise

Open ABSOLUTE AND FUNCTION PRACTICE.XLSX

1. There are several exercises to do, each one in a different sheet at the bottom. You will see the instructions within the sheet.

   The cells that required formulas are colored yellow.

2. After you have followed all of the instructions, you may click on the Completed version of the exercises to compare your answers.

Use CTRL ~ to check out your formulas!

Sorting your Spreadsheet

You can display database records in any order by sorting or rearranging the data. You sort information in a database according to the contents of a column or group of columns, called a sort key. You can also rearrange the order of columns in your database.

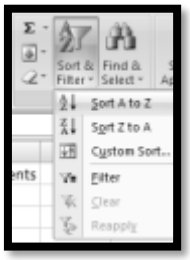
It's important that the spreadsheet is set up properly in order to sort.

	A	B	C	D	E
1	Average Residential Prices				
2					
3	**City**	**Purchase Price**	**Increase**	**Future Cost**	
4	Calgary	180,524.00	18,052.40	198,576.40	
5	Edmonton	127,718.00	12,771.80	140,489.80	
6	Regina	94,205.00	9,420.50	103,625.50	
7	Saskatoon	106,248.00	10,624.80	116,872.80	
8	Toronto	255,910.00	25,591.00	281,501.00	
9	Vancouver	301,228.00	30,122.80	331,350.80	
10	Ottawa	158,007.00	15,800.70	173,807.70	
11	Montreal	128,076.00	12,807.60	140,883.60	
12	Quebec City	97,062.00	9,706.20	106,768.20	
13	St. John's	100,722.00	10,072.20	110,794.20	
14	Halifax	118,229.00	11,822.90	130,051.90	
15					
16	Average Cost	151,629.91	15,162.99	166,792.90	
17	Maximum Cost	301,228.00	30,122.80	331,350.80	
18	Minimum Cost	94,205.00	9,420.50	103,625.50	
19	Total Cost of all houses	1,667,929.00	166,792.90	1,834,721.90	
20					
21	Estimated Growth %	10%			
22					

1. No blank row between the heading row and the first row of data
2. There should only be one row of headings
3. No blank rows or columns within your data
4. There should be at least one blank row between your last row of data and your total row

Simple Sorting

It is very simple to sort by one column.



1. Simply click on one of the cells in the column you wish to sort by (ie. Last name)
2. Click on one of the sorting buttons, depending on if you want to sort by ascending or descending order.

Press CTRL A to test that your data is set up currently. This will select the area that it will assume you want to sort.

NOTE: It is very important **not** to select any data and then hit the sort buttons, because it will only sort what you have selected and leave everything else as is!!

If you want to do any more complex sorting, simply click in your data somewhere and choose Sort from Custom Sort from the Sort & Filter button.

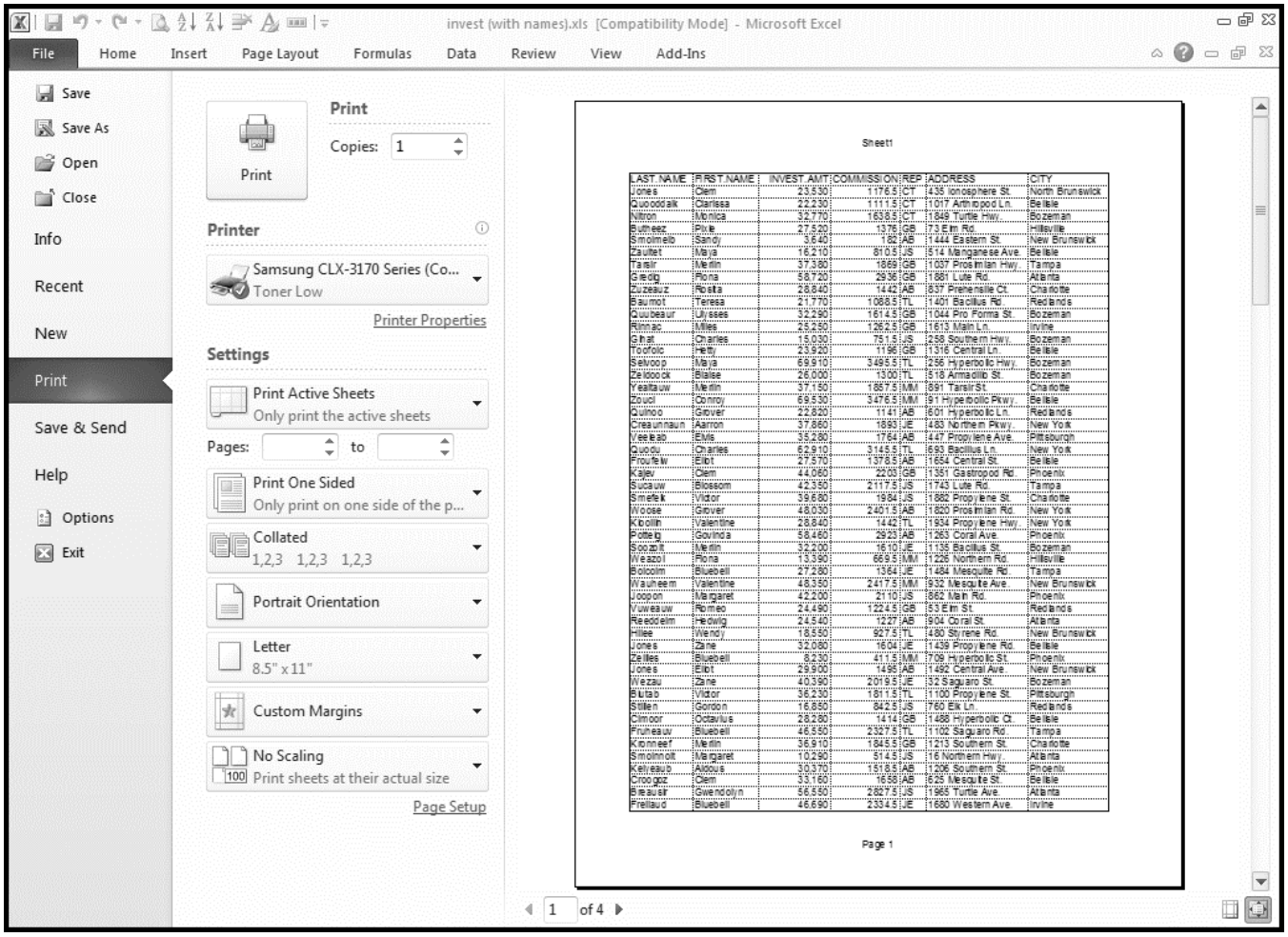
Printing

This module will teach you how to print from a worksheet file and how to preview your worksheet file before you print it. You will also change the Page Setup including options such as Headers & Footers, Margins, Orientation and Scaling.

Previewing Your Print Job

It is a good idea to preview the print job before actually printing it as it saves time, paper, and toner/ink. The preview you will show you exactly how your data will appear on the printed page.

1. Choose Print from the File menu.



Many of the above features are on this screen, as well as a quick link to Page Setup. You are also able to perform other tasks right from this screen such as switch from portrait to landscape and choose a paper size. In the bottom right corner, you'll see a couple of buttons for showing your margins and Zooming in and out. To get out of this screen without printing, simply click on the HOME tab at the top on the ribbon.

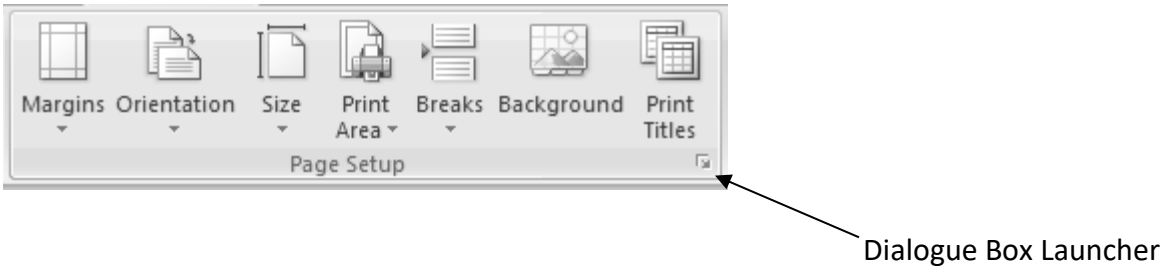
Page Setup

The **Setup** command lets you adjust page margins, include a header or footer for each page, and specify other print and layout settings.

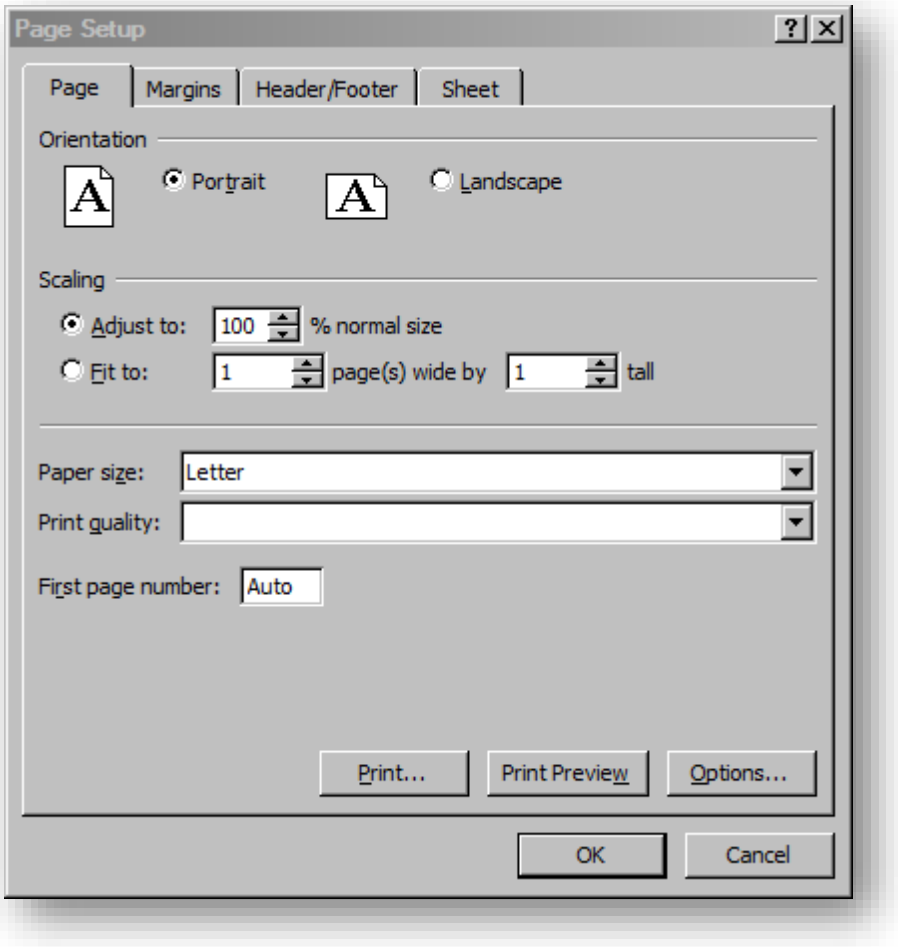
1. Click on the Page Layout Tab on the ribbon or click on the Setup button if you're in Print Preview.

   There are four tabs in the Page Setup box. Following is a list of the options which can be changed in Page Setup.

In new versions of Excel, on the Page Layout tab on the ribbon, you can do many of these things without going into the Page Setup screen. For example, you will see an Orientation button. If you want to go into the Page Setup screen, simply click on the arrow (dialogue box launcher) at the bottom of the Page Setup group when you click on the Page Layout tab on the ribbon.

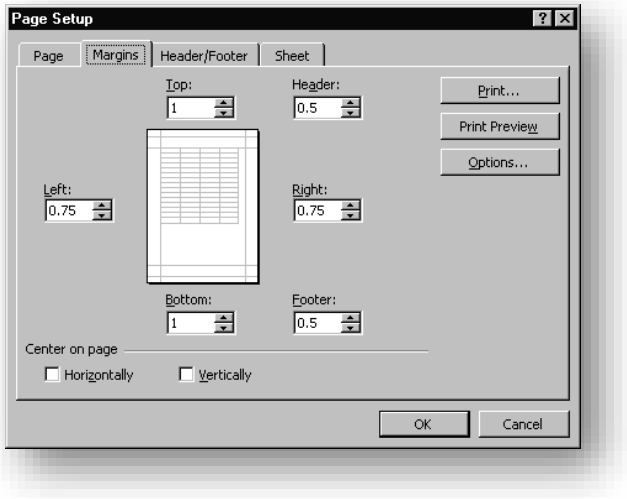


Page Tab



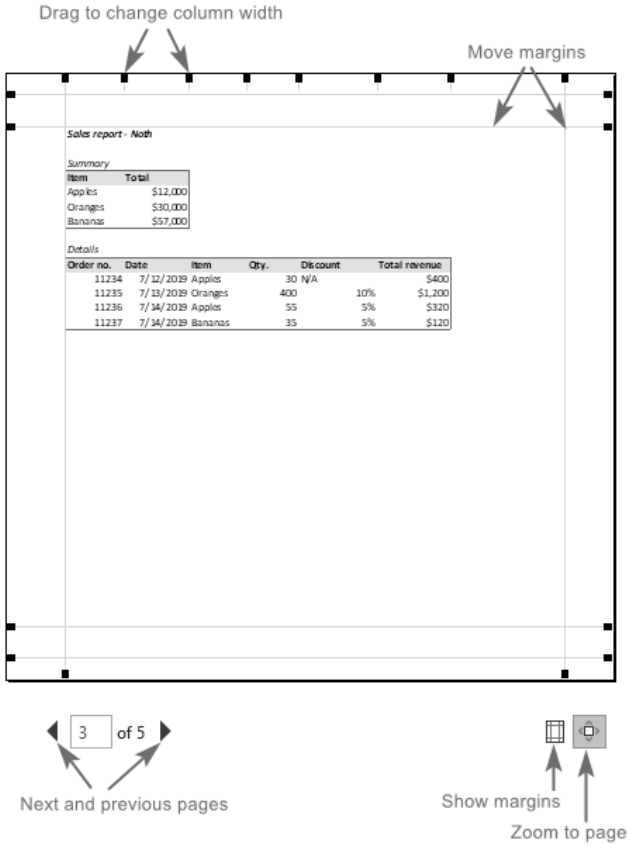
Orientation	Determines whether Excel prints in portrait (vertical) or landscape (horizontal) mode. Landscape is not available for all printers.
Scaling	Allows you to size the spreadsheet to fit onto the page.
Paper Size	Allows you to choose the size of paper to print the spreadsheet on.
Print Quality	Allows you to pick the quality of printing.
First Page Number	Allows you to type a number for the page numbering to start at.

Margins Tab

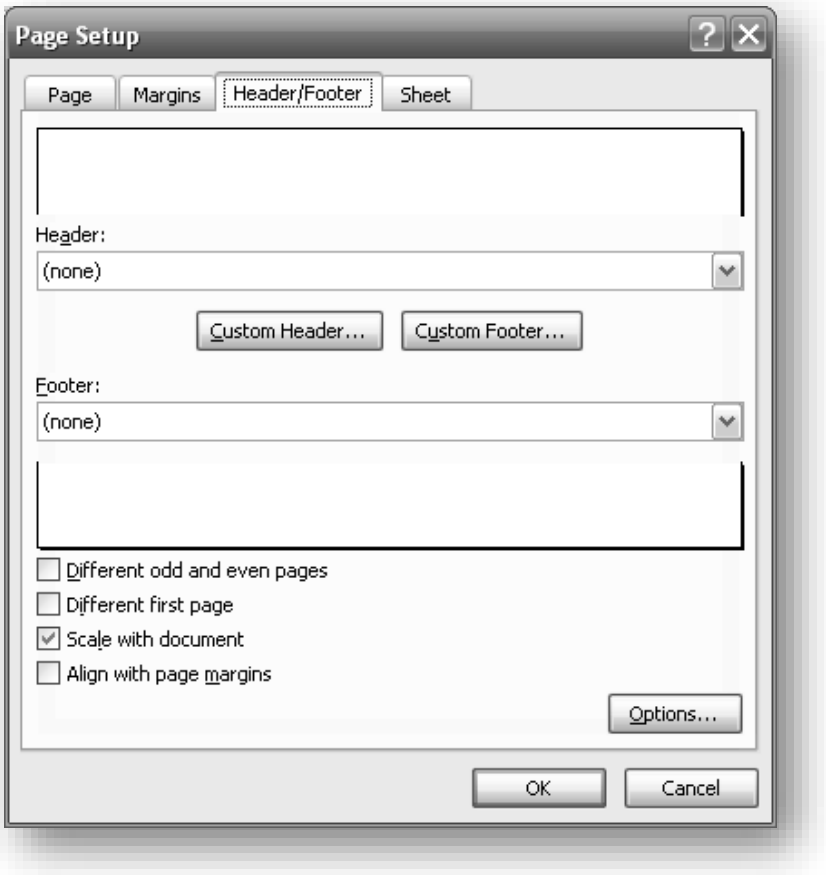


Top, Bottom, Left, Right	Specify the Left, Right, Top, Bottom Margins.
Header, Footer	Specify how close to the edge of the page to print the header and footer.
Center on Page	Lets you center the spreadsheet on the page either horizontally or vertically or both.

NOTE: You can also modify your margins while you're in Print Preview, you don't even need to be in the Page Setup box. Just click on the Show Margins button on the bottom right corner of the screen and you will be able to move the margins around yourself rather than typing in a dimension.



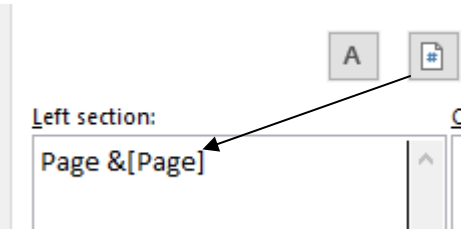
Header/Footer Tab



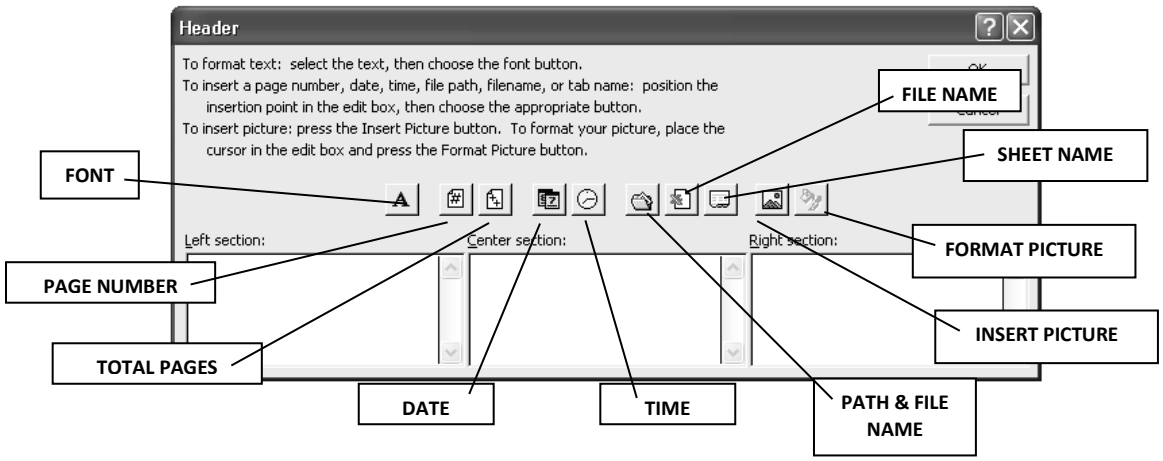
Header	Constant text at the top of the page. i.e. Text, Page #. You can pick a predefined header or create a custom one.
Footer	Constant text at the bottom of the page. i.e. Text, Page #. You can pick a predefined footer or create a custom one.

Adding a Page Number

1. If you would like a page number to appear on every page, click on the Custom Header or Footer button.
2. Position your cursor to where you want it displayed.
3. Type the word Page, if desired, and then click on the Page Number button.

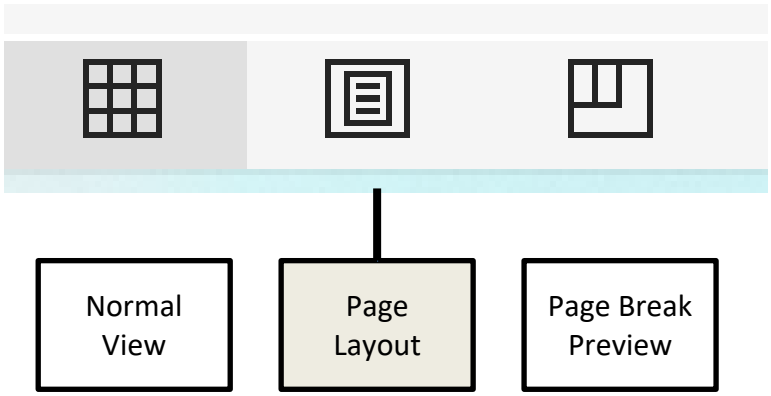


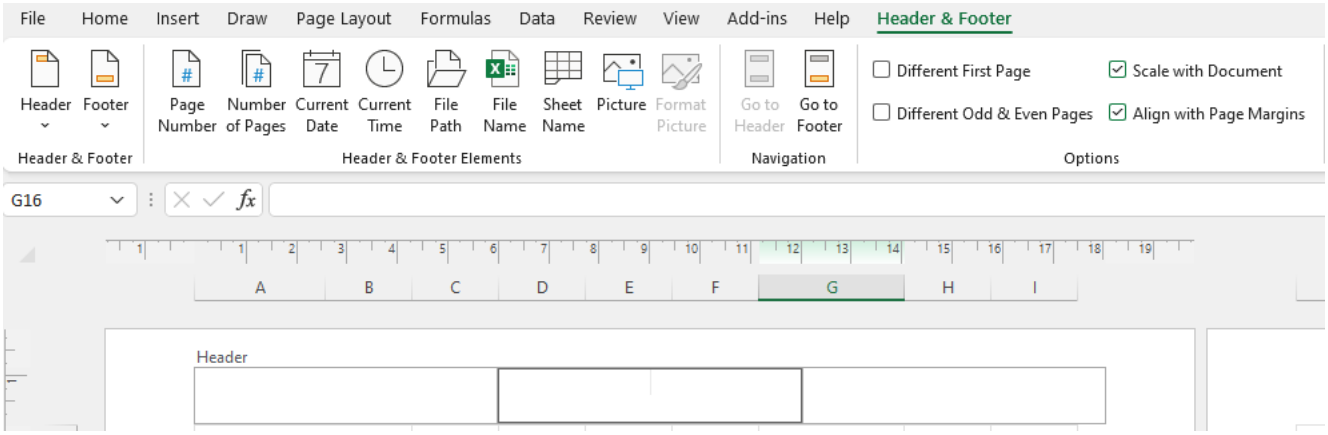
When creating a custom header or footer, you can insert special codes that will update every time it is printed. These special codes can be typed into the Custom Header or Footer or you can click on the tools that appear in the Header or Footer screen. If you click on the '**Custom Header**' or '**Custom Footer**', you will display the following dialog box:



A		Displays the *Font* dialog box so you can adjust the font, size, and style of the text for each of the three sections of the header or footer
#	&[Page]	Inserts the page number
#	&[Pages]	Inserts the total number of pages
	&[Date]	Inserts the date
	&[Time]	Inserts the time
	&[File]	Inserts the filename of the workbook
	&[Tab]	Inserts the name of the current worksheet
	&[Path]&[File]	Inserts the path and filename (ie. c:\data\budget.xls)
	&[Picture]	Displays the *Insert Picture* dialog box so you can insert a picture
		Displays the *Format Picture* dialog box so you can adjust picture properties

NOTE: You can also edit your headers and footers through the Page Layout View Tab on the bottom right corner of your screen.



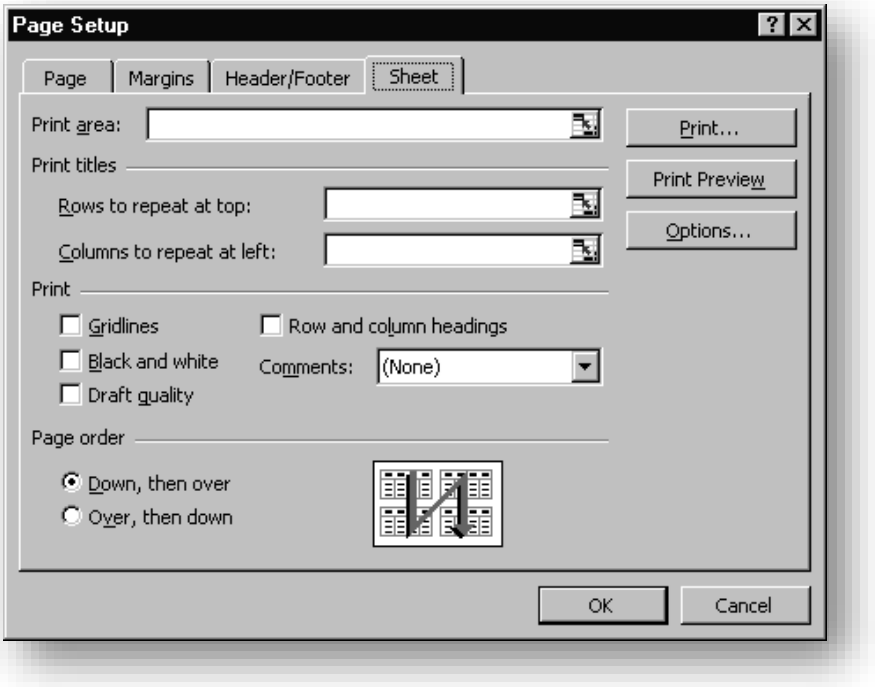


This allows you to click where you want to type in your header/footer and add useful codes to it such as page numbers and/or dates.

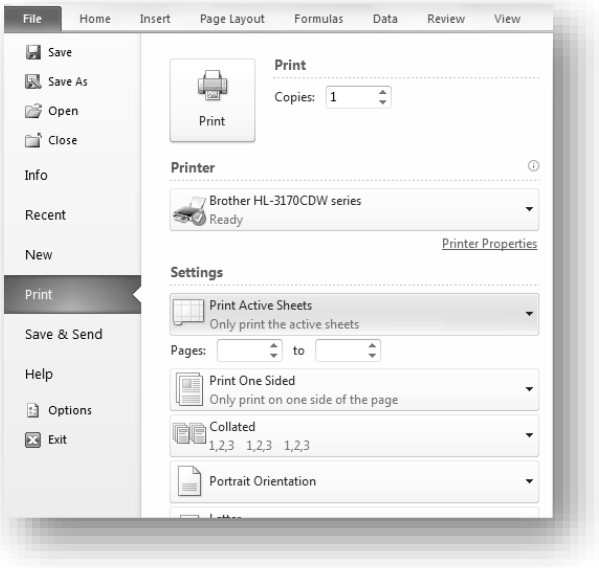
To get your screen back to normal, click on a cell within your spreadsheet and then click on the Normal View button.

Sheet Tab

Print Area	Allows you to define an area on the spreadsheet to print
Print Titles	Specifies the columns of worksheet data to print at the left of every page and print range and the rows of worksheet data to print at the top of every page and above every print range.
Print options	Allows you to choose to print gridlines, row and column headings and other options.
Page Order	Allows you to choose which order to print the pages if they happen to span across more than one page.
Other Options	Gridlines, Row and Column Headings, how to print comments



Printing the Worksheet



If you chose a print area in Page Setup, you can select Selected Sheet to print the range. If you didn't set a print range, Excel guesses at what to print. If you select a range before going into the Print menu, you can choose Selection. This overrides the specified print area. You also have the option to print all the sheets by choosing the Entire Workbook.

You can also choose how many copies to print and which pages.

1. Choose Print from the File menu.

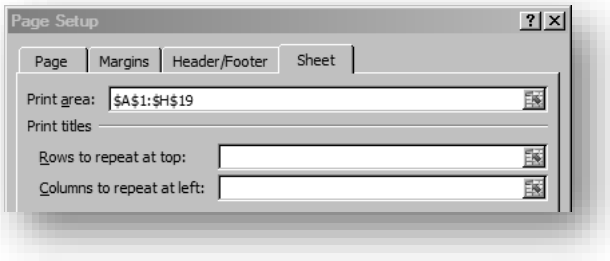
Print Areas

You may choose to set up an area to print each time you print this spreadsheet or you may set up a one-time print area.

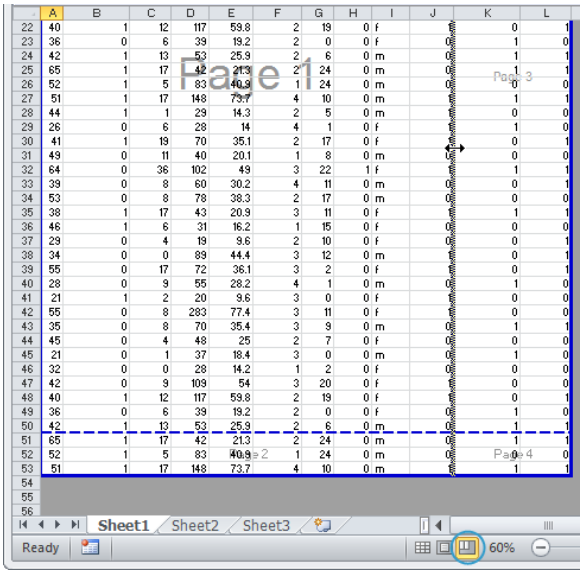
1. Temporary Print Area

   To print only a portion of the spreadsheet, simply select the area, and choose SELECTION from the **Print** menu under Settings. It likely displays Print Active Sheets as a default.

2. Permanent Print Area



   Method One:
   To choose an area to print, click on the SHEET tab from the **File Page Setup** menu. {Click} in the **Print Area** box and click and drag over the cells you want to print. You can also type the names of the cells in. When you choose **Print** from the file menu or the toolbar, this area will always print.



   Note: You must go into Page Setup from the Page Layout tab. You cannot access it from the Print screen to modify Print Area and Print Titles.

   Method Two:
   Choose Page Break Preview from the bottom right of your screen or from the View ribbon tab. Drag the blue lines around the cells you wish to print.

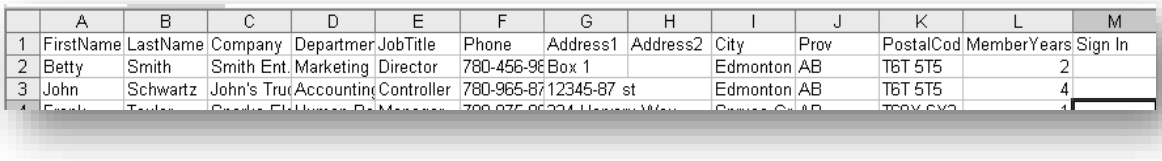
Print Titles

You can set your print titles if you have a long and/or wide spreadsheet and you need certain information repeated on every page. An example you be if you need to produce a list of people. Maybe you want a list of their names and phone numbers. But it would also be great to have a list that has names and maybe a membership number. Or maybe a sign in sheet for your regular meetings.

If you have that many columns of information, how will you ever all fit it on one page? You can flip your spreadsheet to print landscape and decrease your font size, but it would be really great if you could just select the columns you want to print and not worry about the other ones.

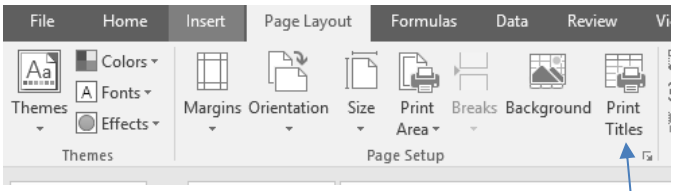
This is easily done with a few simple steps.

1. Start by typing all your information in, starting at column A. Make sure you separate first name from last name, this allows more flexibility later should you decide to merge a letter to your list of names.



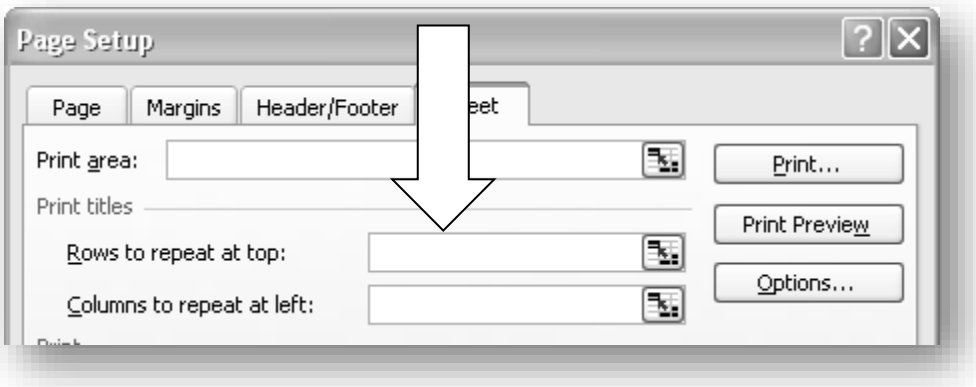
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	FirstName	LastName	Company	Departmer	JobTitle	Phone	Address1	Address2	City	Prov	PostalCod	MemberYears	Sign In
2	Betty	Smith	Smith Ent.	Marketing	Director	780-456-98	Box 1		Edmonton	AB	T6T 5T5	2	
3	John	Schwartz	John's Tru	Accountin	Controller	780-965-87	12345-87 st		Edmonton	AB	T6T 5T5	4	

2. Click on the Page Layout tab and then Print Titles. This takes you directly to the Sheet tab within the Page Setup box.

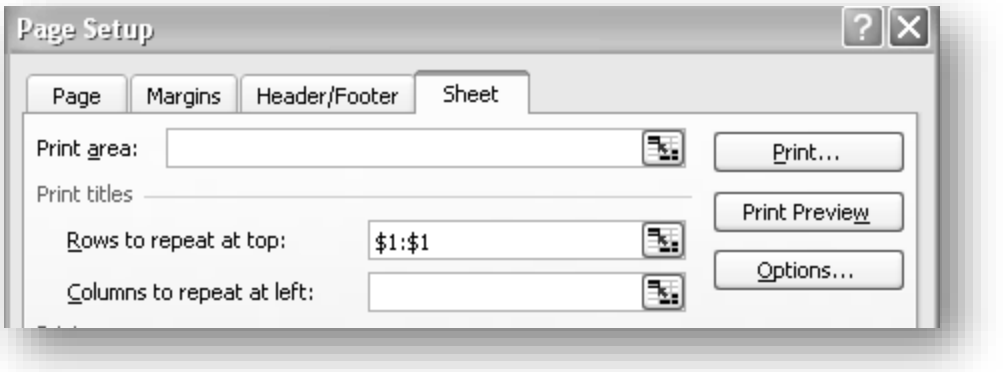


Here you will set up the rows and columns to print on every page. Later, you will select only the data you want to print and these corresponding rows and columns you choose on this screen will automatically print.

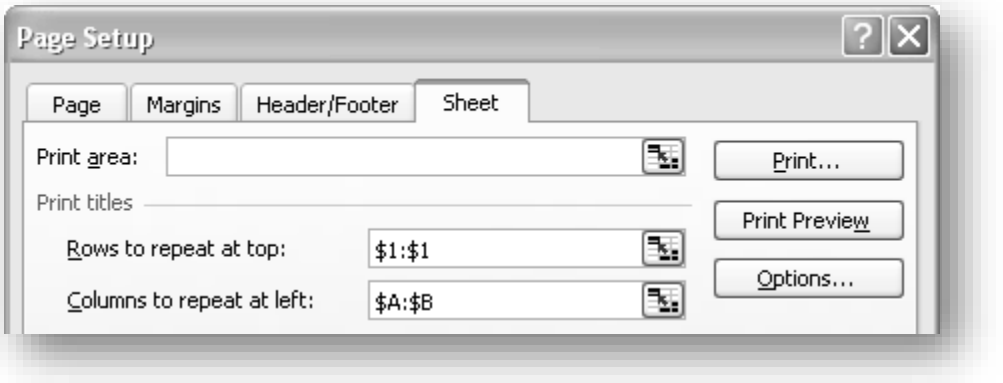
3. Click in the “Rows to Repeat at Top” text area.



4. Next, click anywhere on the row that contains your heading row. This step is something you should do in all Excel spreadsheets in order to have this row repeat at the top of every page. You will see that the row number, along with some dollar signs appear. Don't let the dollar signs scare you, just ignore them!

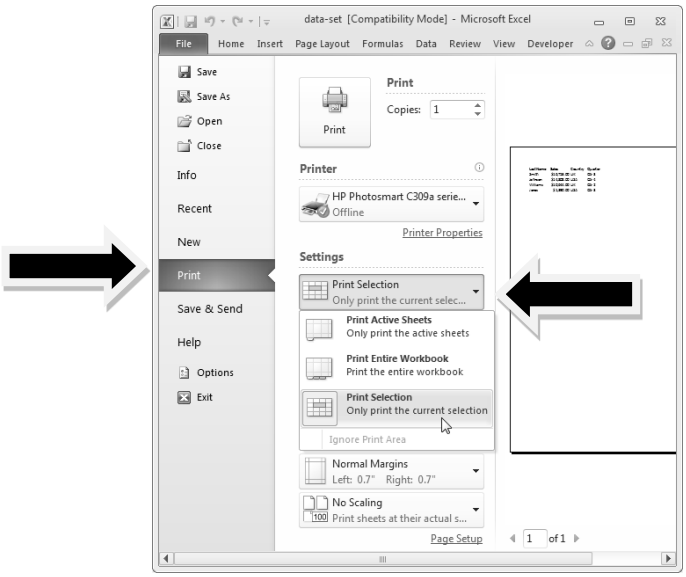


5. Now you will do the same with the columns. Click on the "Columns to Repeat at Left" text area and then click in your spreadsheet where the columns you wish to always appear are. In our case, it is column A and B. This is the secret to making great reports in Excel!



6. After you've clicked OK to save your changes, the rest is very simple. Simply select the cells you want printed, excluding the rows and columns you chose in the above steps. For example, if you want a list of names and phone numbers, simply drag your mouse over all the phone numbers.

7. Now you're ready to print. Go into the File menu and choose Print. The trick here is to click on the Selection option to make it only print your print titles which you set up earlier and the selected cells. You may want to click on Preview the first time, just to make sure everything looks good before you actually print.



There you have it! Only the selected information prints with the print titles! Remember when setting up your spreadsheet, put like columns together so that you can print multiple columns this way. (For. an address list, you would select the address fields, plus city, province/state and postal/zip code)

Next time, you can select something different, say Company and title and repeat the above step. Another great list!

Exercise

Open BUDGET.XLS

1. Sort the list alphabetically by the expense name.

2. Then sort the list to make the highest expense at the top.

3. Do a Print Preview (File, Print) to see how the spreadsheet would look like if it printed now. Notice how it is two pages and only January to June fits on page one. Page two shows the rest of the year.

4. Change the format to LANDSCAPE. (Page Layout ribbon tab or Page Setup, Page tab).

5. Print Preview to see the change.

6. Set the print area to A1:N30. (Page Layout ribbon tab, click Print Titles, and click on the Sheet Tab) This will make only the expenses print, not the income and profit lines.

7. Print Preview the sheet.

8. Make it fit on one page with the Fit to Page (scaling) feature. (Page Setup, Page Tab, click the circle beside Fit to 1 page wide by 1 page tall)

9. Add the following Header in the center: *Budget Projections.* (Page Setup, Header/Footer Tab, then Custom Header)

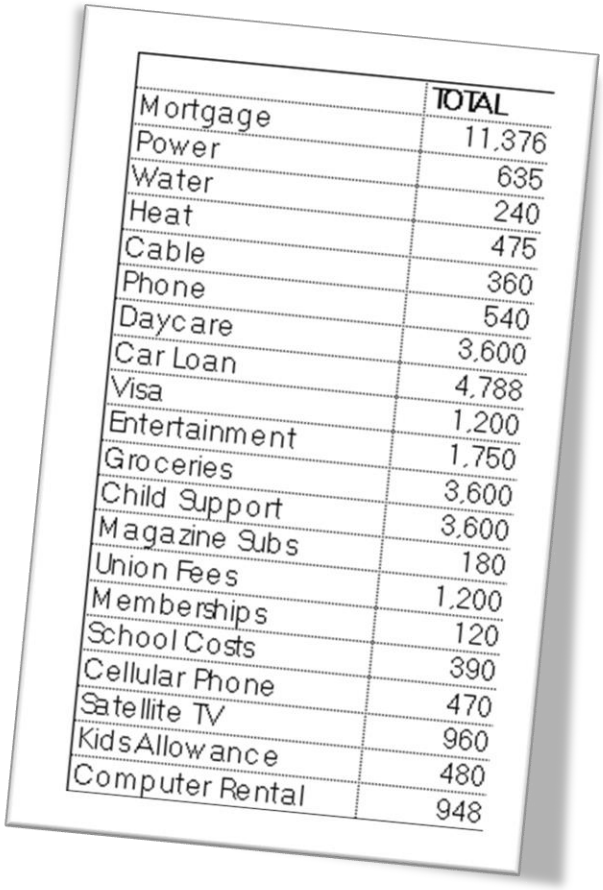
10. Add the date on the bottom left. (Page Setup, Header/Footer Tab, then Custom Footer)

11. Remove the gridlines. (Page Setup, Sheet tab)

12. Print preview the sheet.

13. Set your print titles. (Page Setup, Sheet tab,
Rows to Repeat at top – row 6
Columns to Repeat at Left – Column A

14. Do a Print Preview of just your total column (N) and your expenses. (Select Column N, Office/File menu, Print, choose Selection, then click Preview)



	TOTAL
Mortgage	11,376
Power	635
Water	240
Heat	475
Cable	360
Phone	540
Daycare	3,600
Car Loan	4,788
Visa	1,200
Entertainment	1,750
Groceries	3,600
Child Support	3,600
Magazine Subs	180
Union Fees	1,200
Memberships	120
School Costs	390
Cellular Phone	470
Satellite TV	960
Kids Allowance	480
Computer Rental	948

For Example, see the sample to the right.

Note: It may not be sorted in the same order as yours.

Exercise #2 – Open BUDGET PRINTING.XLS and following the instructions.

Excel Level 2 (Beyond the Basics Day 1)

Intermediate Functions

In this module, you are introduced to some intermediate functions that can be helpful when working with Excel. These include the IF statement, and the VLOOKUP, ROUND, NOW and COUNT functions.

The =IF Statement

Open OFFICE SUPPLY SALES.XLS

The =IF statement is used when the user wishes to assign a value, perform a calculation or display a message based on the result of a condition. Here are some IF statements for this example.

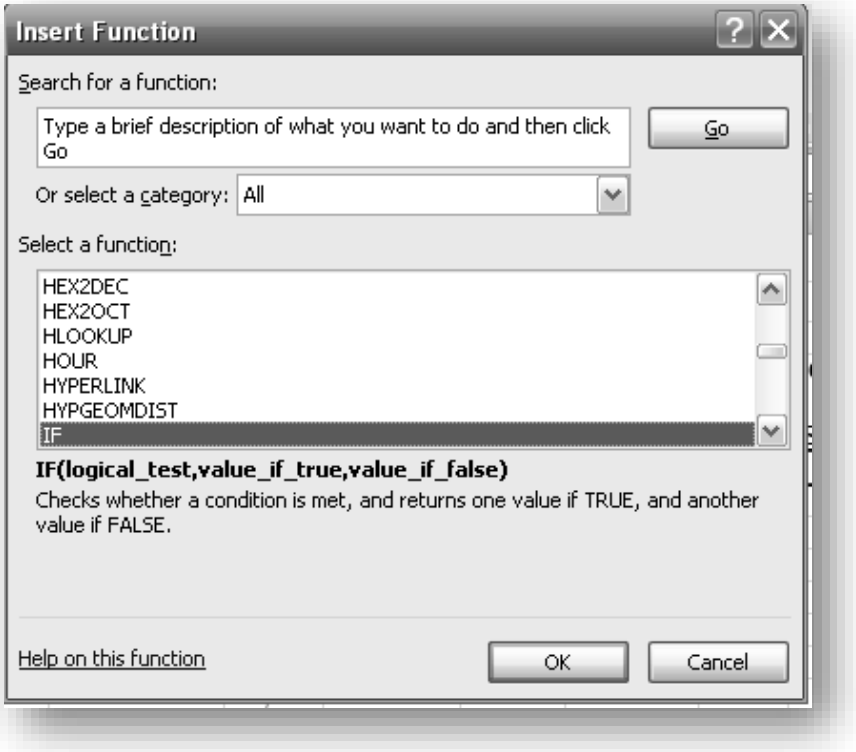
- First, in column H, we want to display a message indicating if it is a large sale or not. There is an amount typed in cell M3 that shows the value we have determined is a large sale amount.
- In column I, we will give them a different commission depending on if the total is greater than or equal to the Large Order Size. (Commission percent multiplied by the Total).
- In Column J, we will use the Large Order size to determine if they get a bonus or not.

	G	H	I	J	K	L	M
1							
2							
3	**Total**	**Order Size**	**Bonus**	**Commission**		Large Order Size:	$ 500.00
4	796.00	Big Order!	$ 1,000.00	$ 159.20		Bonus Amount for large orders:	$ 1,000.00
5	999.50	Big Order!	$ 1,000.00	$ 199.90		Commission for large orders:	20%
6	179.64	Small Order	$ -	$ 17.96		Commission for small orders:	10%
7	539.73	Big Order!	$ 1,000.00	$ 107.95			
8	167.44	Small Order	$ -	$ 16.74			
9	299.40	Small Order	$ -	$ 29.94			
10	149.25	Small Order	$ -	$ 14.93			
11	449.10	Small Order	$ -	$ 44.91			
12	63.68	Small Order	$ -	$ 6.37			
13	539.40	Big Order!	$ 1,000.00	$ 107.88			

1. {Click} on cell **H4**.

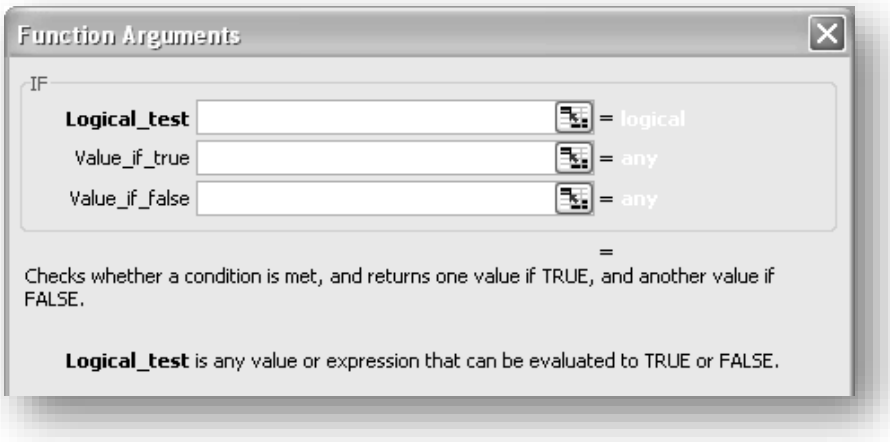
2. {Click} on


3. {Click} on **IF** in the Function Name box. If **IF** is not displayed, choose the **ALL** Category.



4. Click **OK**.

When we use the IF statement, it asks first for the condition, then the action to perform if it is true and then if it is false.



You then need to give it the test. You can compare 2 cells together, or a cell and a number as we are doing in this example. You use the following operators to do the comparison:

=	Equal to	< >	Not Equal to
>	Greater than	>=	Greater than or Equal to
<	Less than	<=	Less than or Equal to

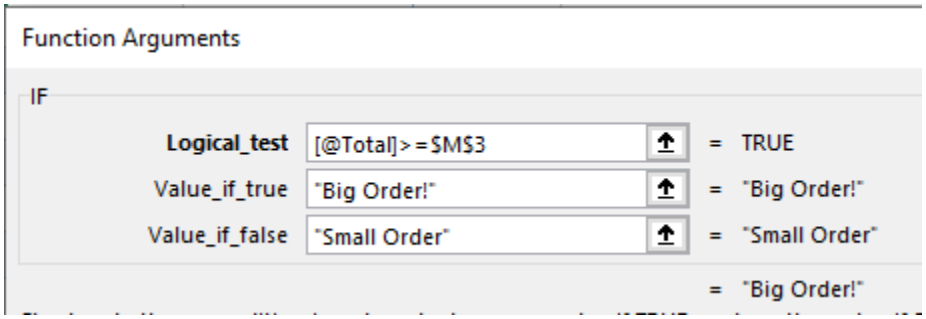
5. In the **logical_test** box, click on G4 and type >=M3. You will then need to hit F4 so this cell reference is absolute when it is copied down.
   This will determine if the total is a large sale or not.

6. Click on the next box or press TAB to get there.

7. In the **value_if_true** box, type **Large Order!**.
   This will display Large Order if the total is larger than the amount that is typed in cell M3.

8. In the **value_if_false** box, type **Small Order.**
   This will display Small Order if the total is less than the amount that is typed in cell M3.

9. Press the **FINISH** or **OK** button.
   The formula **=IF([@Total]>=$M$3,"Big Order!","Small Order")** appears in the formula bar.



10. Copy the formula using Autofill to display messages for the rest of the employees. Note the results.

Completed spreadsheet is as follows.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3	OrderDat	Region	Rep	Item	Units	Unit Cost	Total	Order Size	Bonus	Commission		Large Order Size:	$ 500.00
4	1/6/17	East	Johnson	Pencil	400	1.99	796.00	Big Order!	$ 1,000.00	$ 159.20		Bonus Amount for large orders:	$ 1,000.00
5	1/23/17	Central	Knievel	Binder	50	19.99	999.50	Big Order!	$ 1,000.00	$ 199.90		Commission for large orders:	20%
6	2/9/17	Central	Hall	Pencil	36	4.99	179.64	Small Order	$ -	$ 17.96		Commission for small orders:	10%
7	2/26/17	Central	Morganstin	Pen	27	19.99	539.73	Big Order!	$ 1,000.00	$ 107.95			
8	3/15/17	West	Anderson	Pencil	56	2.99	167.44	Small Order	$ -	$ 16.74			
9	4/1/17	East	Johnson	Binder	60	4.99	299.40	Small Order	$ -	$ 29.94			
10	4/18/17	Central	Shelton	Pencil	75	1.99	149.25	Small Order	$ -	$ 14.93			
11	5/5/17	Central	Hall	Pencil	90	4.99	449.10	Small Order	$ -	$ 44.91			
12	5/22/17	West	Thompson	Pencil	32	1.99	63.68	Small Order	$ -	$ 6.37			
13	6/8/17	East	Johnson	Binder	60	8.99	539.40	Big Order!	$ 1,000.00	$ 107.88			
14	6/25/17	Central	Morgan	Pencil	90	4.99	449.10	Small Order	$ -	$ 44.91			
15	7/12/17	East	Visser	Binder	29	1.99	57.71	Small Order	$ -	$ 5.77			
16	7/29/17	East	Shippley	Binder	81	19.99	1,619.19	Big Order!	$ 1,000.00	$ 323.84			
17	8/15/17	East	Johnson	Pencil	35	4.99	174.65	Small Order	$ -	$ 17.47			
18	9/1/17	Central	Smith	Desk	2	125.00	250.00	Small Order	$ -	$ 25.00			
19	9/18/17	East	Johnson	Pen Set	16	15.99	255.84	Small Order	$ -	$ 25.58			

Here are the formulas:

	H	I	J
1			
2			
3	Order Size	Bonus	Commission
4	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)
5	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)
6	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)
7	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)
8	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)
9	=IF([@Total]>=$M$3,"Big Order!","Small Order")	=IF([@Total]>=$M$3,$M$4,0)	=IF([@Total]>=$M$3,[@Total]*$M$5,[@Total]*$M$6)

Exercise #1

1. Open IF-Exercises.

2. Starting on the first sheet, use the instructions on the sheet to fill in the formulas.

3. Check your answers on the completed version.

4. Make sure you follow all of the instructions if you are comparing the answers!

	A	B	C	D	E	F	G	H	I
1		Instructions:							
2		Create the following formulas and autofill them down for all the students							
3		F11:	Average of the Four marks for that student						
4		G11:	Display PASS or FAIL depending that student's mark. 50 and higher is a PASS						
5		H11:	Display HONORS if the mark is 80 or higher Otherwise, display nothing.						
6		I11:	They receive a scholarship of 100 if the mark is 80 or higher, otherwise they get 0.						
7		Format all the numbers properly.							
8									
9									
10		Math	Science	English	Phys-Ed	Average	Failing?	Honors?	Scholarship
11	Tommy	81	89	84	78				
12	Janice	44	55	73	23				
13	Bob	80	82	100	65				
14	Sue	35	55	40	70				
15	Mark	90	89	65	75				
16	Kevin	85	80	75	85				
17	Nuno	35	45	48	60				
18	Peter	60	70	55	64				
19	Sally	48	22	52	45				
20	Mary	77	45	90	60				

	A	B	C	D	E	F	G	H	I
1		Instructions:							
2		Create the following formulas and autofill them down for all the students							
3		F11:	Average of the Four marks for that student						
4		G11:	Display PASS or FAIL depending that student's mark. 50 and higher is a PASS						
5		H11:	Display HONORS if the mark is 80 or higher Otherwise, display nothing.						
6		I11:	They receive a scholarship of 100 if the mark is 80 or higher, otherwise they get 0.						
7		Format all the numbers properly.							
8									
9									
10		Math	Science	English	Phys-Ed	Average	Failing?	Honors?	Scholarship
11	Tommy	81	89	84	78	83.00	Pass	Honors	$ 1,000.00
12	Janice	44	55	73	23	48.75	Fail		$ -
13	Bob	80	82	100	65	81.75	Pass	Honors	$ 1,000.00
14	Sue	35	55	40	70	50.00	Pass		$ -
15	Mark	90	89	65	75	79.75	Pass		$ -
16	Kevin	85	80	75	85	81.25	Pass	Honors	$ 1,000.00
17	Nuno	35	45	48	60	47.00	Fail		$ -
18	Peter	60	70	55	64	62.25	Pass		$ -
19	Sally	48	22	52	45	41.75	Fail		$ -
20	Mary	77	45	90	60	68.00	Pass		$ -

Conditional Formatting

Conditional formatting allows you to set rules for cell formatting. If the rules (conditions) are met, then the formatting is applied.

Open CLASS MARKS - CONDITIONAL FORMATTING

Highlighting Cells

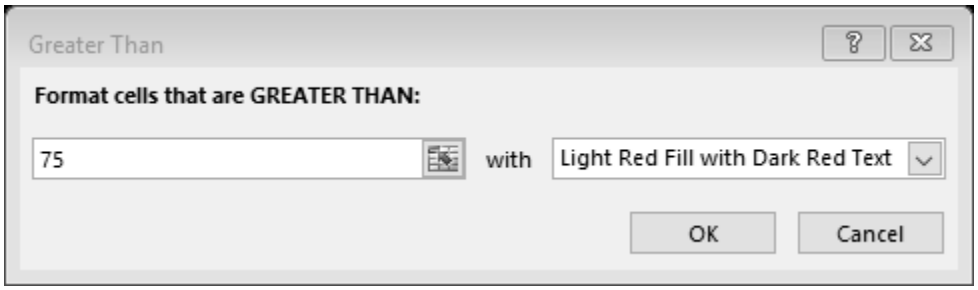
For example, you can set conditional formatting so that a cell turns color if it contains a value higher than 75.

1. Select the cells to be formatted.

2. Click on the Conditional Formatting button on the Ribbon (Home tab).

3. Choose Highlight Cell Rules, then Greater Than.

4. In the text box, type a number or a cell reference. In this example, type the value you want to check -- 75.



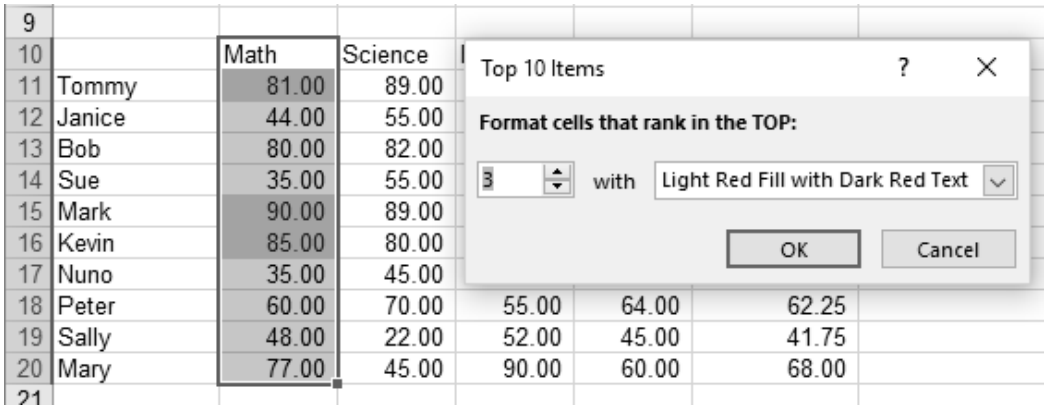
5. Click on the Drop Down box to pick a format.

6. Click OK.

10		Math	Science	English	Phys-Ed
11	Tommy	81	89	84	78
12	Janice	44	55	73	23
13	Bob	80	82	100	65
14	Sue	35	55	40	70
15	Mark	90	89	65	75
16	Kevin	85	80	75	85
17	Nuno	35	45	48	60
18	Peter	60	70	55	64
19	Sally	48	22	52	45
20	Mary	77	45	90	60

There are many other options to experiment with as well, such as Top 10, Data Bars and Icon Sets.

Top/Bottom



	Math	Science			
Tommy	81.00	89.00			
Janice	44.00	55.00			
Bob	80.00	82.00			
Sue	35.00	55.00			
Mark	90.00	89.00			
Kevin	85.00	80.00			
Nuno	35.00	45.00			
Peter	60.00	70.00	55.00	64.00	62.25
Sally	48.00	22.00	52.00	45.00	41.75
Mary	77.00	45.00	90.00	60.00	68.00

Data Bars:

	Math	Science	English	Phys-Ed
Tommy	81	89	84	78
Janice	44	55	73	23
Bob	80	82	100	65
Sue	35	55	40	70
Mark	90	89	65	75
Kevin	85	80	75	85
Nuno	35	45	48	60
Peter	60	70	55	64
Sally	48	22	52	45
Mary	77	45	90	60

Color Scales

	Math	Science	English	Phys-Ed
Tommy	81	89	84	78
Janice	44	55	73	23
Bob	80	82	100	65
Sue	35	55	40	70
Mark	90	89	65	75
Kevin	85	80	75	85
Nuno	35	45	48	60
Peter	60	70	55	64
Sally	48	22	52	45
Mary	77	45	90	60

Icon Sets

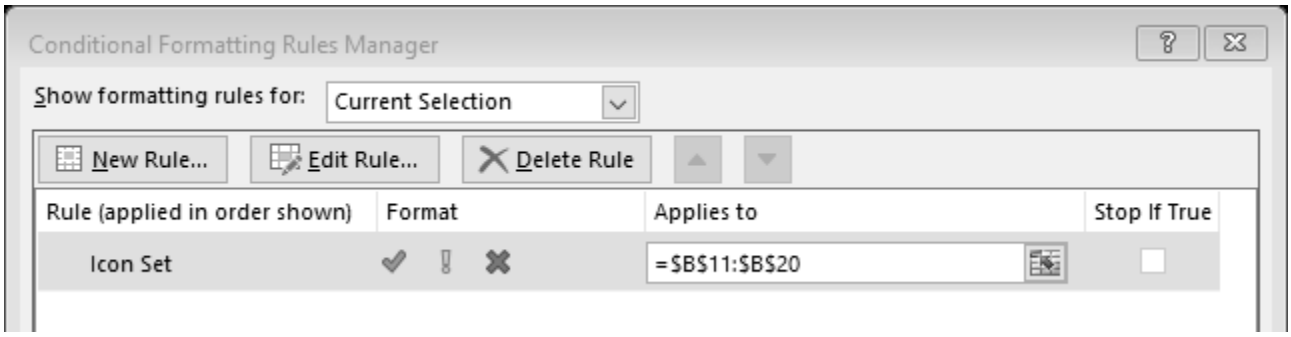
		Math	Science	English	Phys-Ed
10					
11	Tommy	✓ 81	89	84	78
12	Janice	✗ 44	55	73	23
13	Bob	✓ 80	82	100	65
14	Sue	✗ 35	55	40	70
15	Mark	✓ 90	89	65	75
16	Kevin	✓ 85	80	75	85
17	Nuno	✗ 35	45	48	60
18	Peter	! 60	70	55	64
19	Sally	✗ 48	22	52	45
20	Mary	✓ 77	45	90	60

Modifying the Conditional Formatting

1. If you need to do any modifications to the conditional formatting, such as specify how the icons are assigned, first apply the conditional format.

2. While the cells are still selected, go into the Conditional Formatting menu and choose Manage Rules.

3. Then choose Edit Rule. Make sure your rule is selected.



4. Make the appropriate changes. In this example, we are changing the icon designation. We want a check mark if the mark is 80 or higher, the exclamation mark if it's between 50 and 80 and the X if it's below 50.

		Math
10		
11	Tommy	✓ 81
12	Janice	✗ 44
13	Bob	✓ 80
14	Sue	✗ 35
15	Mark	✓ 90
16	Kevin	✓ 85
17	Nuno	✗ 35
18	Peter	! 60
19	Sally	✗ 48
20	Mary	! 77

Named ranges

By naming a range, you are providing a convenient and efficient way to refer to the range in commands and formulas. You can assign a name to any range in the worksheet. Once the range is named, the name can be used any time you need to refer to the range.

You can give the same range several different names if you plan to use the data in different places and a cell address can belong to several range names.

Advantages to using named ranges are:

- Easier to type and is more user friendly (i.e. it is easier to type OT_RATE in a formula than $B$13)
- Lessens the chance that incorrect cell addresses will be used
- Eliminates the need to continually type in the coordinates for ranges you use a lot

GUIDELINES TO FOLLOW WHEN NAMING RANGES:

- Use a name that is relevant to what the name contains.
- The range name can be up to 256 characters.
- The name cannot contain space. Use underscores to make the name more readable. (ie. Jan_Sales)
- Range names are not case sensitive.
- The range name should not contain actual cell references.
- If you delete a range name, check and make sure all values and formulas are correct.
- If columns/rows are inserted, check the range for references.
- Cell addresses can be used in more than one range.
- Range names can be used in any option requiring a range (i.e. print area).
- Range names are stored with the worksheet when saved.

WHAT CAN YOU DO WITH A NAMED RANGE?

- Print it (Print Selection)
- Use it in a formula (Just type the name instead of the cell names)
- Copy it and paste it somewhere else
- Delete the data
- Create a graph with the data
- Total it (just click on the AutoSum tool)

Open INVEST-NAME EXERCISE.XLS

Naming the Range

There are 2 ways to name a range:

- Manually (you decide what to call it).
- Automatically (the names are already contained in the worksheet).

Manually naming a range of cells

In this example, we will name the cells that contain investor information (cells A4:L65).

1. Select cells **A4:L65**.

2. Click to the right of the Name Box.

3. Type in **INVESTORS** and press **<ENTER>**.

   This will assign the name Investors to the cells A4:L65).

4. Press <**CTRL HOME>** to deselect the cells and return to cell A1.

5. Click in the name box and you should see the INVESTORS range listed there. Click on it and you will see your whole range selected!

Naming a Single Cell

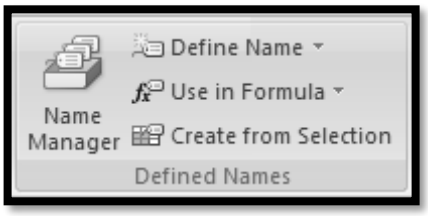
1. Click on cell D2. We will name this cell and later use it in a formula.

2. Click on the arrow beside the name box and type in **commrate**. Press Enter.

If you use the above method, the range will be visible from any sheet within the workbook. The downside of that is that if you had a similar range in another spreadsheet, you could not name it the same name. So if you create your range name using the Define Name button, on the Formula tab on the ribbon.

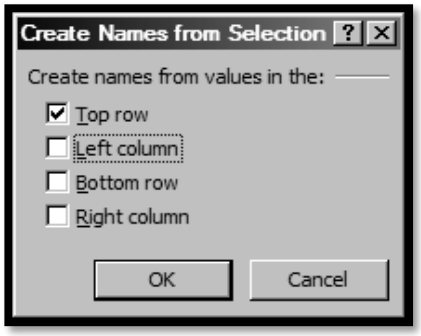
Automatically naming a range

If you want to name more ranges and potential names are already in your spreadsheet, you can use the **Create From Selection** feature. In this example we will give names to each set of data (i.e. names, position, start date, etc).



1. Select the INVESTORS range.

2. Go into the **FORMULAS** ribbon tab and choose **CREATE FROM SELECTION**. You will be prompted to specify where the names exist, based on what you have selected.



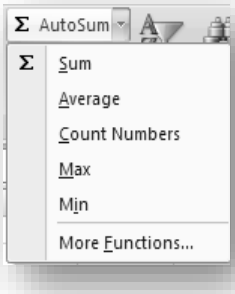
3. Ensure **Top Row** is the only choice selected. Click **OK**.

4. Click in the name box and you will see one name for each column you had selected!

Using the named range in a formula

One of the most common applications for named ranges is to use them in a formula instead of typing the name of the cells. By doing this, the cell references are automatically absolute.

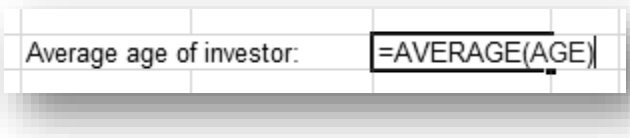
In this example, we will determine the average age of the investors, by using the Average function and the named range, AGE.



1. In cell B68, click on the drop down arrow beside the AUTOSUM button

2. Choose **Average** and click on **OK**.

3. Now instead of typing in the cell names of all the ages (L5:L65), just type **AGE**. Click on OK.



If you ever need to reference your range names while you are in a formula, simply press the **F3** key and they will be listed for you to pick the one to use in your formula!

4. In cell D5, create a formula to figure out the commission. Use your newly named rate to multiply it by the investment amount to get the commission.

5. Copy it down to the other rows to calculate commissions for each investor.

Exercise #1

Open Golf Tourney List.

1. Create two named ranges for the costs in B17 and B18.
2. In cell F5, create a formula to calculate the price of the adult meal for the first person using the named range. (ie. if you named cell B17 “adultcost” then, the formula would be =C5*adultcost.
3. Autofill the formula down. Notice how there is no need to make anything absolute! By using a named range, this is done automatically.
4. Do the same for the formula in cell G5 to calculate the price of the children’s meal.
5. Using the “Automatically Create Names” feature, give all the data names except the total.
6. Go down to cell A20 and type in: The number of employees invited are
7. Then in cell C20, use the COUNTA function in combination with your named ranges to count the number of people listed in column A.
   ie. =COUNTA(First_Name)

Exercise #2

Open Price list - named ranges

1. Follow the instructions in the sheet to create and use named ranges.

Exercise # 3

Open Mileage sheet - named ranges

1. Follow the instructions on the sheet.

Data Tables

Named ranges are useful in many instances but data tables are even better if you will be adding data to the bottom of your list. If you make the range into a table, you will automatically expand the range and your data will be included. With named ranges, you always need to insert a row within the data in order to expand the range.

Tables are discussed more in depth later in this manual and have many other benefits as well.

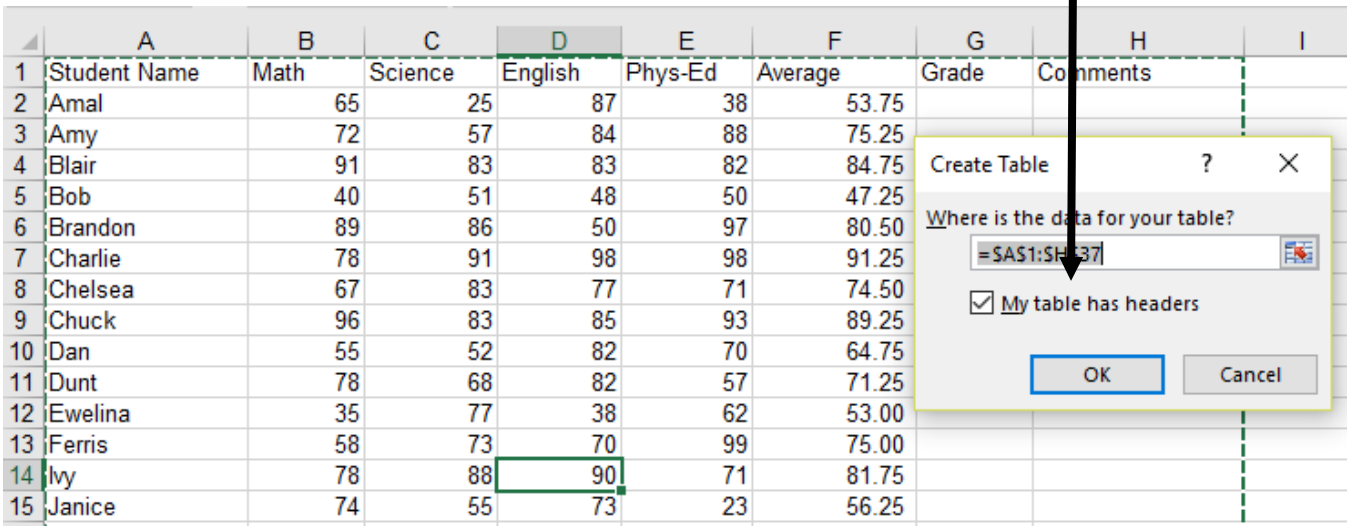
Open Employee Shirts

1. First test your data to be sure there are no blank rows or columns by clicking on one cell in your list and pressing CTRL A.

   This should select all the cells including the headers.

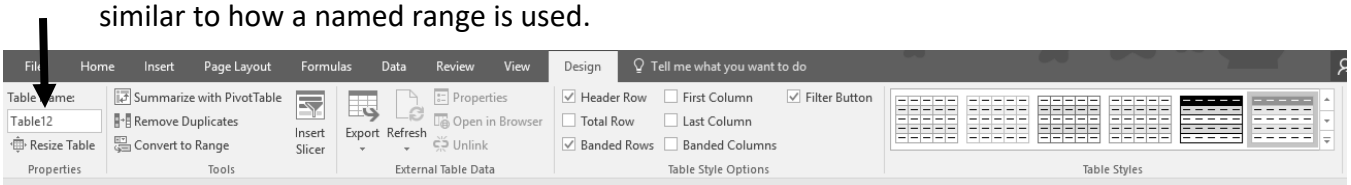
2. Now choose Table from the Insert tab or press CTRL T.

3. It will display a box listing what it recognizes as all the cells containing data, including the headers. Be sure that it recognizes that the first row contains header rows.



	A	B	C	D	E	F	G	H	I
1	Student Name	Math	Science	English	Phys-Ed	Average	Grade	Comments	
2	Amal	65	25	87	38	53.75			
3	Amy	72	57	84	88	75.25			
4	Blair	91	83	83	82	84.75			
5	Bob	40	51	48	50	47.25			
6	Brandon	89	86	50	97	80.50			
7	Charlie	78	91	98	98	91.25			
8	Chelsea	67	83	77	71	74.50			
9	Chuck	96	83	85	93	89.25			
10	Dan	55	52	82	70	64.75			
11	Dunt	78	68	82	57	71.25			
12	Ewelina	35	77	38	62	53.00			
13	Ferris	58	73	70	99	75.00			
14	Ivy	78	88	90	71	81.75			
15	Janice	74	55	73	23	56.25			

4. Now your list is in a table. It has a name which you can change or leave as is. You may want to click on the Table Tools tab on the ribbon to see what the name is in order to use it in a formula similar to how a named range is used.



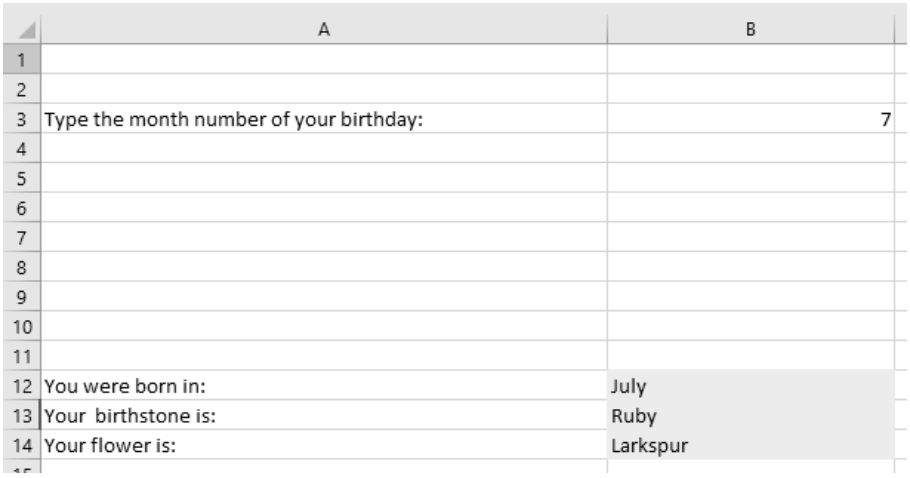
VLOOKUP

Overview

The =**VLOOKUP** function comes in handy whenever there is information to be pulled out of a table, either on the same sheet or in another one.

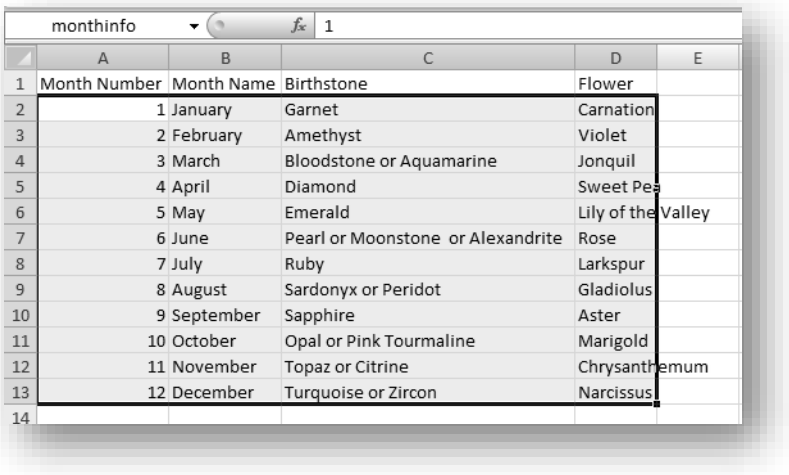
Open BIRTHMONTHINFO.XLS

The following is an example of 3 VLOOKUP functions. They have been entered into B12, B13 and B14. By typing in the month number in B3, the VLOOKUP looks it up and pulls back the appropriate information (ie. Full month name, birthstone, and flower).



	A	B
1		
2		
3	Type the month number of your birthday:	7
4		
5		
6		
7		
8		
9		
10		
11		
12	You were born in:	July
13	Your birthstone is:	Ruby
14	Your flower is:	Larkspur

The information is pulled from a range of cells referred to as a Lookup table. We have stored this on another sheet. It is advisable to make it into a table (CTRL T), then click on the Table Tools tab and make note of the name.



monthinfo | fx | 1

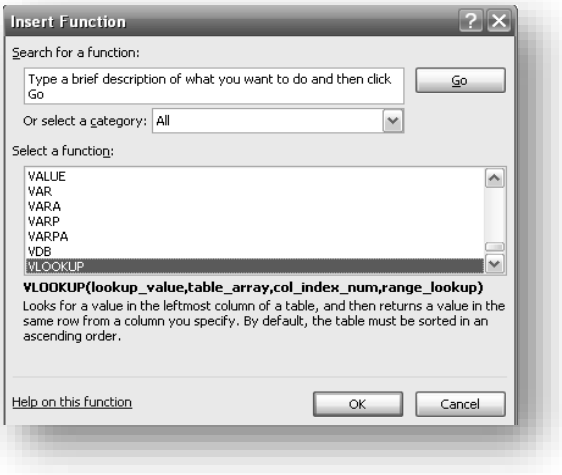
	A	B	C	D	E
1	Month Number	Month Name	Birthstone	Flower	
2	1	January	Garnet	Carnation	
3	2	February	Amethyst	Violet	
4	3	March	Bloodstone or Aquamarine	Jonquil	
5	4	April	Diamond	Sweet Pea	
6	5	May	Emerald	Lily of the	Valley
7	6	June	Pearl or Moonstone or Alexandrite	Rose	
8	7	July	Ruby	Larkspur	
9	8	August	Sardonyx or Peridot	Gladiolus	
10	9	September	Sapphire	Aster	
11	10	October	Opal or Pink Tourmaline	Marigold	
12	11	November	Topaz or Citrine	Chrysanthemum	
13	12	December	Turquoise or Zircon	Narcissus	
14					

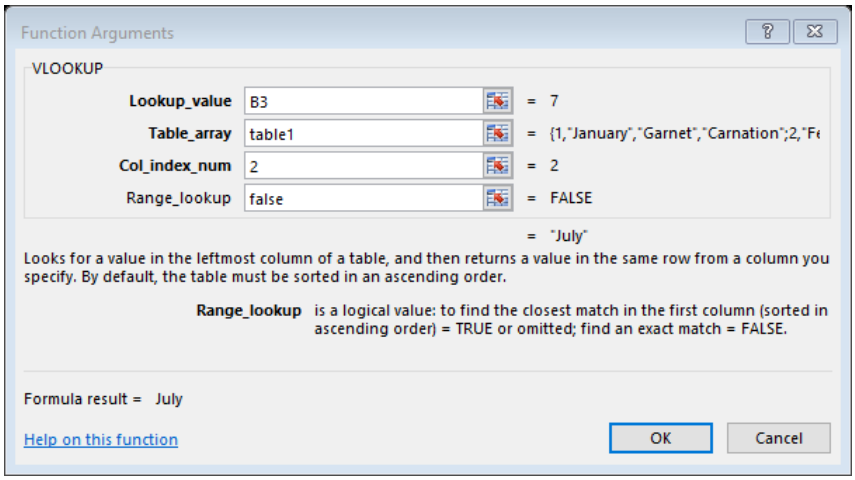
1. Click on the  button and locate VLOOKUP either in the Most Recently Used category or in the ALL category.

2. Click OK.

3. The VLOOKUP function screen appears. It asks for 3 mandatory pieces of information. The fourth is optional. Each are discussed below.

4. In the lookup_value box, type or click on B3.





This is the value you are using to look up the information with, which is the number of the month. It will look this number up in the table array and will choose the closest match, unless otherwise specified in the RANGE LOOKUP field.

5. In the table_array box, it is looking for the master list. Type the name of the table that this list is stored in.

   This is where the information is stored. Think of this like a master list where you will find the information you are looking for. It can be on the same sheet or on a different sheet. It is a good idea to make this data into a table.

Rules for a lookup table:

- It must be sorted by the first column, which must be unique
- It can be on the same sheet, but it may be better if it's on a different one, just for organizational purposes.
- It is advisable to make this list into a data table.

6. In the col_index_num box, type 2.

   This will return the value in the 2nd column in the table, which is the month number.

7. In the range_lookup box, type FALSE.

   This box is used to specify if you want to find an exact match or an approximate match. Type FALSE if you expect it to find an exact match and if it doesn't, it will give an error.

8. Press Finish or OK.

The formula: =VLOOKUP(B3,table1,2,FALSE) appears.

Now if any information on the master list changes, it will automatically change on the other parts of the spreadsheet where you have referenced it.

	A	B
1		
2		
3	Type the month number of your birthday:	7
4		
5		
6		
7		
8		
9		
10		
11		
12	You were born in:	=VLOOKUP(B3,Table1,2,FALSE)
13	Your birthstone is:	=VLOOKUP(B3,Table1,3,FALSE)
14	Your flower is:	=VLOOKUP(B3,Table1,4,FALSE)

You would do this same formula to pull the other two pieces of information (birthstone and flower). The only difference would be that it pulls different column index numbers since this information appears in different columns.

Exercise

Open VLOOKUP EXERCISES.XLS

1. Starting on the first sheet, use the instructions on the sheet to fill in the formulas.

2. Check your answers on the completed version.

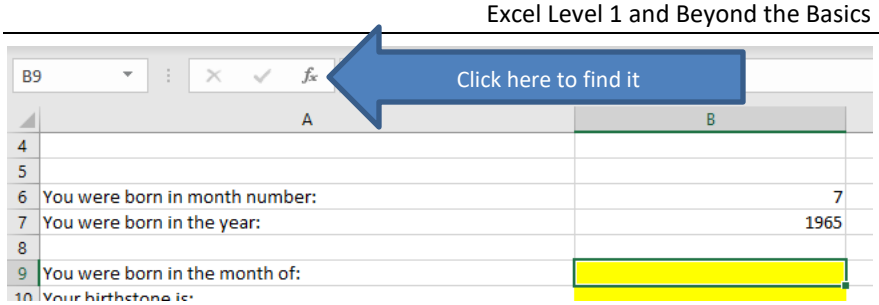
3. Make sure you follow all of the instructions if you are comparing the answers!

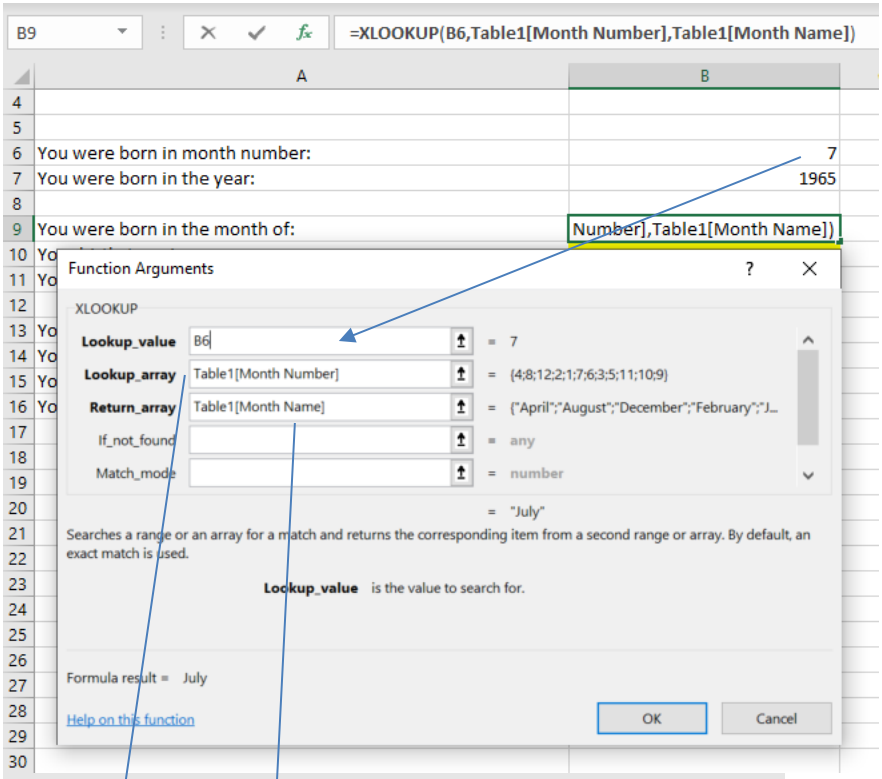
XLOOKUP

There's a new function that came out with Microsoft 365 called XLOOKUP which is similar to VLOOKUP but is more flexible!

The XLOOKUP function searches a range or an array, and then returns the item corresponding to the first match it finds. If no match exists, then XLOOKUP can return the closest (approximate) match.
=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])

Argument	Description
lookup_value **Required***	The value to search for *If omitted, XLOOKUP returns blank cells it finds in **lookup_array**.
lookup_array **Required**	The array or range to search
return_array **Required**	The array or range to return
[if_not_found] **Optional**	Where a valid match is not found, return the [if_not_found] text you supply. If a valid match is not found, and [if_not_found] is missing, **#N/A** is returned.
[match_mode] **Optional**	Specify the match type: 0 - Exact match. If none found, return #N/A. This is the default. -1 - Exact match. If none found, return the next smaller item. 1 - Exact match. If none found, return the next larger item. 2 - A wildcard match where *, ?, and ~ have special meaning.
[search_mode] **Optional**	Specify the search mode to use: 1 - Perform a search starting at the first item. This is the default. -1 - Perform a reverse search starting at the last item. 2 - Perform a binary search that relies on lookup_array being sorted in *ascending* order. If not sorted, invalid results will be returned. -2 - Perform a binary search that relies on lookup_array being sorted in *descending* order. If not sorted, invalid results will be returned.





	A	B	C	D
1	Month Number	Month Name	Birthstone	Flower
2	1	January	Garnet	Carnation
3	2	February	Amethyst	Violet
4	3	March	Bloodstone or Aquamarine	Jonquil
5	4	April	Diamond	Sweet Pea
6	5	May	Emerald	Lily of the Valley
7	6	June	Pearl or Moonstone or Alexandrite	Rose
8	7	July	Ruby	Larkspur
9	8	August	Sardonyx or Peridot	Gladiolus
10	9	September	Sapphire	Aster
11	10	October	Opal or Pink Tourmaline	Marigold
12	11	November	Topaz or Citrine	Chrysanthemum
13	12	December	Turquoise or Zircon	Narcissus

- Find the month number (B6 which is 7)
- In the Month Number Column in the table (presently column A)
- Return the corresponding Month Name (presently column B)
- The match mode is defaulted to forcing it to find an exact match

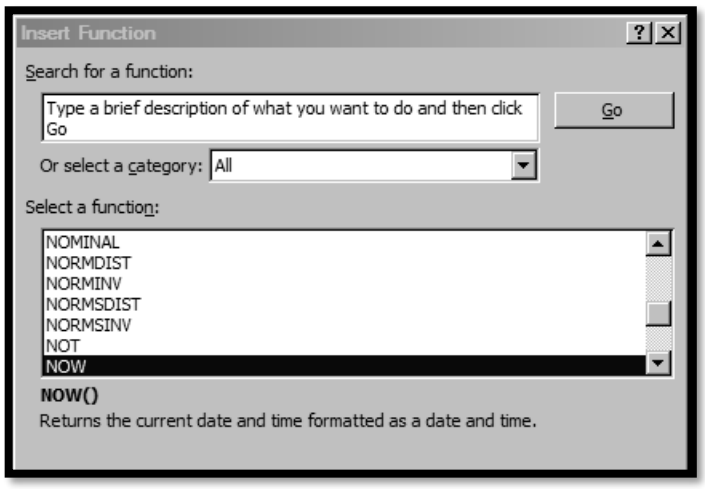
Why is XLOOKUP better than VLOOKUP?

1. You can re-sort your lookup table and it won't mess up the function
2. The column you're using to find the match in doesn't have to be the first column in your table
3. You can specify to start looking at the bottom if you'd like!
4. You can choose if you want the next highest or lowest if it can't match exact.

NOW

Open ROUNDING EXERCISES.XLSX

The NOW function is used to enter the current date into the spreadsheet. When you open the spreadsheet, it automatically fills in the current date.

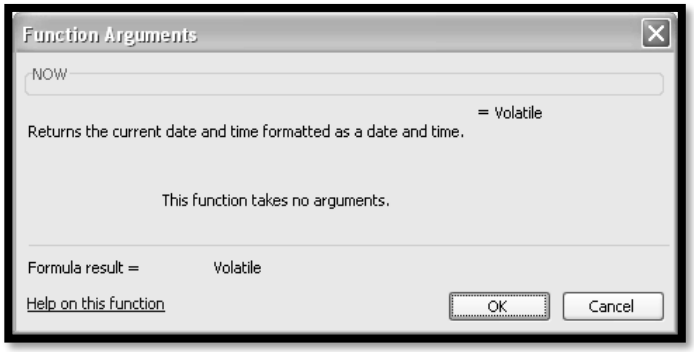


1. Click on cell B1.

2. {Click} on 

3. Choose **NOW** from the **Most Recently Used** list or from the **ALL** category and click OK.

4. Just click OK to get past the next screen.



Very simple – it just adds:

=NOW() to the formula and will give the current date.

You can choose to format it the way you want to in the Format Cells dialog box.

ROUND

Total	Rounded Total
$105.32	$ 105.00
$586.32	$ 586.00
$ 23.85	$ 24.00
$ 54.15	$ 54.00
$246.75	$ 247.00

Many times you need to round a number to the nearest decimal place. The **ROUND** function allows you to specify the number of decimal places to round the number to. Other variations of ROUND are ROUNDUP and ROUNDDOWN (same as TRUNC).

In this exercise, we will round the totals to have no decimals places.

1. {Click} on cell H6.

2. {Click} on 

3. Choose **ROUND** from the **Most Recently Used** list or from the **ALL** category.

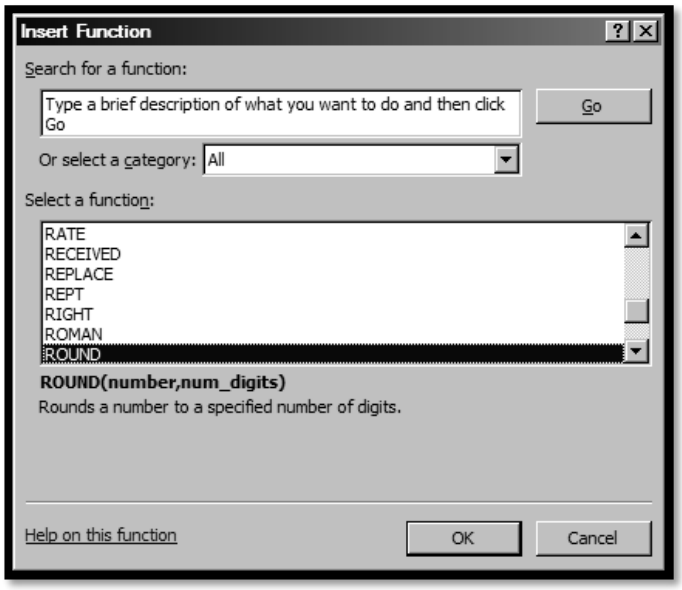
4. Click **OK**.

5. For **number** type ***G6*** or {click} on G6 with the mouse.

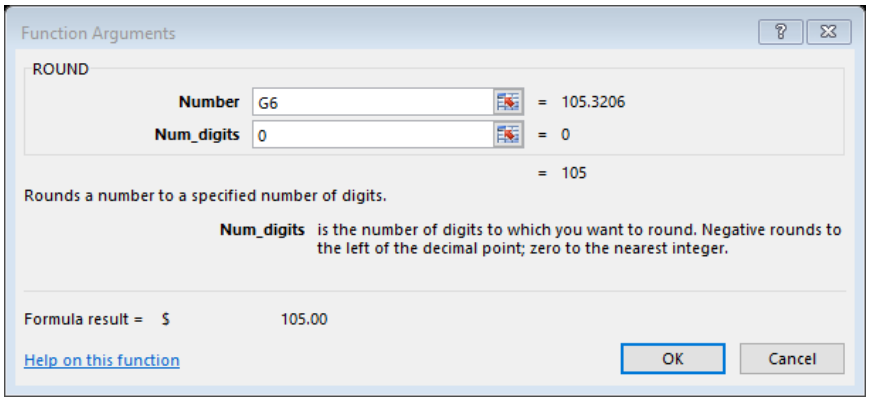
   This indicates which cell is to be rounded.

6. For the **num_of_digits** type ***0***.
   This number indicates which decimal place to round to.

   If the number is positive, it rounds after the decimal place. If it is negative, it rounds before the decimal place (i.e. **-1** would round 77 up to 80). Experiment by typing different numbers into this field such as 1, 2 and -1.



{Click} **FINISH** or **OK**.



Exercise

Open ROUNDING EXERCISES.XLSX

1. Starting on the first sheet, use the instructions on the sheet to fill in the formulas.
2. Check your answers on the completed version.
3. Make sure you follow all of the instructions if you are comparing the answers!

Working with Multiple Sheets

Usually a new Excel workbook starts with one worksheet, but more can be added if required. They are numbered Sheet1, Sheet2, etc. The names appear at the bottom of the screen and are accessed simply by clicking on their tabs.

In this example, we will manage a sales report for a stationery company. There are spreadsheets for the first three quarters of the year and a summary sheet. We will be creating a sheet for the fourth quarter and then link totals to the summary sheet.

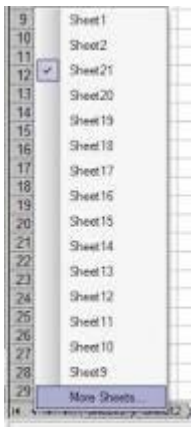
OPEN SALES-LINKING.XLS

	A	B	C	D	E	F
1	Product Sales					
2	Individual Sales Report: John Doe					
3						
4						
5		JAN	FEB	MAR	AVERAGE	TOTAL
6	Paper	$ 1,000.00	$ 250.00	$ 400.00	$ 550.00	$ 1,650.00
7	Pens	$ 636.00	$ 425.00	$ -	$ 353.67	$ 1,061.00
8	Calculators	$ -	$ 1,500.00	$ 525.00	$ 675.00	$ 2,025.00
9	Office Equipment	$ 2,500.00	$ 780.00	$ 645.00	$ 1,308.33	$ 3,925.00
10	Office Furniture	$ 4,000.00	$ 2,500.00	$ 5,200.00	$ 3,900.00	$ 11,700.00
11						
12	TOTAL SALES (MONTHLY)	$ 8,136.00	$ 5,455.00	$ 6,770.00	$ 6,787.00	$ 20,361.00
13						
14	COMMISSION PAID:	$ 1,220.40	$ 818.25	$ 1,015.50	$ 1,018.05	$ 3,054.15
15						
16	COMMISSION RATE	15%				

Navigating Through the Sheets

- To move between sheets, click on the appropriate tab. If you can't see the tab you want, use one of the arrows beside the tabs to scroll through the tabs of the sheets or click on the three little dots.

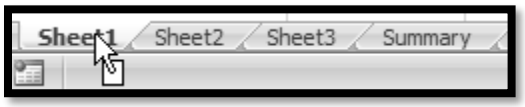
- The arrows with the lines take you to the first and last sheet tabs.  . You can also hold the CTRL key and click an arrow to take you to the first or last sheet.
- The left and right arrows take you forward or backward through the tabs, one at a time.  .
- **<Ctrl Page Up>** and **<Ctrl Page Down>** moves you backwards and forwards through the sheets, one at a time.
- **Right Click on the arrows to see a list of all your sheets.**



Move a Sheet

You can easily move a sheet, just to change the order, as it might seem more logical.

1. Simply click and drag the sheet tab at the bottom until the black pointer is pointing at the desired position.



For practice, move one to the end, behind the Summary Sheet. Now move it back.

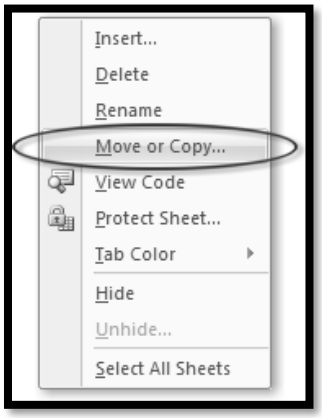
Copy a Sheet

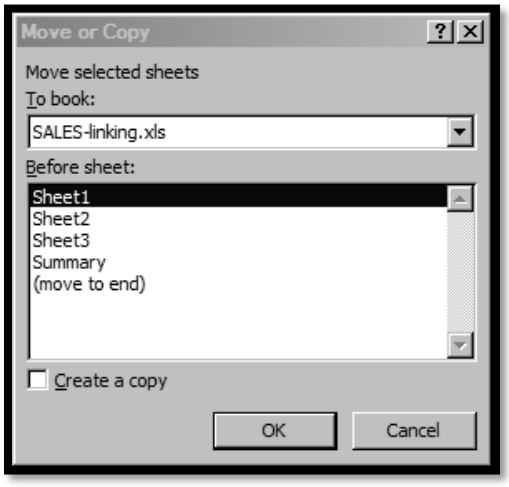
The procedure for copying a sheet is identical to moving except by holding the CTRL key down as you drag, you are copying the sheet, not moving it.

This method is much better than copying the information and then pasting it onto the next blank sheet as you normally want the worksheet formatting to be copied as well (i.e. Column widths, print areas, headers, footers, etc.). Copy and paste does not allow you to do this, however, copying the entire sheet does!

1. Hold the **<CTRL>** key down and click and drag one of the sheets. Let go when the black pointer is behind one of the sheets. **ALWAYS LET GO OF THE MOUSE FIRST!!**

Want to move or copy a sheet to a new workbook or an existing one? Right click on the sheet and choose Move or Copy. You will see your choices to move/copy to a new one or one that you already have open.





Rename a Sheet

To make sheets easier and more practical to work with, you can rename them.

- The name can have spaces.
- Don't use special characters such as: , /, \, ? or *.

1. {Click} on the new sheet tab with your **right** mouse button.

2. Choose Rename with your shortcut menu.

   You can also {double-click} on the tab to bring up the Rename menu.

3. Type in the name of the new sheet.

4. Press <Enter>.

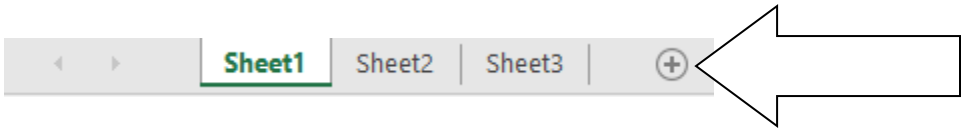
Try double clicking on a sheet name to automatically pop you into "Rename Mode"!

Delete a Sheet

1. Right click on the sheet tab and choose Delete. Note that you cannot undo this command.

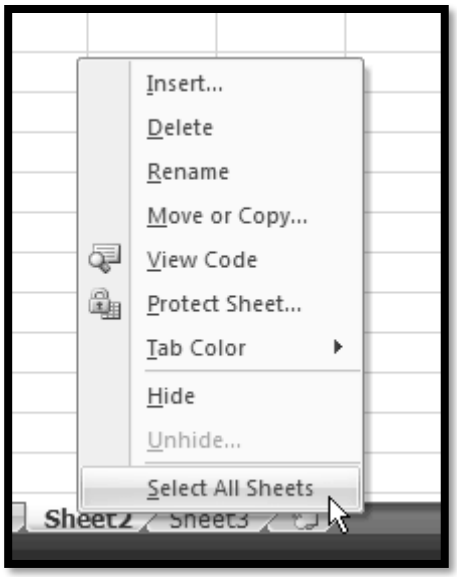
Insert a Blank Sheet

If you just want a new blank sheet, not a copy of an existing one, simply click on the Insert Worksheet button on the Worksheet bar at the bottom of your screen.



Grouping Sheets

Sometimes you need to group sheets to print, create formulas, or change the formatting. Once the sheets are grouped, all changes you do will affect those sheets. You must be careful that if you type anything into a cell while you have them grouped, you may overwrite existing information that was already there.

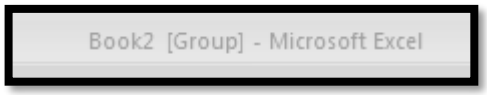


Selecting All Sheets to Group

1. {Click} on the right mouse button on one of the tabs.

2. Choose Select All Sheets.

Notice the title bar indicates the sheets are grouped.



Ungrouping Sheets

To ungroup all the sheets so you are only modifying one of them:

1. {Click} on the right mouse button.

2. Choose **Ungroup Sheets**.
   -OR-
   {Click} on one of the sheet tabs.

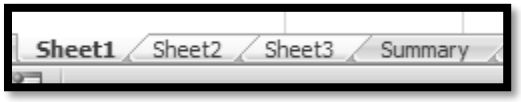
Selecting Specific Sheets

To select specific sheets to group, rather than all the sheets, depends on whether or not the sheets are next to each other.

If the Sheets are Adjacent to One Another (i.e. Sheet1, Sheet2, Sheet3):

1. {Click} on the first sheet you want to group.
2. Hold down the <**Shift>** key.
3. {Click} on the last sheet you want to group.

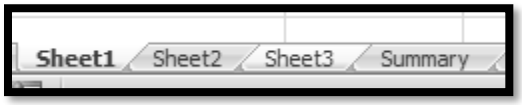
   Notice the title bar displays a message that they are grouped.



4. Ungroup them by clicking on one of the sheets **NOT** in the group.

If the Sheets are not Adjacent to One Another (i.e. Sheet1, Sheet3, Sheet6):

1. {Click} on the first one you want to group.
2. Hold down the <**Ctrl>** key.
3. {Click} on each of the sheets you want to group.



4. Ungroup them by clicking on one of the sheets NOT in the group.

Exercise

1. Group all of your sheets, select cell B2 and enter your name in there instead of John Doe's.

	A	B
1	Product Sales	
2	Individual Sales Report	John Doe
3		

2. Ungroup the sheets.

3. Group all the sheets except for the Summary Sheet.

4. Select cells B5:D5 and then center them.

	A	B	C	D	E	F
1	Product Sales					
2	Individual Sales Report	John Doe				
3						
4						
5		JAN	FEB	MAR	AVERAGE	TOTAL

5. Ungroup the sheets.

6. Look at the other quarter sheets and you will see that the cells are also centered on these sheets too!

This command is great for setting column widths after you've just entered a bunch of numbers! You may find your columns are too small so just select all or some of your sheets, and autofit them! They will all be changed!

Linking Cells from One Sheet to Another

If you want one cell's results to appear in another sheet, you can link the cells.

In this example, we want to show how many of each product was sold per quarter on the summary sheet.

QUARTER ONE SHEET:

	A	B	C	D	E	F
1	Product Sales					
2	Individual Sales Report: John Doe					
3						
4						
5		JAN	FEB	MAR	AVERAGE	TOTAL
6	Paper	$ 1,000.00	$ 250.00	$ 400.00	$ 550.00	$ 1,650.00
7	Pens	$ 636.00	$ 425.00	$ -	$ 353.67	$ 1,061.00
8	Calculators	$ -	$ 1,500.00	$ 525.00	$ 675.00	$ 2,025.00
9	Office Equipment	$ 2,500.00	$ 780.00	$ 645.00	$ 1,308.33	$ 3,925.00
10	Office Furniture	$ 4,000.00	$ 2,500.00	$ 5,200.00	$ 3,900.00	$ 11,700.00

SUMMARY SHEET:

	A	B	C
1	Product Sales		
2	Individual Sales Report: John Doe		
3			
4			
5		Quarter 1	Quarter 2
6	Paper	$ 1,650.00	
7	Pens		
8	Calculators		
9	Office Equipment		
10	Office Furniture		

1. Click on cell B6 in the Summary Sheet.
2. Press =
3. Click on the Quarter1 Sheet tab.
4. Click on cell F6 and press Enter.
5. Autofill it down for the other products.

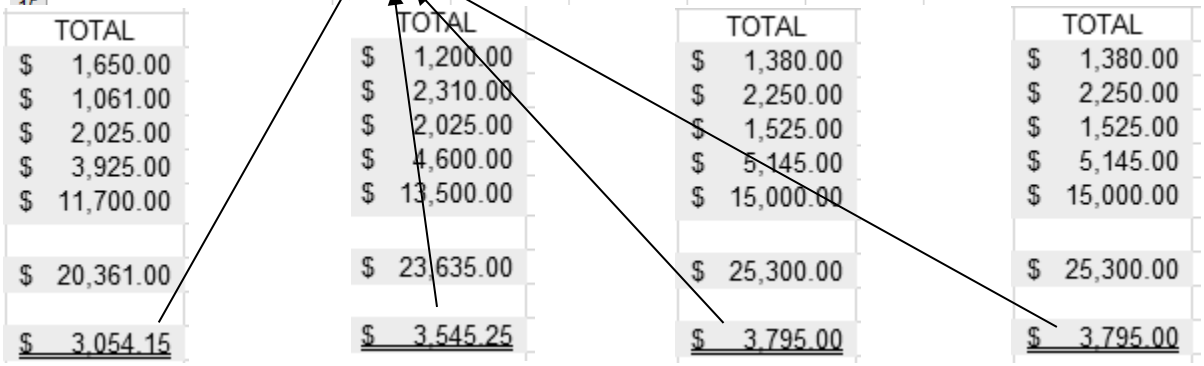
Creating 3D Formulas

It is easy to perform calculations across sheets. In this exercise, we will create a formula to go on our Summary sheet that adds up all of the commissions that were paid out.

It is important to ensure that the commissions reside in the same cell if you are using the AutoSum feature to add them up!

SUMMARY SHEET:

	A	B	C	D	E	F
1	Summary					
2	Report for:	John Doe				
3						
4						
5		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
6	Paper	$ 1,650.00	$ 1,200.00	$ 1,380.00	$ 1,380.00	$ 5,610.00
7	Pens	$ 1,061.00	$ 2,310.00	$ 2,250.00	$ 2,250.00	$ 7,871.00
8	Calculators	$ 2,025.00	$ 2,025.00	$ 1,525.00	$ 1,525.00	$ 7,100.00
9	Office Equipment	$ 3,925.00	$ 4,600.00	$ 5,145.00	$ 5,145.00	$ 18,815.00
10	Office Furniture	$ 11,700.00	$ 13,500.00	$ 15,000.00	$ 15,000.00	$ 55,200.00
11						
12	Total Sales (Quarterly)	$ 20,361.00	$ 23,635.00	$ 25,300.00	$ 25,300.00	$ 94,596.00
13						
14	Commission Paid for year	$ 14,189.40				



Quarter 1 sheet Quarter 2 sheet Quarter 3 sheet Quarter 4 sheet

1. {Click} on cell **B14** on the Summary Sheet. *This is where we want the total to go.*

2. {Click} on the AutoSum tool. Σ

3. {Click} on the first sheet (Quarter1). *Notice how it adds the name of the sheet to the formula.*

4. Hold down the <**Shift**> key and {click} on the last sheet (Quarter4).
   T*he formula now lists these sheets as the range of sheets to use.*

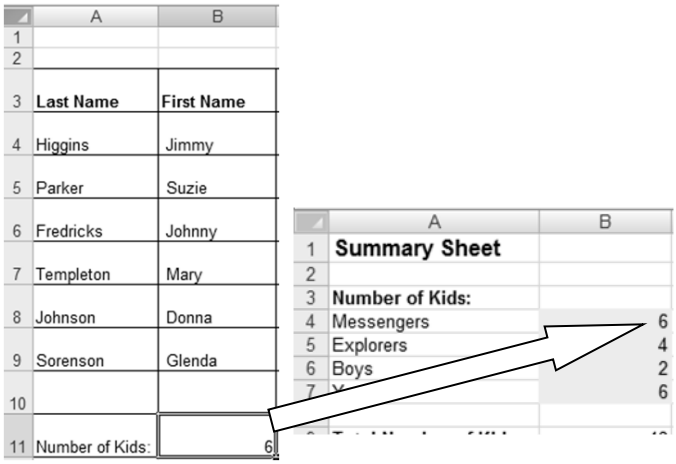
5. {Click} on **F14** and Press **<Enter>**.
   This adds F14 to the formula to indicate that this is the cell in all spreadsheets to add up.

   Your formula should now read **=SUM('Quarter 1:Quarter 4'!F14)).**

   Now if anything in the sheets change, the summary sheet will change too!

Exercise #1

1. Open Registration List.xls. This spreadsheet is one that is used to administer four children's groups. It also contains a summary sheet.



	A	B
3	**Last Name**	**First Name**
4	Higgins	Jimmy
5	Parker	Suzie
6	Fredricks	Johnny
7	Templeton	Mary
8	Johnson	Donna
9	Sorenson	Glenda
10		
11	Number of Kids:	6

	A	B
1	**Summary Sheet**	
2		
3	**Number of Kids:**	
4	Messengers	6
5	Explorers	4
6	Boys	2
7	Y	6

2. On each of the first four sheets, there is a COUNTA function entered in cell B11 that calculates how many people are registered in each group. Link that cell on each sheet to the appropriate cell in the Summary sheet.

3. Group all the sheets and add today's date to cell B1.

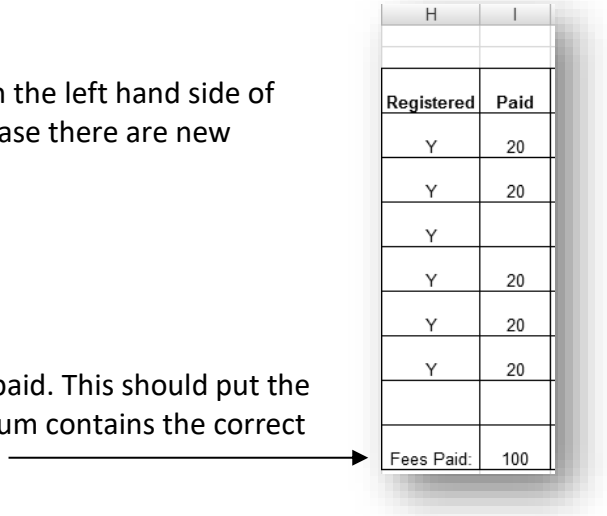
4. Ungroup the sheets.

5. Make a copy of the Boys sheet and position it first, on the left hand side of the Messengers sheet. This will be your template in case there are new groups to add.

6. Clear rows 4 to 10. Rename this sheet to Blank.

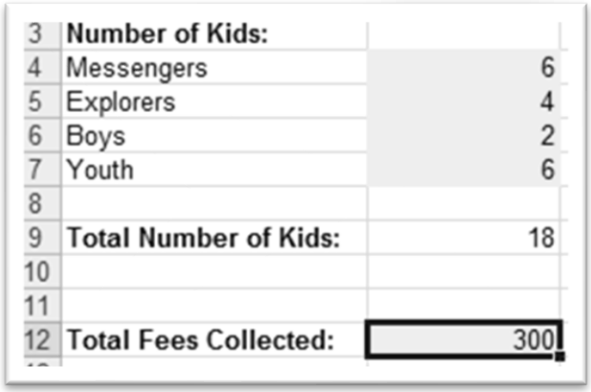
7. Group the first five sheets (from Blank to Youth).

8. Create an Autosum in cell I11 that totals up the fees paid. This should put the formula onto all of your sheets! Make sure the Autosum contains the correct cells!



	H	I
	Registered	**Paid**
	Y	20
	Y	20
	Y	
	Y	20
	Y	20
	Y	20
	Fees Paid:	100

9. On the summary sheet in cell B12, do a 3D formula to add up all the amounts in cell I11 in the other sheets, including the blank one (for future use).



3	**Number of Kids:**	
4	Messengers	6
5	Explorers	4
6	Boys	2
7	Youth	6
8		
9	**Total Number of Kids:**	18
10		
11		
12	**Total Fees Collected:**	300

10. Add one more person to one of the groups. Enter an amount for their fee. Go to the summary sheet and the new person's numbers should be included!

Exercise #2

1. Open ACCOUNT ACTIVITY – SHEETS.XLSX
2. Link the totals from the three yearly sheets to the appropriate place on the summary sheet.
3. Do a 3D formula to calculate the Total sales as well as the average from the three sheets.

Formatting Shortcuts

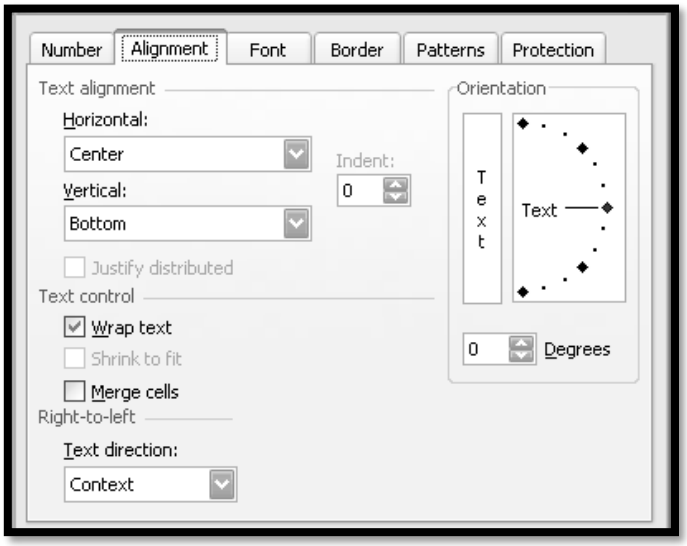
Excel offers many shortcuts to work with your spreadsheet quickly and efficiently.

Wrapping Long Titles

Open GOLF TOURNEY LIST2.XLS.

	A	B	C	D	E	F	G	H	I
1	Guest List								
2	Family Golf Tournament								
3									
4	Last Name	First Name	# of Adults	# of Kids	Total # of Gu	Price of Adults	Price of Kids	Total Price for Employee	
5	Jones	Jenny	2	3					
6	Higgins	Jimmy	1	3					
7	Parker	Suzie	2	0					
8	Fredricks	Johnny	1	0					

Many times the column headings are longer than the numbers or text under them. Therefore, best fitting the column is not always the best way to size a column. We can use the wrap text feature to wrap the long title within the cell by making the cell higher.



1. Select the headings (**A4:H4**).

2. Click the Wrap text button on the toolbar of the Home tab.

To choose other options, click on the Dialogue box launcher beside the Alignment options.

If you prefer, you can force the cell to wrap as you type by pressing **ALT ENTER** in the cell where you want the line to break. You don't even need the WRAP TEXT option!

By typing:

START <ALT-ENTER> DATE

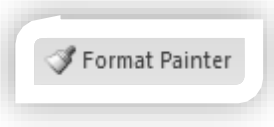
Would place START on the first line of the cell and DATE on the second line automatically.

The Format Painter

The Format Painter tool offers a quick way to format a range of cells to look like another.

In this exercise you will format the title (A1) and then apply the same format to the subtitle (A2).

1. Select cell A4.
2. Bold, Italicize and make the font larger.
3. With cell A4 still selected, click the **Format Painter** tool.
4. Drag over the other heading cells (B4:H4).

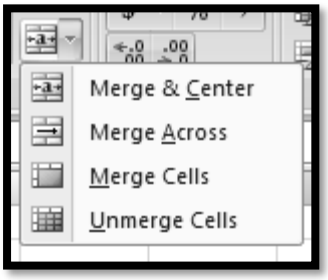


The headings are all formatted the same way now!

If you have several cells to apply this format to, instead of clicking once on the paintbrush, double click it and the Format Painter stays on so that you can select different cells and apply it.

You must press ESC or click on the paintbrush again to get out of this mode.

Merge and Center

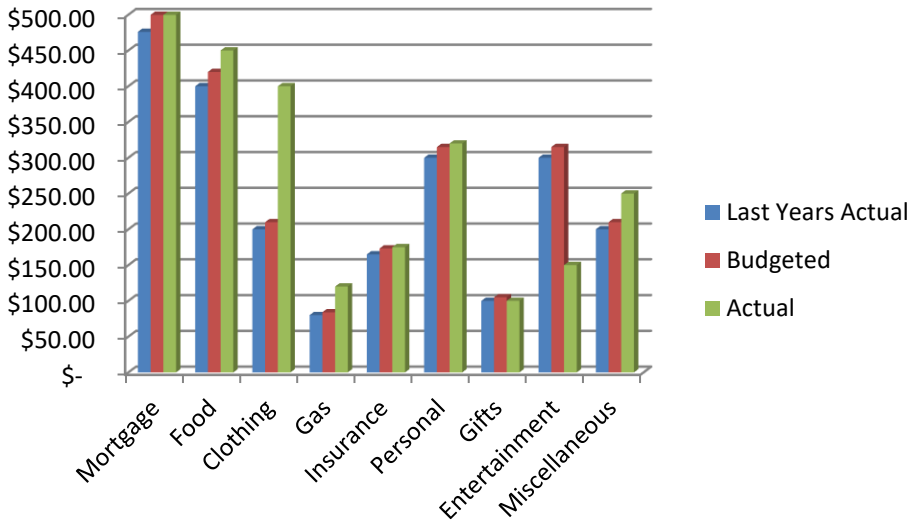


1. Select cells A1:H1.
2. Click on the Merge Cells button
   The Merge & Center command merges the cells and centers the title across the spreadsheet.
3. Try it on the title on the second row as well.

	A	B	C	D	E	F	G	H
1	**Guest List**							
2	**Family Golf Tournament**							
3								
4	***Last Name***	***First Name***	***# of Adults***	***# of Kids***	***Total # of Guests***	***Price of Adults Meal***	***Price of Kids Meal***	***Total Price for Employee***
5	Jones	Jenny	2	3				
6	Higgins	Jimmy	1	3				
7	Parker	Suzie	2	0				
8	Fredricks	Johnny	1	0				

Graphs

You can create great looking graphs and have them link to your data. If a number changes in your spreadsheet, the associated bar will change in your graph!



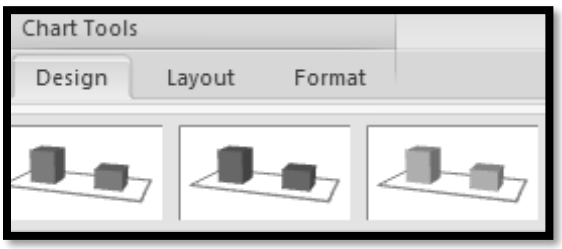
Open EXPENSE BUDGET-GRAPHING.XLSX

Start by selecting the data you want to graph. If the columns do not appear side by side, select the first range, then hold down the CTRL key and select the second range and so on.

1. Select cells A3:D12.

	A	B	C	D
1	For the Month of:			
2				
3	**Expenses**	**Last Years Actual**	**Budgeted**	**Actual**
4	Mortgage	$ 476.00	$ 499.80	$ 499.80
5	Food	$ 400.00	$ 420.00	$ 450.00
6	Clothing	$ 200.00	$ 210.00	$ 400.00
7	Gas	$ 80.00	$ 84.00	$ 120.00
8	Insurance	$ 165.00	$ 173.25	$ 175.00
9	Personal	$ 300.00	$ 315.00	$ 320.00
10	Gifts	$ 100.00	$ 105.00	$ 100.00
11	Entertainment	$ 300.00	$ 315.00	$ 150.00
12	Miscellaneous	$ 200.00	$ 210.00	$ 250.00

2. Click on the **Insert** ribbon tab and choose a graph such as the Column, then a subtype.



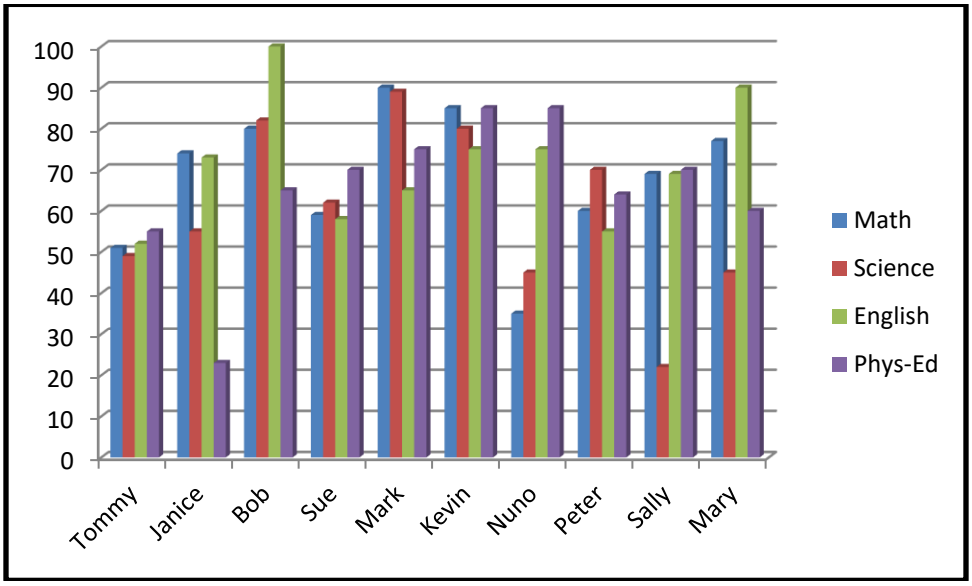
3. You can make changes to your graph in two ways:

- Double click on a part of the graph and watch the extra menus show up at the top.
- Right click on a part of the graph and choose an option.
- If you want to change the chart type, click on the Change Chart Type button on the Chart tab on the ribbon.

Exercise

Open CLASS MARKS.XLSX

1. Create the following graph:



2. Change the colors of the bars.

3. Experiment with the different types of graphs by changing the Chart type.

4. How else can you change the look of the graph?

Excel Level 3 (Beyond the Basics Day 2)

Working with Long Lists

Open INVEST DATA FOR MERGING.XLSX

Freezing panes

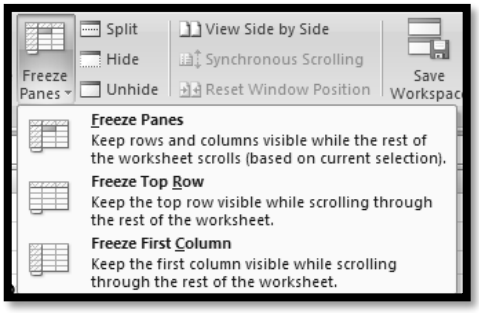
If your spreadsheet is either wide or long and contains headings, it is hard to see the headings when you scroll onto another page. Therefore, it is difficult to tell which cells go with which headings.

In this spreadsheet, when you are looking at the last column (column L, you probably can't see the names of the people anymore, which could be a problem!

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3												
4	LAST.NAME	FIRST.NAME	INVEST.AMT	COMMISSION	REP	ADDRESS	CITY	STATE	ZIP	SSN	BIRTH.DATE	AGE
5	Jones	Clem	23,530.00	1,176.50	CT	858 Tarsir Ct.	Red Deer	AB	T4P0N9	964-728-476	16-Jul-42	74
6	Quooddalk	Clarissa	22,230.00	1,111.50	Marty	1421 Oak Ct.	Prince Albert	SK	S6Z2T2	997-798-704	11-Sep-63	52
7	Nitron	Monica	32,770.00	1,638.50	Lorie	435 Lonosphere St.	Regina	SK	S4J5R1	980-373-510	05-Feb-28	88
8	Butheez	Pixie	27,520.00	1,376.00	Gord	1067 Arthropod Ct.	Prince George	BC	V2N5C3	996-218-120	03-Oct-50	65

To prevent this, we can freeze certain cells and heave them always appear on the screen, no matter where the cursor is. You can freeze columns along the side or along the top, or both. In this exercise, we will freeze the names on the left side (column B) and the column headings (row 4) on the top.

The procedure is simple.



1. Click on the cell below the row you want to freeze, and to the right of the column you want to freeze.

   In the above spreadsheet, you would click on C5.

2. Click on the Freeze Panes button on the View tab. Choose the first option (Freeze Panes).

3. Try scrolling through the screen and watch how the left columns and top rows never leave the screen!

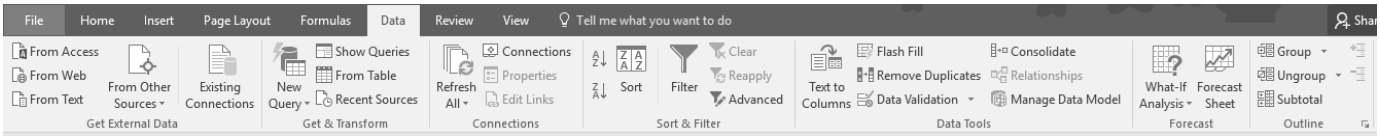
To make screen back to its original state, choose **Unfreeze Panes**.

	A	B	J	K	L
1					
2					
3					
4	LAST.NAME	FIRST.NAME	SSN	BIRTH.DATE	AGE
35	Weazoi	Fiona	914-477-381	20-Jul-62	54
36	Boicoim	Bluebell	963-583-975	26-Jun-44	72
37	Wauheem	Valentine	909-101-176	05-Sep-34	82
38	Joopon	Margaret	926-365-581	02-May-48	68
39	Vuweauw	Romeo	982-521-577	06-Jun-57	59
40	Reeddeim	Hedwig	930-622-658	21-Mar-61	55

Database Features

You can use any area of an Excel worksheet to create a database and any worksheet can qualify as a database if it meets certain criteria. You can use Excel to sort database information in a specified order, present database information in a table, project and analyze database information and include database information in reports.

The Data ribbon tab provides many tools to help you with your database. Some of these tools are on the Home ribbon tab as well.



Defining a Database

A database us an organized collection of information arranged in a row or column format, such as a telephone directory. You can use a database to store large amounts of information and retrieve all or part of the information as needed. You can enter database information using standard worksheet entry techniques, or into a data entry screen called a Data Form as discussed in a later section. Excel databases can also be used as data sources for Microsoft Word mail merges.

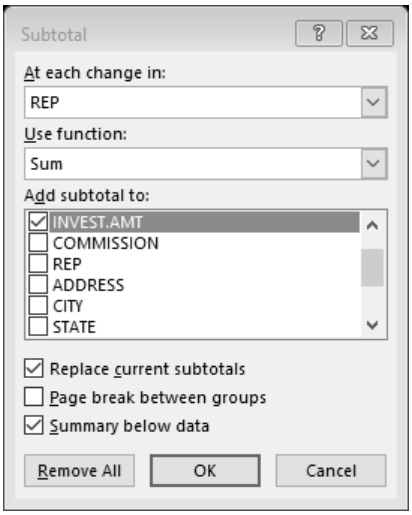
All databases consist of fields and records. A *field* is the smallest single item of information in a database, such as a person's last name. A *record* is a set of one or more related fields that comprise an entry; for example, the full name and phone number for a person listed in a telephone directory constitutes one record.

<u>Guidelines for creating a database:</u>

- You must represent fields in columns and records in rows. Database information can include text, numbers, values, formulas and functions.
- A *list* is part of an existing worksheet that you can use as a database because it displays information in a row and column format. It must contain unique field names in the header row, which is the top row. *Field names*, also called *column labels*, identify each column of data. **You could distinguish the field names from the list data by using a different font, data type, alignment, format, pattern or capitalization style.**
- You must enter the first record for the database in the row directly below the field names.
- You can use a cell border to further distinguish the field names from the database, but you cannot use a blank row or dashed lines.
- The database must be separated from other worksheet data by at least one blank row or column.

Subtotaling

You can easily get subtotals within your data. This feature does not work while your data is in a table so you must "Convert it Range" if it's a table. This option is available in the Table ribbon tab.



We want a report of the sales (Invest Amount) for each rep.

1. Sort the column you want to subtotal by. In this case, the Rep.

2. Click on the **Subtotals** button from the **Data** ribbon tab.

3. Make the following choices. You want to "SUM" the Invest Amt column each time the Rep changes. You can also Count, Average, etc.

This will give you a SUM subtotal the Invest Amt column for each Rep.

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3												
4	LAST.NAME	FIRST.NAME	INVEST.AMT	COMMISSION	REP	ADDRESS	CITY	STATE	ZIP	SSN	BIRTH.DATE	AGE
5	Rinnac	Miles	25,250.00	1,262.50	Gary	1882 Propylene St.	Victoria	BC	V8T3T4	940-373-291	13-Jan-43	73
6	Gihat	Charles	15,030.00	751.50	Gary	693 Bacillus Ln.	Regina	SK	S4P2R3	947-673-767	27-Dec-50	65
7	Sucauw	Blossom	42,350.00	2,117.50	Gary	1889 Gyrfalcon Rd.	Victoria	BC	V8V3W6	981-511-687	09-Mar-48	68
8	Soozoit	Merlin	32,200.00	1,610.00	Gary	1613 Main Ln.	Edmonton	AB	T5L9U3	964-274-234	26-Jul-56	60
9	Vuweauw	Romeo	24,490.00	1,224.50	Gary	1743 Lute Rd.	Prince George	BC	V2H8Y7	982-521-577	06-Jun-57	59
10	Reeddeim	Hedwig	24,540.00	1,227.00	Gary	39 Prehensile Hwy.	Vancouver	BC	V7V8N1	930-622-658	21-Mar-61	55
11	Zeilles	Bluebell	8,230.00	411.50	Gary	256 Hyperbolic Hwy.	Vancouver	BC	V7R3N6	986-098-783	16-Mar-30	86
12	Wufi	Merlin	21,270.00	1,063.50	Gary	1135 Bacillus St.	Vancouver	BC	V7V3N8	947-593-862	28-Nov-42	73
13			193,360.00		**Gary Total**							
14	Butheez	Pixie	27,520.00	1,376.00	Gordon	1067 Arthropod Ct.	Prince George	BC	V2N5C3	996-218-120	03-Oct-50	65
15	Seivoop	Maya	69,910.00	3,495.50	Gordon	447 Propylene Ave.	Red Deer	AB	T4R2Y2	907-821-783	19-Jun-16	100
16	Yauloo	Margaret	3,640.00	182.00	Gordon	932 Mesquite Ave.	Fort McMurray	AB	T98T3W	990-444-388	11-Aug-58	58

You can get summaries by clicking on the 1 or 2 buttons on the top left corner of the spreadsheet.

	A	B	C	D	E
1					
2					
3					
4	LAST.NAME	FIRST.NAME	INVEST.AMT	COMMISSION	REP
13			193,360.00		**Gary Total**
17			101,070.00		**Gordon Total**
24			203,200.00		**James Total**
39			508,370.00		**Kelly Total**
50			409,390.00		**Lorie Total**
63			407,070.00		**Marty Total**
71			171,080.00		**Thomas Total**
72			1,993,540.00		**Grand Total**

<u>Removing the Subtotals</u>

<u>You can remove the subtotals by going into Subtotal screen and clicking on Remove.</u>

Exercise

Open INVESTOR STATUS.XLSX

	A	B	C	D	E	F	G	H	I	J
1										
2					COMMISSION	5.00%				
3										
4	LAST NAME	FIRST NAME	INVESTOR STATUS	CHRISTMAS GIFT	INVEST AMT	COMMISSION	REP	ADDRESS	CITY	STATE
5	Jones	Clem	silver	fruit basket	$ 23,530.00	$ 1,176.50	CT	435 Ionosphere St.	North Brunswick	NJ
6	Quooddalk	Clarissa	gold	gift certificate	$ 35,000.00	$ 1,750.00	CT	1017 Arthropod Ln.	Belisle	MA
7	Nitron	Monica	gold	gift certificate	$ 32,770.00	$ 1,638.50	CT	1849 Turtle Hwy.	Bozeman	MT
8	Butheez	Pixie	silver	fruit basket	$ 27,520.00	$ 1,376.00	GB	73 Elm Rd.	Hillsville	VA
9	Smoimeib	Sandy	regular	card	$ 3,640.00	$ 182.00	AB	1444 Eastern St.	New Brunswick	NJ
10	Zaultet	Maya	bronze	chocolates	$ 16,210.00	$ 810.50	JS	514 Manganese Ave.	Belisle	MA
11	Tarsir	Merlin	gold	gift certificate	$ 37,380.00	$ 1,869.00	GB	1037 Prosimian Hwy.	Tampa	FL
12	Gredig	Fiona	platinum	tickets for hockey game	$ 58,720.00	$ 2,936.00	GB	1881 Lute Rd.	Atlanta	GA
13	Zuzeauz	Rosita	silver	fruit basket	$ 28,840.00	$ 1,442.00	AB	837 Prehensile Ct.	Charlotte	NC
14	Baumot	Teresa	silver	fruit basket	$ 21,770.00	$ 1,088.50	TL	1401 Bacillus Rd.	Redlands	CA
15	Quubeaur	Ulysses	gold	gift certificate	$ 32,290.00	$ 1,614.50	GB	1044 Pro Forma St.	Bozeman	MT
16	Rinnac	Miles	silver	fruit basket	$ 25,250.00	$ 1,262.50	GB	1613 Main Ln.	Irvine	CA
17	Gihat	Charles	bronze	chocolates	$ 15,030.00	$ 751.50	JS	258 Southern Hwy.	Bozeman	MT
18	Toofoic	Hetty	silver	fruit basket	$ 23,920.00	$ 1,196.00	GB	1316 Central Ln.	Belisle	MA
19	Seivoop	Maya	platinum	tickets for hockey game	$ 69,910.00	$ 3,495.50	TL	256 Hyperbolic Hwy.	Bozeman	MT

1. Let's say you were going shopping for the gifts for these people. It would be handy to know how many fruit baskets to buy, and how many chocolates, etc.

   Do a Subtotal to COUNT each Christmas gift.

   (Hint, sort by the Christmas Gift column, then go into the Subtotals screen and choose:

   At each change in CHRISTMAS GIFT
   Do a COUNT
   of CHRISTMAS GIFT

   Don't forget to click on the "2" when you've created your subtotalled list.

   This will be your shopping list!

INVESTOR STATUS	CHRISTMAS GIFT
card Count	3
chocolates Count	7
fruit basket Count	18
gift certificate Coun	24
tickets for hockey ga	8
Grand Count	60

		COMMISSION
INVESTOR STATUS	CHRISTMAS GIFT	INVEST AMT
bronze Total		$ 104,340.00
gold Total		$ 917,070.00
platinum Total		$ 493,480.00
regular Total		$ 15,510.00
silver Total		$ 455,180.00
Grand Total		$ 1,985,580.00
		$ 3,515,980.00

2. Remove the subtotals.

3. Do a Subtotal to create a list of how much each Investor type invests.

4. How many investors are in each state?
   Hint: I counted the INVEST AMT column, then hid the columns in between to get this printout.

INVEST AMT	STATE	ZIP
5	**AZ Count**	
8	**CA Count**	
5	**FL Count**	
4	**GA Count**	
8	**MA Count**	
1	**ME Count**	
8	**MT Count**	
5	**NC Count**	
6	**NJ Count**	
4	**NY Count**	
3	**PA Count**	
3	**VA Count**	
60	**Grand Count**	

What other reports would be handy?

Making your Data into a Table

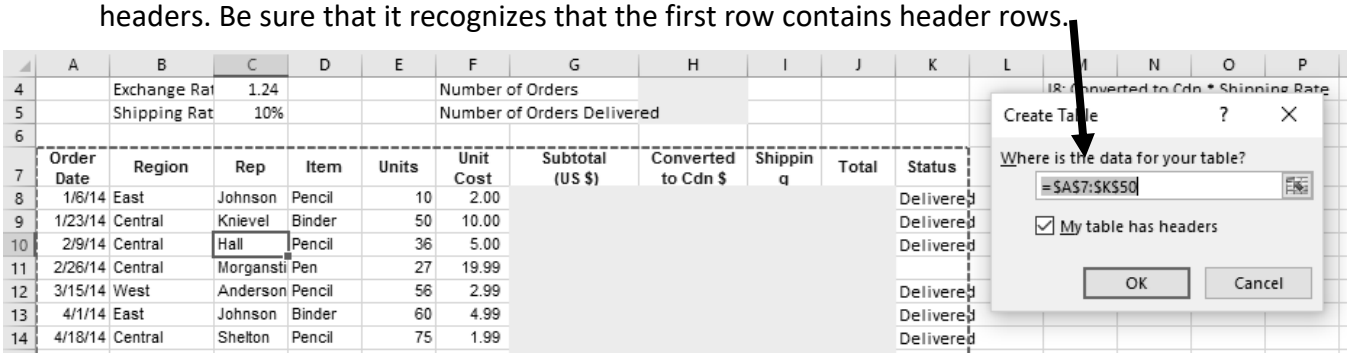
Open Office Supply Sales.XLSX

1. First test your data to be sure there are no blank rows or columns by clicking on one cell in your list and pressing CTRL A.

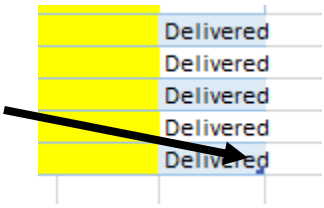
   This should select all the cells including the headers.

2. Now choose Table from the Insert tab or press CTRL T.

3. It will display a box listing what it recognizes as all the cells containing data, including the headers. Be sure that it recognizes that the first row contains header rows.



Advantages of Creating a Table



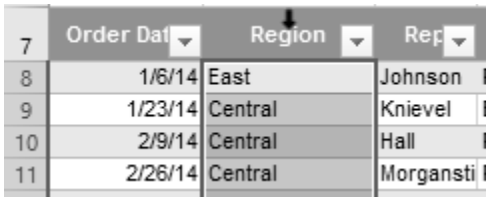
1. Always visible headers

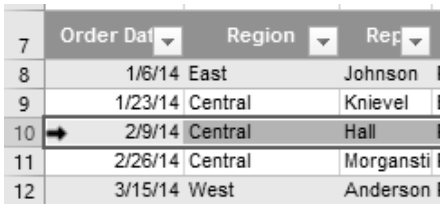
2. Automatic table extension. Enter below your last row and the table expands. Any formulas referring to this table you've used will now include the new data.

3. Formulas automatically copy down, no need to autofill.

4. Easy formatting. Click anywhere in the table and choose a Table style.

5. One click select. Click at the top of the header cell or the left of the first cell to select all the data in that column or row. If you click again, you will select the header as well.





Sorting Data

You can display database records in any order by sorting or rearranging the data. You sort information in a database according to the contents of a column or group of columns, called a sort key. You can also rearrange the order of columns in your database.

Simple Sorting

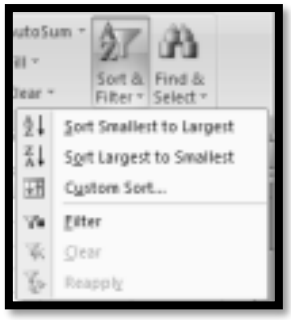
It is very simple to sort by one column. Simply click on the column you wish to sort by (ie. Last name) and click on the sort and Filter button, and choose one of the sorting options, which depends on if you want to sort by ascending or descending order.

If your data in is a table, you can click on the filter box beside each column header and sort by that column.

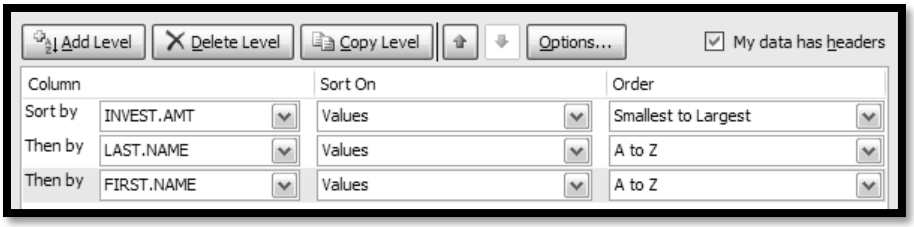
NOTE: It is very important not to select any data and then hit the sort buttons, because it will only sort what you have selected and leave everything else as is!!

Complex Sorting

If you require a more complex sort, for example, you want to sort by more than one column (Last name, then first name), you need to use the **Custom Sort** screen. You also need to sort this way if you want to sort across, rather than down.



1. Select a cell within your database.
2. Choose **Custom Sort** from the **Sort & Filter** button. Sorting buttons are also available on the Data ribbon tab.
3. Choose the first field you wish to sort by clicking on the down arrow beside each fieldname. Choose which order it should be in.
4. Click on Add Level and repeat the above step for each additional sorting level.
5. By pressing the options button, you can choose if you want to sort it left to right rather than top to bottom.



Filtering your Data

You can filter a database when you want to display or work with a subset of data. When you *filter* data, you display only those records that contain a certain value or meet a set of search conditions called *criteria*. Filtering temporarily hides records that do not meet the criteria you specify. You can remove filters to redisplay the entire database.

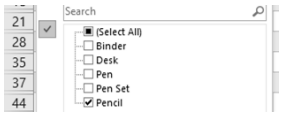
1. Select a cell within your list.

2. Choose **Filter** from the **Sort & Filter** button. Filtering buttons are also available on the Data ribbon tab. If your list is a table, you already have this feature turned on.

	A	B	C	D	E	F
7	Order Date	Region	Rep	Item	Units	Unit Cost (US $)

This displays drop-down arrows to the right of the field names in the database.

3. Click on one of the arrows to see all the different values in that field (ie. Item)



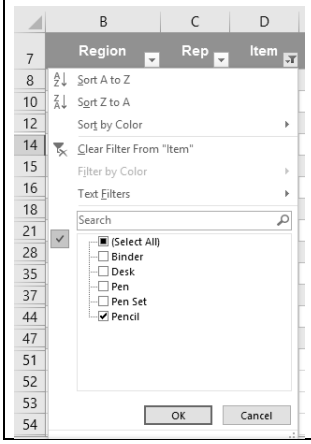
4. Uncheck the (Select All) check box and select a single value (ie. Pencil), and click OK.

7	Region	Rep	Item	Units	Unit Cost (US $)	Subtotal (US $)	Converted to Cdn $	Shipping	Total	Status
8	East	Johnson	Pencil	10	2.00	$ 20.00	$ 24.71	$ 2.47	$ 27.18	Delivered
10	Central	Hall	Pencil	36	5.00	$ 180.00	$ 222.38	$ 22.24	$ 244.62	Delivered
12	West	Anderson	Pencil	56	2.99	$ 167.44	$ 206.86	$ 20.69	$ 227.55	Delivered
14	Central	Shelton	Pencil	75	1.99	$ 149.25	$ 184.39	$ 18.44	$ 202.83	Delivered
15	Central	Hall	Pencil	90	4.99	$ 449.10	$ 554.83	$ 55.48	$ 610.31	
16	West	Thompson	Pencil	32	1.99	$ 63.68	$ 78.67	$ 7.87	$ 86.54	

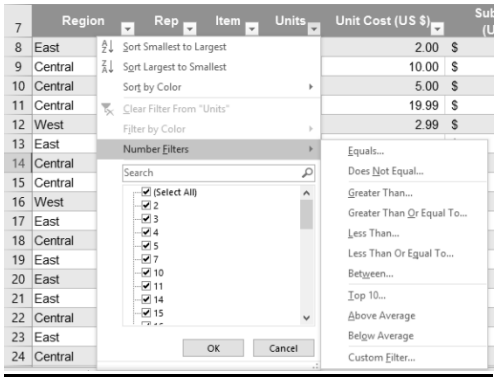
5. Click on the filter arrow (right side of the column you filtered by) and choose Clear Filter from Item to get all the records back.

Different types of filters:

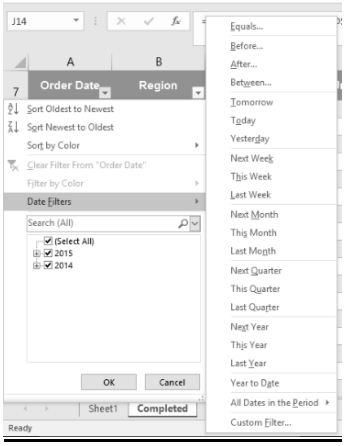
<u>Text</u>



<u>Number</u>



<u>Date</u>

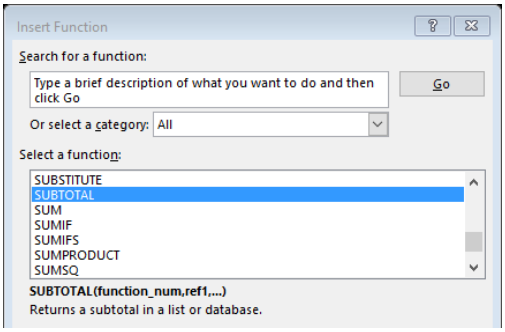


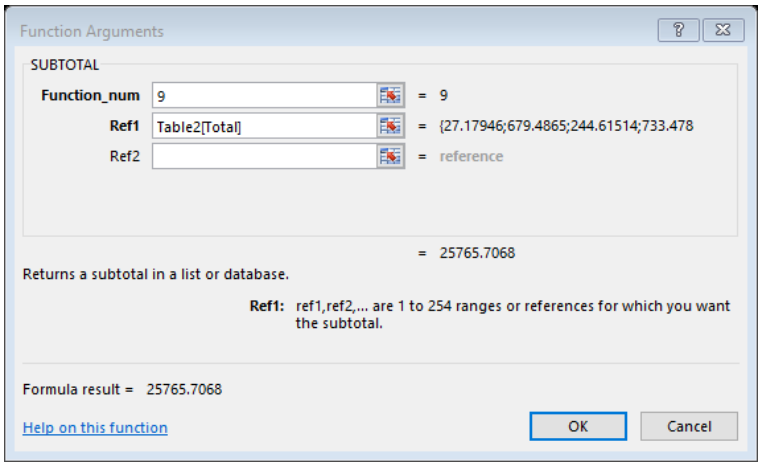
Combining Filters and Subtotals

You may have formulas and functions to display totals in your spreadsheet. But when you filter your list, you probably expect the totals to be the SUM of only the records you have filtered by, but they aren't. They are still totalling the cells that you have hidden by filtering.

1. Click on cell H2.

2. Click on the fx button and choose Subtotal. Choose 9 as the function number (see below) the same cell range as the first Autosum. If it's a table, you can just select the top of the header cell. In this case, we will be totaling the Total column.





   This creates the formula: **=SUBTOTAL(9,Table1[Total])**

3. Apply a filter to the list and you will notice that the subtotal will adjust to sum only the cells that are visible.

The following chart gives other alternatives.

Function_num	Function
1	AVERAGE
2	COUNT
3	COUNTA
4	MAX
5	MIN
9	SUM

4. Create SUBTOTAL formulas for the rest of the cells in Column I (Average, COUNT, COUNTA)

Exercise

Open SPAGHETTI MENU.XLSX

1. Make the list into a table.

2. Create subtotals formulas to calculate the Sum, etc.

	A	B	C	D	E	F	G	H
1								
2	Totals	33,502.00	14,009.00	1,574.61	5,790.61	52,491.80	3,078.99	1,769.11
3	Highest	1,273.00	610.00	67.80	367.40	3,778.50	172.30	87.40
4	Lowest	70.00	6.00	0.66	-	37.20	-	0.26
5	Average	549.21	229.66	25.81	94.93	860.52	50.48	29.00
6	Number of Items	61.00						
7								
8	Entrée	Calorie	Calories from Fa	Total Fa	Choleste (mg)	Sodiun (mg)	Carbohydrat	Protein (g)
9	Oriental Sesame Dressing	70.00	20.00	2.00	-	600.00	11.00	1.00
10	Minestrone Soup	93.00	6.00	0.66	-	1,404.30	19.20	3.60
11	House Italian Dressing	107.00	101.00	11.00	0.01	362.00	1.54	0.26
12	Ranch Dressing	140.00	134.00	14.70	12.70	132.00	0.87	0.76
13	Blue Cheese Dressing	176.00	168.00	18.50	17.70	200.00	0.70	1.29
14	Sauteed Mushrooms	185.00	128.00	14.60	36.60	37.20	8.30	7.20
15	Popcorn Shrimp	213.00	13.00	1.40	92.10	850.50	34.00	15.60

3. Filter by “Chicken” to display all items with Chicken in it to see the numbers change.

	A	B	C	D	E	F	G	H
1								
2	Totals	7,546.00	2,993.00	338.80	1,649.70	12,447.80	555.70	564.70
3	Highest	810.00	518.00	59.80	367.40	3,778.50	83.70	87.40
4	Lowest	428.00	50.00	5.60	74.10	301.60	-	32.60
5	Average	686.00	272.09	30.80	149.97	1,131.62	50.52	51.34
6	Number of Items	11.00						
7								
8	Entrée	Calorie	Calories from Fa	Total Fa	Choleste (mg)	Sodiun (mg)	Carbohydrat	Protein (g)
31	Chicken Dippers	428.00	50.00	5.60	104.40	926.60	42.50	48.60
32	Spinach Salad with Chicken	428.00	198.00	22.80	74.10	301.60	25.60	35.60
50	Child Chicken & Fries	686.00	132.00	14.70	104.40	1,877.50	83.00	52.10
52	Red Thai Linguine with Chicken	693.00	165.00	19.20	81.00	997.70	83.70	40.00
53	Breast of Chicken	703.00	238.00	26.40	171.00	662.00	51.60	64.70
54	Chicken Wings (Spicy)	730.00	356.00	39.40	367.40	3,778.50	-	87.40
56	Chicken Parmigiana	740.00	124.00	14.10	144.00	1,222.00	80.00	70.10
57	Caesar Salad with Chicken	757.00	503.00	57.10	170.60	1,086.60	16.90	48.00
58	Pesto Linguine with Chicken	765.00	262.00	29.90	123.60	441.80	83.00	45.50
61	Chicken Penne	806.00	447.00	49.80	193.00	343.00	57.10	32.60
62	Mediterranean Salad with Chicken	810.00	518.00	59.80	116.20	810.50	32.30	40.10

Exercise 2

1. Open CRUISEDATA – SUBTOTALS.XLSX. Create the appropriate functions. Then try filtering and watch the Subtotals change.

Pivot Tables

A PivotTable is used as an interactive worksheet table that allows you to quickly summarize large amounts of data using the format and calculation method specified by you. The name refers to the table's ability to rotate rows and column headings to access different views or perspectives of your data.

Open US OFFICE SUPPLY SALES.XLSX
Click on the Completed Sheet

Order Date	Region	Rep	Item	Units	Unit Cost (US $)	Subtotal (US $)	Converted to Cdn $	Shipping	Total	Status
Jan 06 2017	East	Johnson	Pencil	10	2.00	$ 20.00	$ 24.71	$ 2.47	$ 27.18	Delivered
Jan 23 2017	Central	Knievel	Binder	50	10.00	$ 500.00	$ 617.72	$ 61.77	$ 679.49	Delivered
Feb 09 2017	Central	Hall	Pencil	36	5.00	$ 180.00	$ 222.38	$ 22.24	$ 244.62	Delivered
Feb 26 2017	Central	Morganstine	Pen	27	19.99	$ 539.73	$ 666.80	$ 66.68	$ 733.48	
Mar 15 2017	West	Anderson	Pencil	56	2.99	$ 167.44	$ 206.86	$ 20.69	$ 227.55	Delivered
Apr 01 2017	East	Johnson	Binder	60	4.99	$ 299.40	$ 369.89	$ 36.99	$ 406.88	Delivered

When creating a PivotTable, you will be asked to specify which data is to be summarized in **rows and/or columns**. You can then specify which fields you actually want summarized. You can even filter this summary report, if desired.

Fields are categories of data such as years or regions. These data categories can be separated by rows, columns or pages. If, for example, you were creating a sales report for the past five years, you might want to start each year on a separate page.

These fields can be further broken down into **items,** which are essentially sub-categories. For example, you may have a field labeled **Year** which can be grouped by each year. Each individual year is an item within the field called Year.

The data to be summarized (such as sales) is referred to as the **data area**. It typically consists of numeric values but can consist of text.

Sum of Converted to Cdn $	Column Labels					
Row Labels	Binder	Desk	Pen	Pen Set	Pencil	Grand Total
Anderson	$ 172.87	$1,019.23	$ 186.85		$ 206.86	$ 1,585.81
Hall	$ 2,389.26			$ 308.24	$ 777.21	$ 3,474.71
Johnson	$ 1,060.94		$ 710.82	$ 698.29	$ 240.48	$ 2,710.52
Knievel	$ 617.72	$ 772.14		$1,834.54		$ 3,224.40
Morgan	$ 310.98			$ 848.68	$ 554.83	$ 1,714.49
Morganstine	$ 1,399.42		$ 666.80		$ 95.62	$ 2,161.84
Shelton	$ 172.61				$ 368.96	$ 541.58
Shippley	$ 2,000.40		$ 370.44	$1,461.83		$ 3,832.67
Smith	$ 1,612.24	$ 308.86			$ 106.78	$ 2,027.87
Thompson	$ 1,407.69				$ 78.67	$ 1,486.36
Visser	$ 71.30		$ 591.82			$ 663.12
Grand Total	$ 11,215.42	$2,100.23	$2,526.73	$5,151.58	$2,429.41	$23,423.37

Column Field (Item)

Row Field (Rep)

Values Field Converted to CDN$

The arrangement of the fields within the table is referred to as the **layout**. You can change the layout by dragging fields to "pivot" the table to a different perspective for viewing purposes.

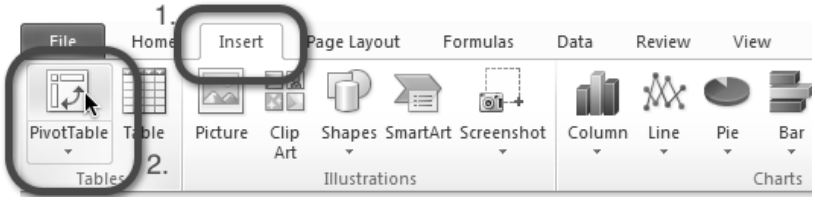
Like an automatic outline, the PivotTable is based on formulas, such as the SUM or AVERAGE function. Excel automatically uses the SUM function for numeric data and the CountA function for text.

Excel offers two methods for creating a PivotTable. You can either choose from one of its recommended tables manually create the PivotTable yourself.

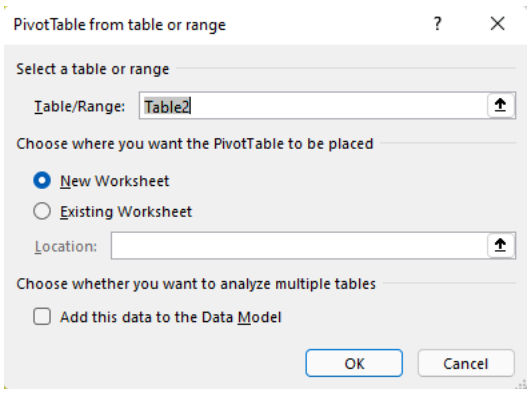
Creating a Pivot Table

1. Click in the data table to be used and then select this tool (located within the **Tables** section on the Insert Ribbon) to create a PivotTable.

   It is advisable to make your list into a table first! (CTRL T)



   The following dialog box will be displayed:



2. You'll be asked to enter the location of the data to be included in the PivotTable. Excel will attempt to include the selected data table to be used. If it's not correct, you'll need to enter the correct table range. You can choose a group of cells within the current worksheet or specify an external data file. It's a great idea to make your data into a table first, then the range will be the table name. This is handy when you add data to your table. It will be included in the pivot table automatically.

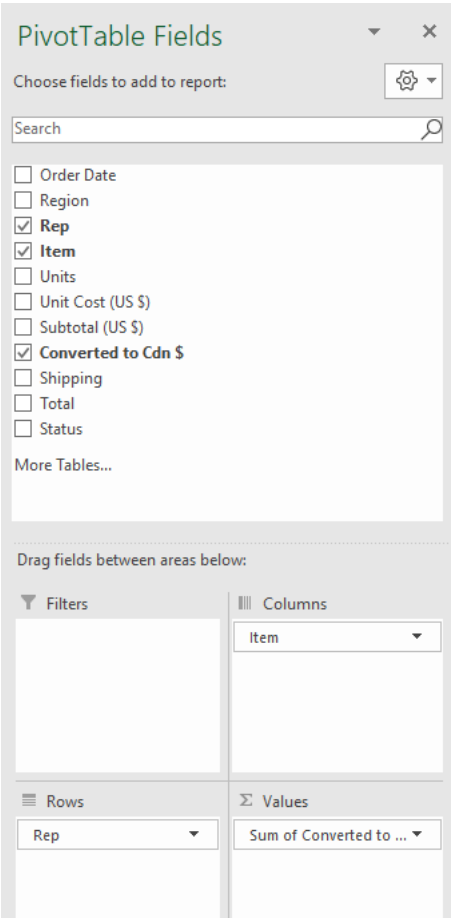
3. You'll also need to specify where the PivotTable will be placed (within the current worksheet or in a new worksheet). You will typically want to place the PivotTable in a new worksheet to keep it separate from the actual data being analyzed. This allows you to make edits (delete/insert rows and columns, etc.) without directly affecting the PivotTable.

4. When done, click OK. The new PivotTable will have been added to your workbook, as a new sheet if that is what was specified in the previous step.

5. Begin by dragging the name of the field you want included in the report to the different sections of your pivot table. Normally we start with the Rows area.

To get this report, drag the fields to the following spots.

Sum of Converted to Cdn $	Column Labels					
Row Labels	Binder	Desk	Pen	Pen Set	Pencil	Grand Total
Anderson	$ 172.87	$1,019.23	$ 186.85		$ 206.86	$ 1,585.81
Hall	$ 2,389.26			$ 308.24	$ 777.21	$ 3,474.71
Johnson	$ 1,060.94		$ 710.82	$ 698.29	$ 240.48	$ 2,710.52
Knievel	$ 617.72	$ 772.14		$1,834.54		$ 3,224.40
Morgan	$ 310.98			$ 848.68	$ 554.83	$ 1,714.49
Morganstine	$ 1,399.42		$ 666.80		$ 95.62	$ 2,161.84
Shelton	$ 172.61				$ 368.96	$ 541.58
Shippley	$ 2,000.40		$ 370.44	$1,461.83		$ 3,832.67
Smith	$ 1,612.24	$ 308.86			$ 106.78	$ 2,027.87
Thompson	$ 1,407.69				$ 78.67	$ 1,486.36
Visser	$ 71.30		$ 591.82			$ 663.12
Grand Total	**$ 11,215.42**	**$2,100.23**	**$2,526.73**	**$5,151.58**	**$2,429.41**	**$23,423.37**

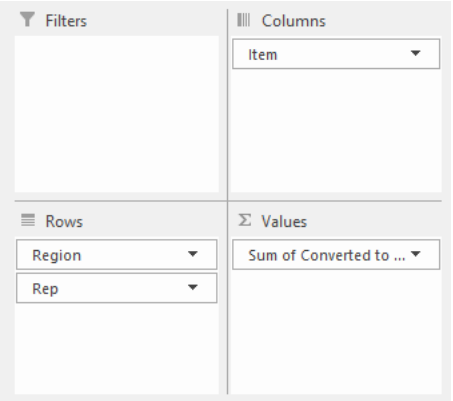


Simply click and drag the field name off it's spot if you want to remove it from the summary report.

To analyze your data in more detail, you can add a second field to the PivotTable to subdivide the totals even further by dragging the field to the "Row or Column Labels" section in the task pane.

The diagram shown below was created by first selecting the "Region" data followed by "Rep". Notice how each region's sales are broken down by rep.

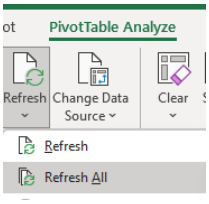
Sum of Converted to Cdn $	Column Labels					
Row Labels	Binder	Desk	Pen	Pen Set	Pencil	Grand Total
Central	**6502.228696**	**1081.00125**	**666.7986339**	**2991.457848**	**1903.402292**	**13144.88872**
Hall	2389.259849			308.239785	777.209013	3474.708647
Knievel	617.715	772.14375		1834.539424		3224.398174
Morgan	310.9824396			848.6786385	554.831613	1714.492691
Morganstine	1399.420978		666.7986339		95.622282	2161.841894
Shelton	172.6142796				368.9611695	541.5754491
Smith	1612.23615	308.8575			106.7782149	2027.871865
East	**3132.630434**		**1673.081078**	**2160.124646**	**240.4764495**	**7206.312607**
Johnson	1060.937867		710.8170048	698.2897446	240.4764495	2710.521066
Shippley	2000.395902		370.4436855	1461.834902		3832.674489
Visser	71.2966653		591.8203872			663.1170525
West	**1580.559725**	**1019.22975**	**186.8464332**		**285.5325816**	**3072.16849**
Anderson	172.8737199	1019.22975	186.8464332		206.8603992	1585.810302
Thompson	1407.686005				78.6721824	1486.358187
Grand Total	**11215.41885**	**2100.231**	**2526.726145**	**5151.582494**	**2429.411324**	**23423.36982**



If you prefer to have your data grouped in a columnar format, drag your field to the "Column Labels" section of the task pane.

Refreshing your Data

When you make changes to your data, you'll need to Refresh your Pivot Table.



1. Click on the Pivot Table
2. Choose Refresh or Refresh All from the Pivot Table Analyze tab.

Formatting Values in a Pivot Table

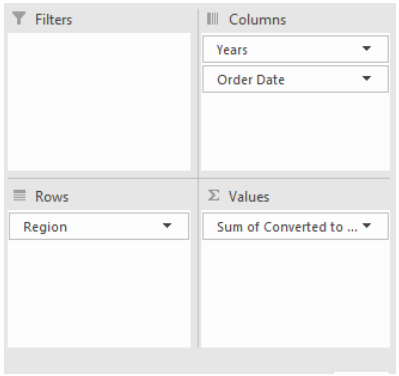
1. Right click on one of the numbers in your pivot table
2. Choose Number Format
3. Pick Accounting or Number, depending on which format you'd like

Grouping Your Data

Sometimes your data needs to be grouped in order for it to become useful in a pivot table. For example, some spreadsheets only contain the date, and it's not already broken down into years or months. You can, however, group your date field and request it to be broken down into months, quarters or years.

1. Go back to your data sheet and click anywhere in it.

2. Create a pivot table using the date as the column and the region as the row. Use Converted to Cdn $ for the Values.



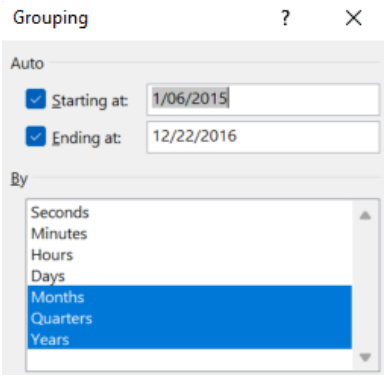
Sum of Converted to Cdn $	Column Labels		
	⊞2015	⊞2016	Grand Total
Row Labels			
Central	4119.380729	9025.507991	13144.88872
East	6207.615704	998.6969034	7206.312607
West	285.5325816	2786.635908	3072.16849
Grand Total	**10612.52901**	**12810.8408**	**23423.36982**

In newer versions of Excel, it will automatically group the data by year. If it doesn't give you the breakdown you want, you can group it by Days, Months, Quarters or Years.

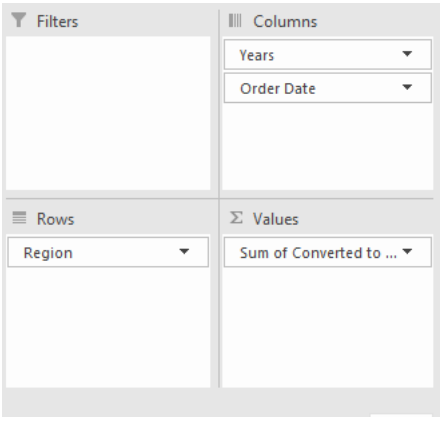
3. Right click on one the dates and choose Group.

4. Next you will see a box asking to break down your data into Years, Quarters, Months.

   Choose Years and Months.

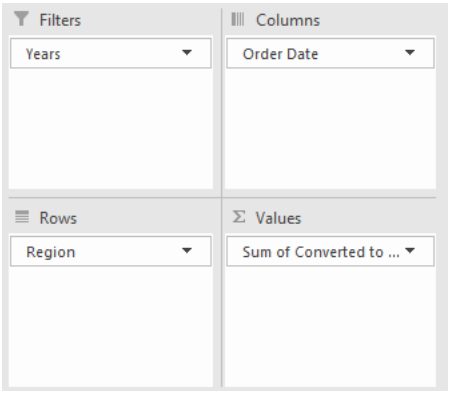


5. You should now have 2 date fields in your Pivot Table field list. One is Years, and the other is Order Date (which is now Months). You can click on the – and + signs in your pivot table to collapse and expand the details.



Sum of Converted to Cdn $	Column Labels		
	2015		
Row Labels	Jan	Feb	Mar
Central	617.715	889.1760339	
East	24.7086		
West			206.8603992
Grand Total	642.4236	889.1760339	206.8603992

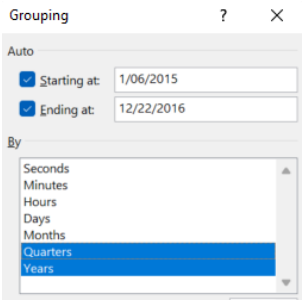
6. You are now able to move Years to the Filter box and choose a year to display if you'd like to summarize by month for a specific year.



Years	2015			
Sum of Converted to Cdn $	Column Labels			
Row Labels	Jan	Feb	Mar	Apr
Central	617.715	889.1760339		18
East	24.7086			3
West			206.8603992	
Grand Total	642.4236	889.1760339	206.8603992	55

If you want it to summarize by year(s), you can remove Order Date from the Columns area.

7. Experiment with the Grouping options such as Years and Quarters to see the various different reports you can get.

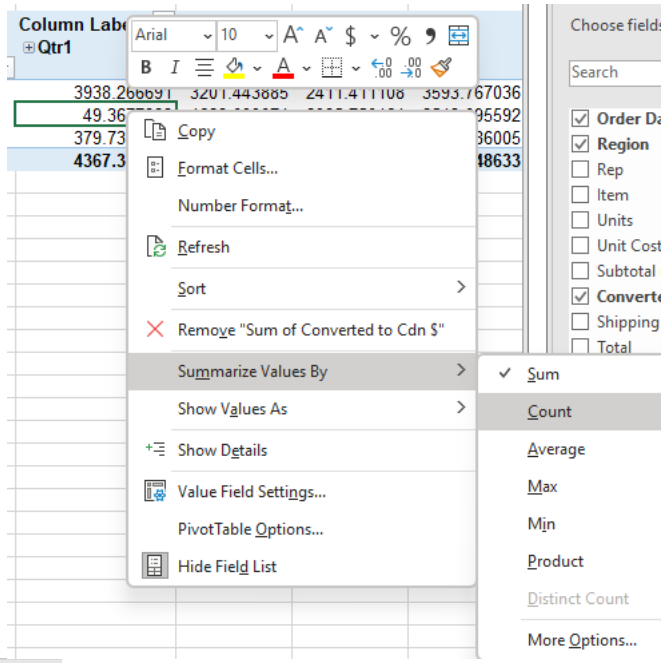


Years	2015				
Sum of Converted to Cdn $	Column Labels				
Row Labels	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
Central	1506.891034	1294.051154	308.8575	1009.581042	4119.380729
East	24.7086	1036.278684	2603.532828	2543.095592	6207.615704
West	206.8603992	78.6721824			285.5325816
Grand Total	1738.460033	2409.00202	2912.390328	3552.676634	10612.52901

Displaying Averages, Counts, etc

By default, if you drag over a field that has numbers in it, Excel will assume that you want to add (sum) them. It's easy to change if you would rather have it perform a different function.

1. Right click on one the totals
2. Choose Summarize Values By and choose a function

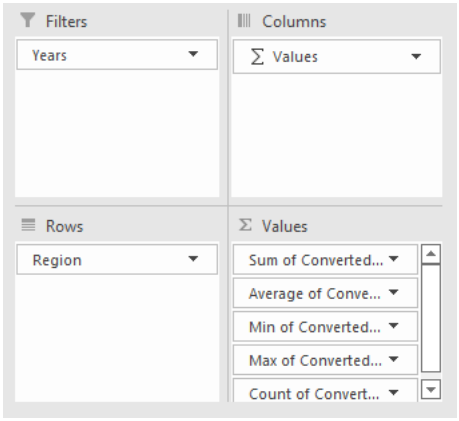


	A	B	C	D	E	F
1	Years	2015				
2						
3	Count of Converted to Cdn $	Column Labels				
4		Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
5	Row Labels					
6	Central	3	3	1	3	10
7	East	1	2	4	3	10
8	West	1	1			2
9	Grand Total	5	6	5	6	22
10						

You could display more than one column of information as well if you drag the field over multiple times and change each one. It is best to not have a field in the Columns spot when doing this.

You can edit the heading cells to be more meaningful and less busy as well.

	A	B	C	D	E	F
1	Years	2015				
2						
3	Row Label	Sum	Average	Min	Max	Count
4	Central	$ 4,119.38	$ 411.94	$ 106.78	$ 666.80	10
5	East	$ 6,207.62	$ 620.76	$ 24.71	$ 2,000.40	10
6	West	$ 285.53	$ 142.77	$ 78.67	$ 206.86	2
7	Grand Total	$ 10,612.53	$ 482.39	$ 24.71	$ 2,000.40	22



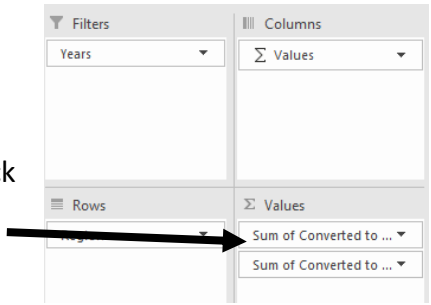
Displaying Percentages

Sometimes you may want to compare your data to the grand total.

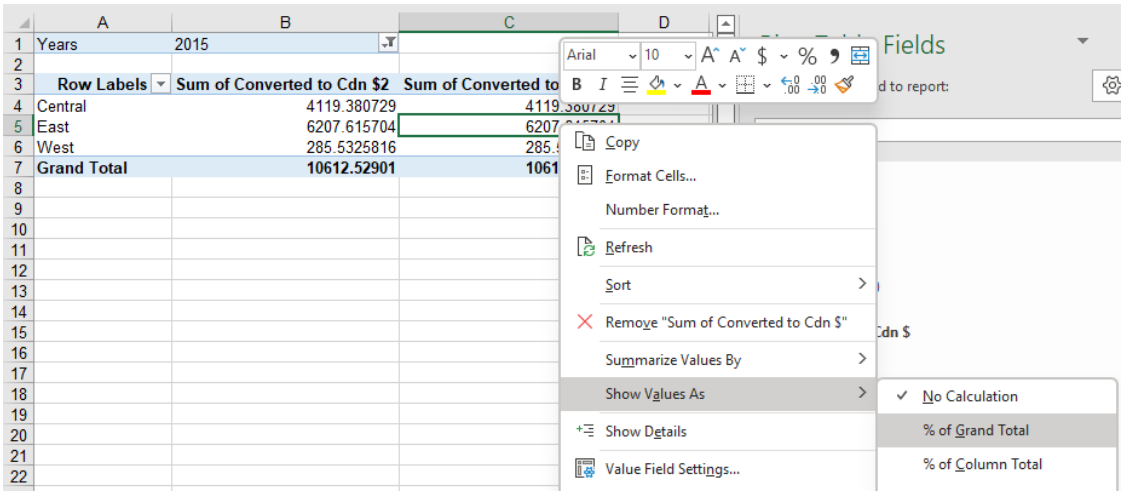
	A	B	C
1	Years	2015	
2			
3	**Row Labels**	**Sum of Converted to Cdn $2**	**Sum of Converted to Cdn $**
4	Central	$ 4,119.38	38.82%
5	East	$ 6,207.62	58.49%
6	West	$ 285.53	2.69%
7	**Grand Total**	**$ 10,612.53**	**100.00%**

1. If you want both the columns as displayed above, drag the field you're interested in twice to the Values section of the Pivot Table fields on the right of your screen.

2. You will see the data displayed twice in your pivot table. Right click on one of the numbers within the column that you want to display percentages.



3. Choose Show Values As….% of Grand Total



Creating a Pivot Chart

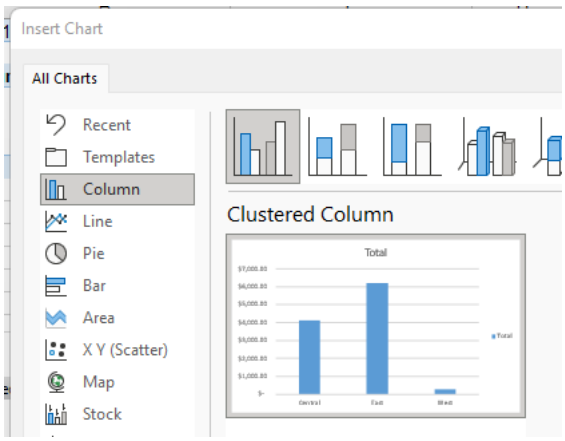
You can insert a PivotChart (based on your PivotTable) to visually see the summary data within the PivotTable report, and to easily identify comparisons, patterns, and trends. By using a PivotTable as the basis for your chart, you can also quickly rearrange the data that is displayed in the chart.

To create a PivotChart from an existing PivotTable, follow the steps outlined below:

1. Be sure the PivotTable is active.

2. Click this tool (located within the **Tools** section on the PivotTable Analyze Ribbon).

3. The following box will be displayed. Select the type of chart to be created.



If you'd like to change anything, click on the chart and choose from various options from the ribbon tabs you see at the top.

Exercise

Open Pivot Table Exercises

1. Starting on the first sheet, use the sample on the sheet to create the pivot table.
2. Make sure you make each list a table first.

Advanced Functions

In this module, you are introduced to some advanced functions that can be helpful when working with Excel. These include the COUNTIF and SUMIF functions.

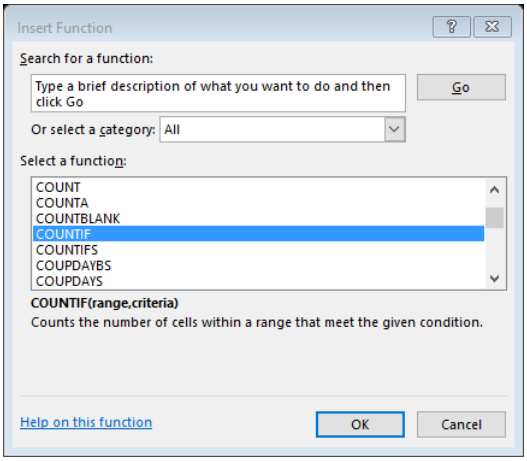
Total Number of Investors:	60
Number of Seniors:	42.00
Amount Seniors Invested:	$ 1,608,630.00

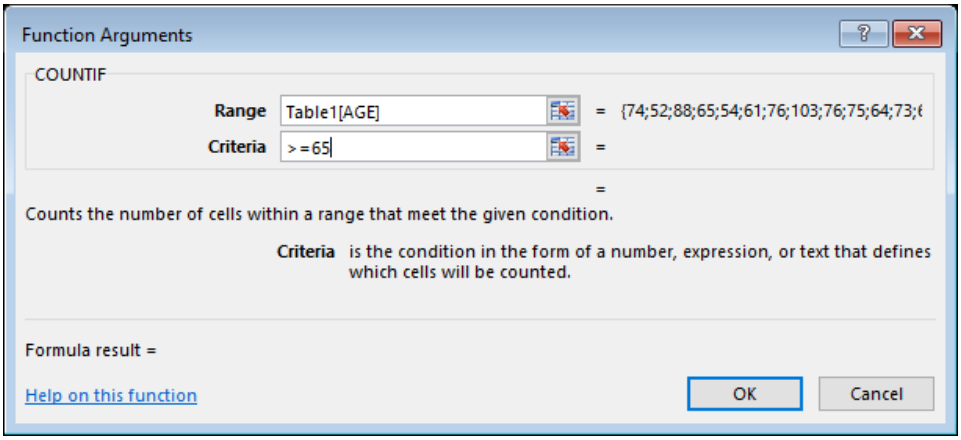
COUNTIF

The COUNTIF function will only count the cells if the criteria are matched.

Open INVEST DATA.XLS

1. Click on cell L3. We are going to have it count how many people are 65 or older.
2. Use the ***fx*** button to find the COUNTIF function.
3. Click OK and fill in the following information.





- **range** Required. The range of cells that you want evaluated by criteria. Cells in each range must be numbers or names, arrays, or references that contain numbers. Blank and text values are ignored. In this case, the ages.

- **criteria** Required. The criteria in the form of a number, expression, a cell reference, text, or a function that defines which cells will be added. For example, criteria can be expressed as 32, ">32", B5, 32, "32", "apples", or TODAY(). In this case, if they are 65 or older.

If you are using text, you must be specific (ie. If you want to find all people who live in St. Albert, you must type in St. Albert. However, if you think you might miss some because of data entry inconsistency, you could type *Albert and it would count all cells with the word Albert in it.)

NOTE: You can type a number into the criteria as above or a cell reference. If you type a cell reference, you need to put an ampersand in front of it to distinguish it from a number. ie. ">"&B16. Otherwise it will put quotes around it and consider it text.

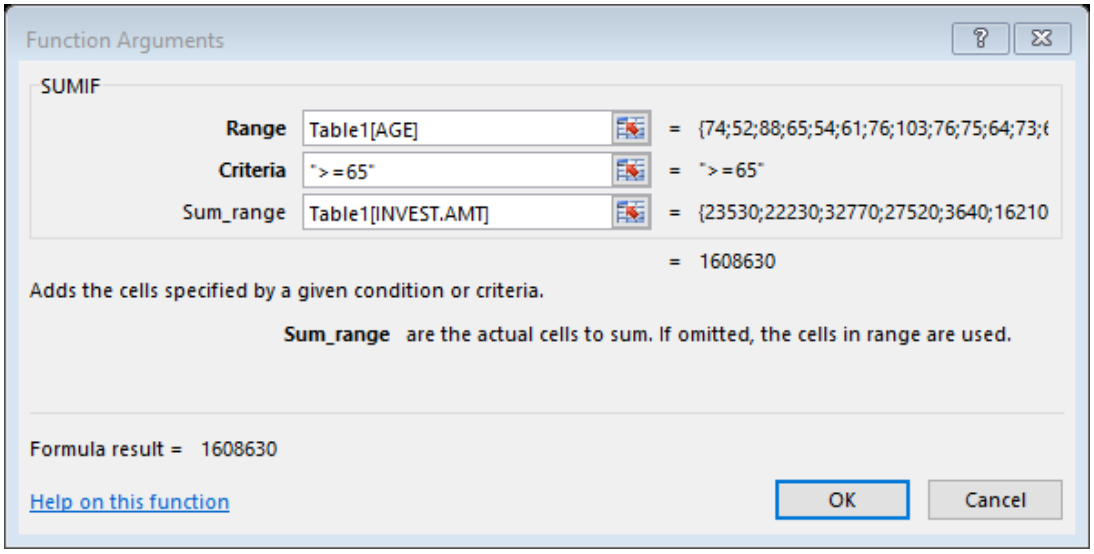
SUMIF

SUMIF is similar to COUNTIF except that it will actually add up certain cells if it meets the criteria.

In this next example, we will add up the investment amount from the seniors only.

1. Click on cell L5 and find SUMIF from the ***fx*** button.

2. Fill in the following information:



- **range** - Same as COUNTIF

- **criteria** - Same as COUNTIF.

- **sum_range** Optional. The actual cells to add, if you want to add cells other than those specified in the range argument. If the ***sum_range*** argument is omitted, Excel adds the cells that are specified in the ***range*** argument (the same cells to which the criteria are applied). In this case, the investment amount.

Exercise 1

Open VACATION.XLS

In the yellow cells, fill in the COUNTIF and SUMIF formulas for the questions asked.

	A	B	C	D	E	F	G	H	I
1	***Kids Kars Employee List***								
2	Effective Date:								
3	**Emp #**	**First Name**	**Last Name**	**Position**	**Salary**	**Start Date**	**Years of Service**	**Birthdate**	**Age**
4	101	Carrie	Waddle	CEO	5,000	3/02/67	41.11	16-Jul-42	65
5	102	Ronald	Bonker	Vice President	4,900	12/12/88	19.33	11-Sep-63	44
6	103	James	Zachary	Assistant VP	4,800	4/14/90	17.99	05-Feb-28	80
7	104	Sara	Ramsay	Research Tech	3,500	2/28/75	33.12	03-Oct-50	57
8	105	Becky	Pinter	Quality Clerk	3,000	12/01/97	10.36	17-Aug-72	35
9	106	Rose	Glass	Research Tech	2,500	4/04/97	11.02	01-Jul-55	52
10	107	Paul	Simons	Research Tech	2,200	8/04/91	16.69	27-Dec-39	68
11	108	Jenny	Black	Admin Assistant	3,000	8/07/92	15.68	25-Oct-12	95
12	109	Michael	Anthony	Clerk	1,800	5/08/79	28.93	15-Jul-60	47
13	110	Freda	Whitelock	AP Clerk	1,900	9/22/01	6.55	21-Mar-81	27
14	111	Beth	Williamson	Admin Supervisor	3,500	3/03/03	5.11	15-Apr-82	25
15	112	Maryanne	Wagar	Clerk	2,000	12/12/95	12.33	13-Jan-43	65
16	113	Keith	Marshall	Clerk	1,800	5/01/93	14.95	27-Dec-70	37
17	114	Mario	Summers	Laborer	2,500	7/04/92	15.77	06-Mar-58	50
18									
19	Number of employees who've worked 15 years or longer:								
20	Total Salary of long term employees:								
21									
22	Number of Clerks:								
23	Total Salary of Clerks:								
24									
25	How many employees are under 50?								

Completed:

	A	B	C	D	E	F	G	H	I
1	**Kids Kars Employee List**								
2	Effective Date:								
3	**Emp #**	**First Name**	**Last Name**	**Position**	**Salary**	**Start Date**	**Years of Service**	**Birthdate**	**Age**
4	101	Carrie	Waddle	CEO	5,000	3/02/67	41.11	16-Jul-42	65
5	102	Ronald	Bonker	Vice President	4,900	12/12/88	19.33	11-Sep-63	44
6	103	James	Zachary	Assistant VP	4,800	4/14/90	17.99	05-Feb-28	80
7	104	Sara	Ramsay	Research Tech	3,500	2/28/75	33.12	03-Oct-50	57
8	105	Becky	Pinter	Quality Clerk	3,000	12/01/97	10.36	17-Aug-72	35
9	106	Rose	Glass	Research Tech	2,500	4/04/97	11.02	01-Jul-55	52
10	107	Paul	Simons	Research Tech	2,200	8/04/91	16.69	27-Dec-39	68
11	108	Jenny	Black	Admin Assistant	3,000	8/07/92	15.68	25-Oct-12	95
12	109	Michael	Anthony	Clerk	1,800	5/08/79	28.93	15-Jul-60	47
13	110	Freda	Whitelock	AP Clerk	1,900	9/22/01	6.55	21-Mar-81	27
14	111	Beth	Williamson	Admin Supervisor	3,500	3/03/03	5.11	15-Apr-82	25
15	112	Maryanne	Wagar	Clerk	2,000	12/12/95	12.33	13-Jan-43	65
16	113	Keith	Marshall	Clerk	1,800	5/01/93	14.95	27-Dec-70	37
17	114	Mario	Summers	Laborer	2,500	7/04/92	15.77	06-Mar-58	50
18									
19	Number of employees who've worked 15 years or longer:					8			
20	Total Salary of long term employees:					$ 27,700.00			
21									
22	Number of Clerks					5			
23	Total Salary of Clerks:					$ 10,500.00			
24									
25	How many employees are under 50?					6			

Remember these spreadsheets have current data so the years of service and ages will be different in your spreadsheet than they were when this manual was printed!

With Formulas:

	A	B	C	D	E	F
19	Number of employees who've worked 15 years or longer:					=COUNTIF(G4:G18,">=15")
20	Total Salary of long term employees:					=SUMIF(G4:G18,">=15",E4:E18)
21						
22	Number of Clerks					=COUNTIF(D4:D18,"*clerk")
23	Total Salary of Clerks:					=SUMIF(D4:D18,"*clerk",E4:E18)
24						
25	How many employees are under 50?					=COUNTIF(I4:I18,"<50")

Extra Exercise

Open KIDS PARTY LIST.XLS

1. Use COUNTIF and SUMIF to fill in the following yellow squares.

2. Create your own inquiry for the last one! Be creative!

3	Childs Last Name	First Name	Gender	Age	Grade	Food Choice	Quantity	Permission Form received
4	Higgins	Jimmy	M	5	K	hot dog	1	
5	Parker	Suzie	F	7	2	hot dog	2	
6	Fredricks	Johnny	M	8	3	hamburger	2	Y
7	Templeton	Mary	F	4	K	hamburger	1	
8	Johnson	Donna	F	5	K	hot dog	1	
9	Sorenson	Glenda	F	8	3	hamburger	1	Y
10	Gunness	Boris	M	4	K	hot dog	1	
11	Fisher	Edward	M	4	K	hot dog	1	Y
12	Harrison	Harry	M	4	K	hamburger	2	
13	Anderson	Andy	M	8	3	hamburger	3	
14	Ryan	Ryan	M	6	1	hot dog	2	
15	Jackson	Howie	M	7	2	hamburger	2	
16	Swifty	Graham	M	6	2	hot dog	1	Y
17								
18								
19	How many girls are attending?							
20	How many boys are attending?							
21								
22	How many hot dogs should we order?							
23	How many hamburgers should we order?							
24								
25	What other information could you draw from this spreadsheet?							
26	?							

Completed:

19	How many girls are attending?	4
20	How many boys are attending?	9
21		
22	How many hot dogs should we order?	9
23	How many hamburgers should we order?	11

With Formulas:

	A	B	C	D	E	F
19	How many girls are attending?					=COUNTIF(C4:C18,"F")
20	How many boys are attending?					=COUNTIF(C4:C18,"M")
21						
22	How many hot dogs should we order?					=SUMIF(F4:F18,"hot dog",G4:G18)
23	How many hamburgers should we order?					=SUMIF(F4:F18,"hamburger",G4:G18)

Worksheet Protection

Occasionally you will want to protect certain cells in your worksheet from being changed or viewed. You can protect the whole worksheet from others looking at it with a password. You can also protect specific cells in a worksheet which prevents you or someone else from making changes to it.

An example would be if you had confidential data that only specific people were allowed to see. You could force them to type in the correct password in order to view the spreadsheet.

Or, if you had cells you wanted to protect that contained formulas or data that no one should be allowed to change, you would protect just those cells.

Open and Save Passwords

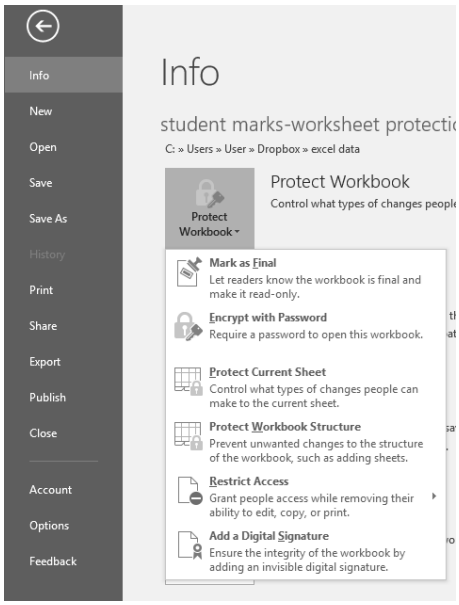
To prevent your worksheet from being opened by unauthorized users, you can assign a password to do it.

In this exercise, you will assign a password to a confidential document.

Open STUDENT MARKS-WORKSHEET PROTECTION.XLS

1. Click the File menu, and then click **Info**.

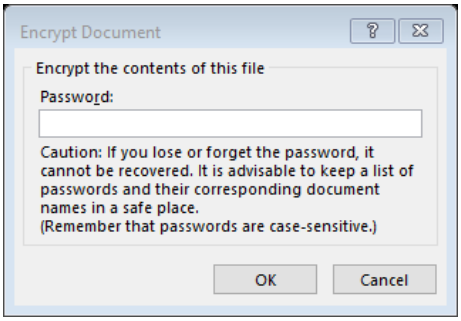
2. Click **Protect Workbook**, and then click **Encrypt with Password**.



3. If you want reviewers to enter a password before they can view the document, type a password in the **Password** box.

   REMEMBER THAT PASSWORDS ARE CASE SENSITIVE!

   THERE IS NO WAY TO RETRIEVE A PASSWORD PROTECTED WORKSHEET IF YOU FORGET YOUR PASSWORD!



Protecting the Worksheet

You can protect a sheet to prevent other people from changing its contents. You have the choice of protecting the contents of the whole sheet or just certain cells within the sheet. In this example, we will only allow the user to type in student marks (columns B - E).

Name	Math	Science	English	Phys-Ed	Average	Failing?	Honors?	Scholarship
Tommy	81	89	84	78	83.00	Pass	Honors	$ 1,000.00
Janice	44	55	73	23	48.75	Fail		$ -
Bob	80	82	100	65	81.75	Pass	Honors	$ 1,000.00
Sue	35	55	40	70	50.00	Pass		$ -
Mark	90	89	65	75	79.75	Pass		$ -
Kevin	85	80	75	85	81.25	Pass	Honors	$ 1,000.00
Nuno	35	45	48	60	47.00	Fail		$ -
Peter	60	70	55	64	62.25	Pass		$ -
Sally	48	22	52	45	41.75	Fail		$ -
Mary	77	45	90	60	68.00	Pass		$ -

Pass Mark	50
Honors Mark	80
Scholarship Mark	80
Scholarship Amount	1000

- On the Home ribbon tab, click on Format.

<u>To protect the entire sheet:</u>

1. Click on Protect Sheet.
2. Click on **OK**. Note that there is an option to assign a password and specify what changes are allowed.
3. Try to make changes to one of the cells.

You are not able to make changes to any of the cells.

<u>To unprotect the entire sheet:</u>

1. Click on Unprotect Sheet in the Format button on the home tab.

Protecting Cells

You can protect specific cells from being changed by first locking them and then turning on the protection as described above. Then you can turn protection off if you want to make changes and turn it back on when you are done.

As a default, all cells are locked. You must unlock the cells you want to be able to change. In this exercise, we will unlock the cells where we will type the students' marks.

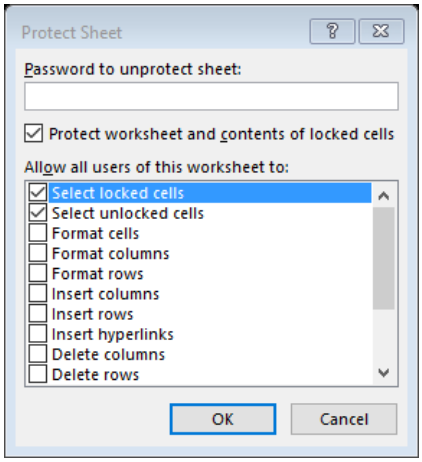
1. Click on Format button on the Home ribbon tab. Notice this LOCK CELL button is already turned on.

2. Select the cells you want to be able to type in (numbers in columns B – E). In this case, many of the cells contain formulas. Select the cells that will contain the student marks. We have shaded them.

3. Click on the Format button on the Home ribbon tab and click on LOCK CELL to turn it off.

4. These cells are now unlocked. The rest of the cells on the sheet are already locked by default. **You must now protect the sheet in order to have the locking take effect**.

5. Click on Protect Sheet and click OK. You can see that there are many levels of protection. For example, you may want to allow the user to make the columns bigger if they type data that is too small for the column.



6. Type in a mark for the first student. It should allow this change.

7. Now try to type over the Average or Passing Comment. It should not allow you to change these cells.

When you have protected a sheet, press the TAB key to take you through the available cells! It will cycle you through all unlocked cells, which make it a super data entry key to remember!

Exercise

1. Open BANK DEPOSIT-BLANK.XLS.

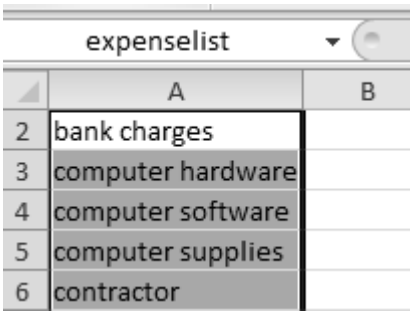
2. Unlock the cells where you want to type into. They may already be shaded to help you out.

3. Protect the sheet.

4. Type into the shaded cells. You should be able to type there. Now try typing over some other cells, such as the formulas. You should be stopped from typing into those cells.

	A	B	C	D	E	F	G	H	I
1	Date:								
2	Received From:				Received by:				
3	Explanation:				Kids Night Out fees				
4									
5		List of Cheques			Cash Count				
6		Name on Cheque	Amount			X	$ 1	Coin	$0.00
7	1					X	$ 2	Coin	$0.00
8	2					X	$ 2		$0.00
9	3					X	$ 5		$0.00
10	4					X	$ 10		$0.00
11	5					X	$ 20		$0.00
12	6					X	$ 50		$0.00
13	7					X	$ 100		$0.00
14	8								
15	9				Other Coin:				
16	10								
17	11				Cash Subtotal:				$0.00
18	12								
19	13								
20	14								
21	15								
22	16								
23	17				Deposit				
24	18								
25	19				Cash Subtotal:				$0.00
26	20								
27	21				Cheque Subtotal:				$0.00
28	22								
29	23								
30	24								
31	25								
32									
33	Cheque Sub Total		$0.00		Total Deposit:				$0.00
34									

Making Drop Down Lists



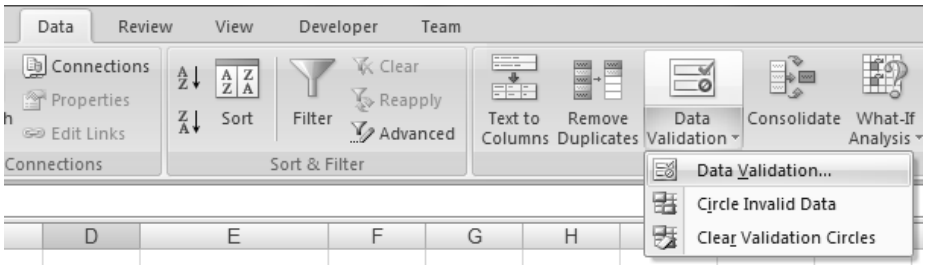
1. Enter all the possibilities onto another sheet.

2. Sort them.

3. Make them into a Table (CTRL T).

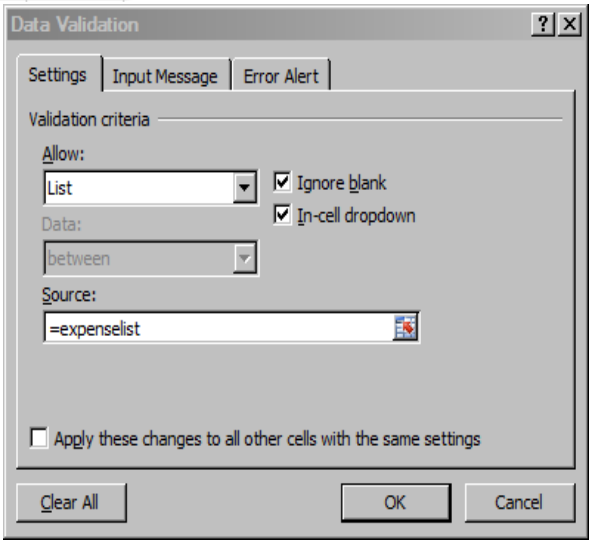
4. Select them and give this range a name by clicking in the name box (top left corner) and typing in a name – no spaces allowed!

5. Then select all the cells where you want the drop down list to appear and go into the Data Validation button from the Data ribbon tab.

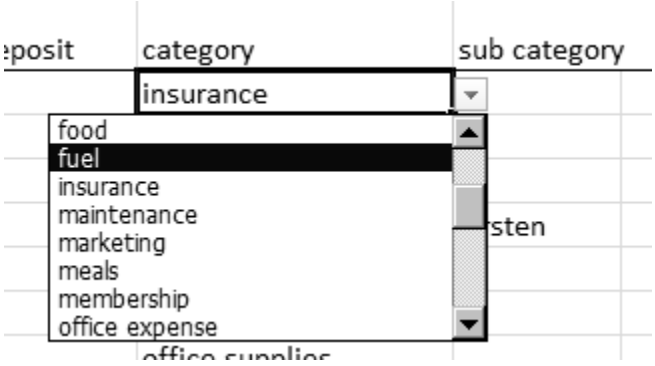


6. Choose List in the Allow box.

7. Click in the Source field, and press F3. This will list all the named ranges and you can pick the range you named earlier!



Now you'll have a list to choose from!

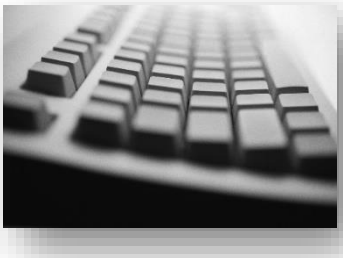


Exercise:
Open invest - data validation and follow the instructions.

Quick Keystrokes

ALT ENTER	Forces a hard return or a line break in a cell cause the text to word wrap in a column. Handy for long titles.
SHIFT ENTER	Completes a cell entry and selects the cell above
CTRL ENTER	Completes a cell entry and keeps the cursor in that cell
CTRL -	Deletes/Removes whatever you have selected (ie. Row, column or prompts you if you have neither selected)
CTRL ~	Alternates between displaying cell values and displaying formulas in the worksheet
CTRL SHIFT !	Formats selected cells to Comma style
CTRL SHIFT $	Formats selected cells to Currency style
CTRL Y or F4	Repeats the last command
CTRL Z	Undoes the last command you did
F1	Brings up the Help screen
F2	Takes you into EDIT mode so you can edit the contents of the current cell
F3	Brings up a list of names of ranges in the spreadsheet. You can then double click on one of them and it will place the name in the formula you are entering.
F4	If you're typing a formula, this makes the current cell reference in the formula absolute. If you keep hitting F4, it will toggle then and eventually remove the $ signs.
F4	Repeats the last command
F5	Brings up a "Go To" box listing named ranges and allows you to type in a cell reference in order to go directly to that cell
ALT F1	Creates a chart of the data in the current range
SHIFT F3	Displays the Insert Function dialog box
ALT =	Creates an Autosum Function
CTRL T	Creates a Table Using the Current Region of Cells
CTRL D	Duplicates Above Entry

MOVING AROUND and SELECTING CELLS	
CTRL ← or CTRL → or CTRL↓ or CTRL ↑	Takes you to the last cell in that direction
CTRL END	Takes you to the bottom right corner of the data
CTRL HOME	Goes to cell A1
CTRL SHIFT 8 or CTRL A	Selects all surrounding cells
SHIFT ARROW	Selects one cell at a time
SHIFT CTRL ARROW	Selects from the starting point to the last cell in that direction
PAGE UP/PAGE DOWN	Moves one screen up/down in a worksheet
ALT PAGE UP/PAGE DOWN	Moves one screen to the left/right in a worksheet
CTRL PAGE UP/PAGE DOWN	Moves to the previous/next sheet in a workbook
CTRL SHIFT PAGE UP/PAGE DOWN	Selects the current and previous/next sheet in a workbook.
CTRL SPACEBAR	Selects an entire column in a worksheet
SHIFT SPACEBAR	Selects an entire row in a worksheet
CTRL SHIFT SPACEBAR	Selects the entire worksheet
CTRL SEMICOLON	Inserts the current date into the cell
CTRL SHIFT SEMICOLON	Inserts the current time into the cell
CTRL SEMICOLON, then SPACEBAR, then CTRL SHIFT SEMICOLON	Inserts both current date and time into a cell
CTRL A	Selects Current Region of Cells

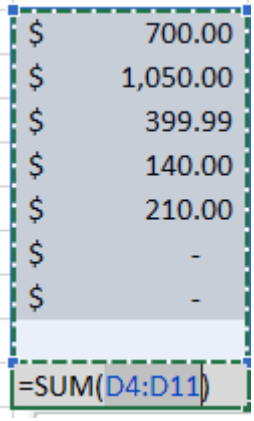


Adding Up a Column or Row of Numbers

1. • Click where you want the total to go.

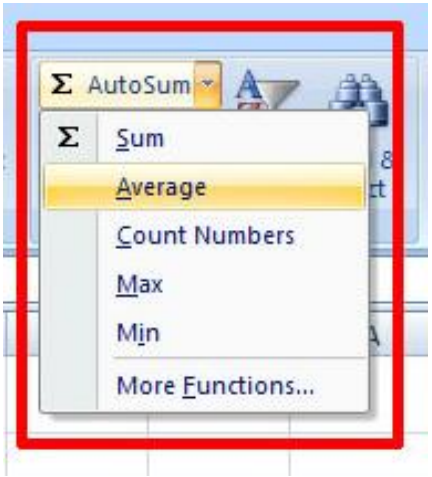
2. • Click the AUTOSUM button. 

3. • It guesses which cells you want added.
   - If it's correct, press Enter.
   - If it's incorrect, click and drag over the correct cells with the white cross and press Enter. Remember to include the blank cell if there is one!



These same steps work for AVERAGE, MIN, MAX and COUNT.

If you are counting cells containing text, do the same steps but type an A in after COUNT to make it COUNTA.



=AVERAGE(D4:D11)
=MIN(D4:D11)
=MAX(D4:D11)
=COUNT(D4:D11)
=COUNTA(D4:D11)

Understanding the Excel Cursors

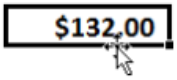
1. Selection Cursor:

Click and drag to highlight multiple cells with this cursor, or click in a cell to select the single cell.

2. Autofill Handle:

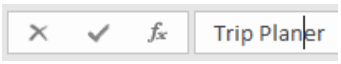
Click and drag to fill in the other cells with content. It works differently depending on what you drag. For example, if you Autofill Jan, you will fill in the other cells with Feb, Mar, etc.

3. Move Cursor:



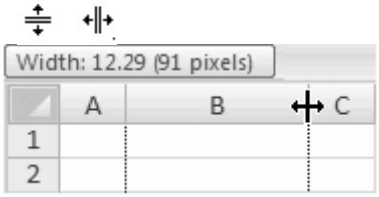
Click and drag the contents of the selected cell to any other cell.

4. Selection Bar (I-Beam): I

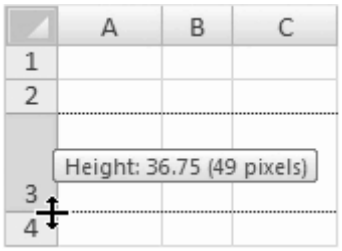


Click to place the cursor into the Formula bar so that you can edit an equation or function.

5. Column Width/Row Height Sizer:

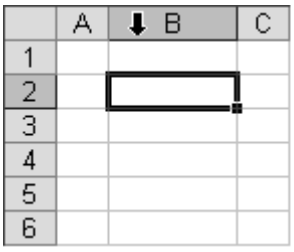


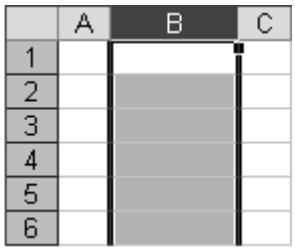
Click and drag in between columns or rows to resize them.



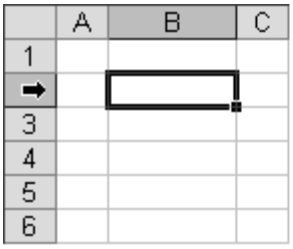
Double click when you see this arrow and it will automatically size your column or row to accommodate the largest entry!

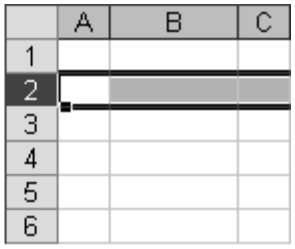
6. Select Whole Column or Row:





Click right on the Column heading or Row number to select the entire Column or Row.





Excel Printing Cheat Sheet

#1 To Specify What to Print, Set your Print Area!

- Click on the Page Break Preview button on the bottom right corner of the screen.
- Drag the Solid Blue Lines to enclose the desired cells.
- To get back to Normal view, click Normal.

 # 2 To Add a Header/Footer

- Click Page Layout button on the bottom right of the screen and type the text in the desired spot.
- To get back to Normal view, click on a cell, then click Normal.

#3 To Add a Page Number

- Follow Above Steps for Header/Footer
- Type Page (if desired) and then click the Page # button on the Header/Footer toolbar

#4 To Print Selected Cells

- Select Cells
- File Print
- Choose Print Selection instead of Active Sheet

#5 To Flip it to Landscape or Portrait

- File, Print
  OR
- Page Layout Tab at top of screen

#6 To Modify Margins

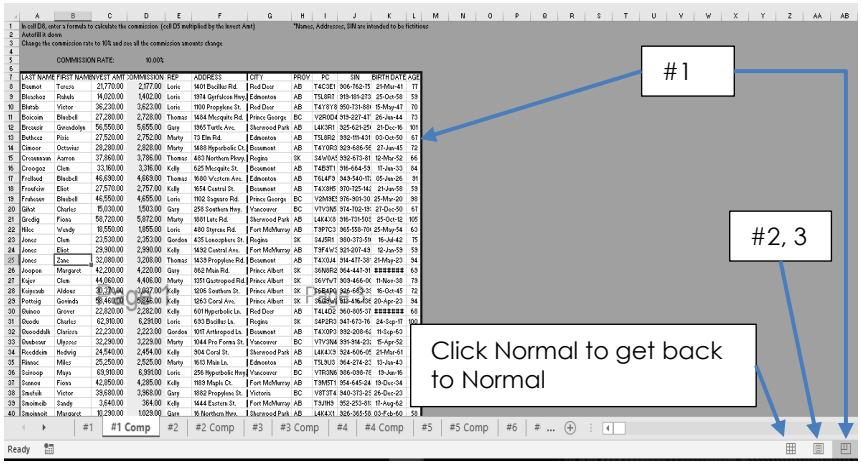
- File Print
- Click Margins to choose Predefined
  OR
- Click Show Margins (Bottom Right)

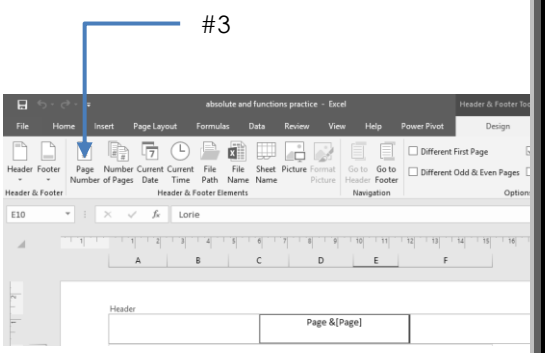
#7 To Make it Fit Properly on the Page

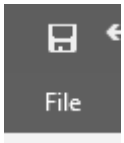
- File, Print
- Change Scaling to Fit All Columns on One Page

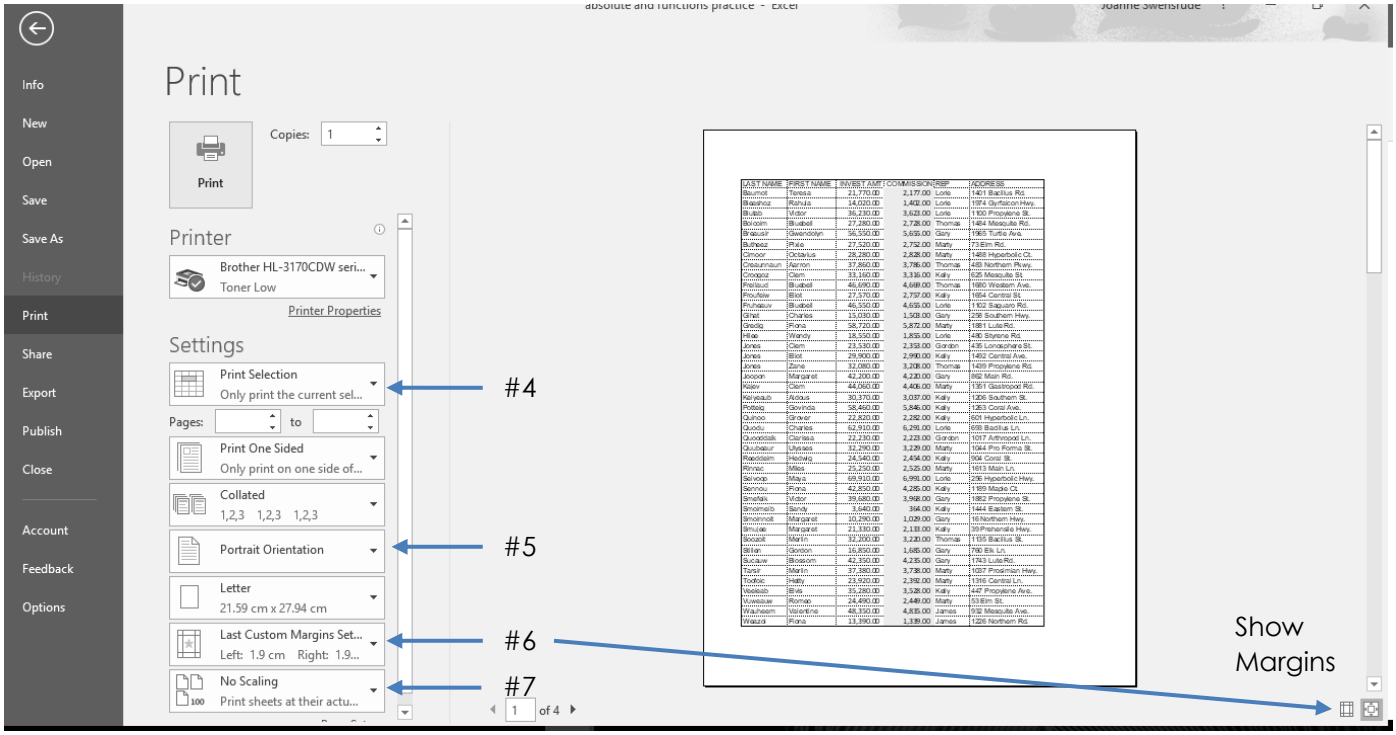
#8 To Repeat Headings at the Top/Side of Each Page

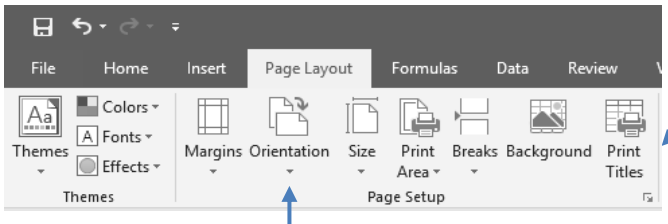
- Click Print Titles on the Page Layout Tab at top of Screen
- Click beside "Rows/Columns to Repeat at the Top" and Click on the Row(s)/Column(s) to Repeat

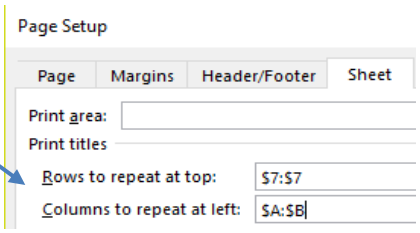

#1
#2, 3
Click Normal to get back to Normal


#3
Header
Page &[Page]


File


Print
Info
New
Open
Save
Save As
History
Print
Share
Export
Publish
Close
Account
Feedback
Options
Copies: 1
Printer
Brother HL-3170CDW seri...
Toner Low
Printer Properties
Settings
Print Selection
Only print the current sel...
Pages:
to
Print One Sided
Only print on one side of...
Collated
1,2,3 1,2,3 1,2,3
Portrait Orientation
Letter
21.59 cm x 27.94 cm
Last Custom Margins Set...
Left: 1.9 cm Right: 1.9...
No Scaling
Print sheets at their actu...
1 of 4
#4
#5
#6
#7
Show Margins


File
Home
Insert
Page Layout
Formulas
Data
Review
Themes
Colors
Fonts
Effects
Margins
Orientation
Size
Print Area
Breaks
Background
Print Titles
Themes
Page Setup
#5
#8


Page Setup
Page
Margins
Header/Footer
Sheet
Print area:
Print titles
Rows to repeat at top:
$7:$7
Columns to repeat at left:
$A:$B

NOTES:

