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INTERMEDIATE EXCEL

Microsoft Excel is a spread sheet program that makes it easy for you to create, track, and update all sorts of data. Excel's calculating functions are ideal for creating such products as inventories, check registries, or sales invoices.

Opening Excel:

In order to open the Microsoft Excel program you must:

Click the "Start" button in the corner of the task to open the "Start Menu"

Go to Programs

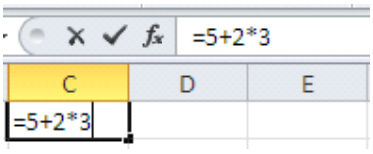
Go to "Microsoft Excel" and click to open

Review and Shortcuts

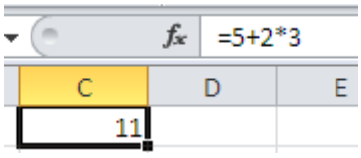
Math Formulas

Formulas are equations that perform calculations on values in your worksheet. A formula starts with an equal sign (=). Operators specify the type of calculation that you want to perform on the elements of a formula. Microsoft Excel includes four different types of calculation operators: arithmetic, comparison, text, and reference. For example, the following formula multiplies 2 by 3 and then adds 5 to the result: =5+2*3. When entered into a cell, this formula will display the value of the expression (i.e. 11).

Input formula into a cell in an excel worksheet:



After inputting formula into cell press ENTER:

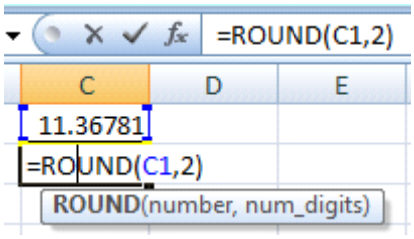


Functions

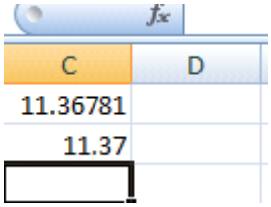
Functions are predefined formulas that perform calculations by using specific values, called arguments, in a particular order, or structure. Functions can be used to perform simple or complex calculations. The structure of a function begins with an equal sign (=), followed by the function name, an opening parenthesis, the arguments for the function

separated by commas, and a closing parenthesis. Arguments can be numbers, text, logical values such as TRUE or FALSE, arrays, error values such as #N/A, or cell references. The argument you designate must produce a valid value for that argument. Arguments can also be constants, formulas, or other functions. For example, the ROUND function rounds off a number in cell C1 to two decimal places: =ROUND(C1, 2).

Input a function into a cell in an excel worksheet:

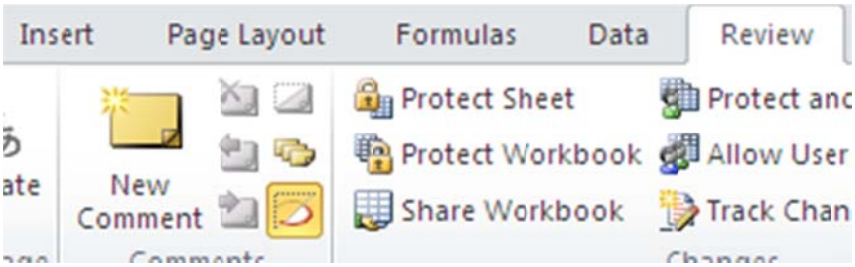


After inputting function into cell press ENTER:



Comments

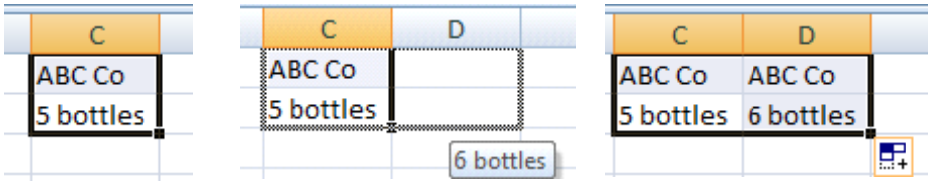
A comment is a note that you attach to a cell, separate from other cell content. Comments are useful as reminders to you, such as noting how a complex formula works, or to provide feedback to other users. Click the cell you want to comment on. On the **Review** tab, click **Comment**. In the box, type the comment text. If you don't want your name in the comment, select and delete the name. When you finish typing the text, click outside the comment box.



Using the Fill Handle

The fill handle allows you to copy text from one or more cells across many attached cells. To allow the use of the fill handle, click **Options** on the **Tools** menu and click the **Edit** tab. Select the **Allow cell drag and drop** check box. To use the fill handle select the cells you want to copy. Point the mouse to the bottom right-hand corner of the copied cell until you see a black '+' symbol (the fill handle). Now, drag the fill handle across the cells you want to fill, and then release the mouse button.

Copy cell(s) and then drag fill handle across empty cells:



Right Mouse Shortcuts

When you right click the mouse while it is pointed at any cell, a list of options will appear in menu. The **Cut, Copy** and **Paste** commands allows you cut or copy the contents of a cell or paste contents into the cell. The **Insert** and **Delete** commands allow you to add or remove rows or columns from the worksheet. The **Clear Contents** option allows you to delete the text of the selected cell(s). **Insert Comments** is a shortcut for entering comments into a cell. The **Format Cells** command brings up a menu which allows the user to format the contents of cells including numbers, borders, fonts, alignment and patterns. **Hyperlink** allows the user to create a link to another source such as another document or a World Wide Web page.

Format Painter

The format painter allows you to copy the format from one cell or range to another. To copy the formatting to a cell or range, click **Format Painter** 

on the **Clipboard** toolbar. To copy the formatting in the selected cell or range to several locations, double-click the **Format Painter** button. When you finish copying the formatting, click the button again.

Absolute Cell Addresses

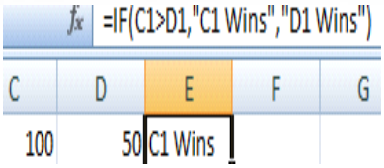
An absolute cell reference in a formula, such as $A$1, always refers to a cell in a specific location. If the position of the cell that contains the formula changes, the absolute address remains the same. If you copy the formula across rows or down columns, the absolute address does not adjust. For example, if you copy a relative reference, say =A1, in cell B2 to cell B3, it will change to =A2. With absolute addressing, =$A$1 will remain no matter where it is copied to. By default, new formulas use relative addressing, and must be changed to absolute addressing.

Logical Functions

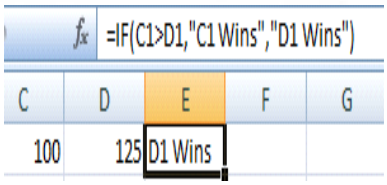
Using =IF

The IF function is used to conduct conditional tests on values and formulas. It returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE. It is setup like so: **IF**(**logical_test**,**value_if_true**,value_if_false). For example, we can write =IF(C1 > D1, “C1 wins”, “D1 wins”). If the value in cell C1 is greater than the value in D1 then the formula will put C1 wins in cell E1, if not it will put D1 wins into cell E1.

If the value in cell C1 is greater than the value in D1:

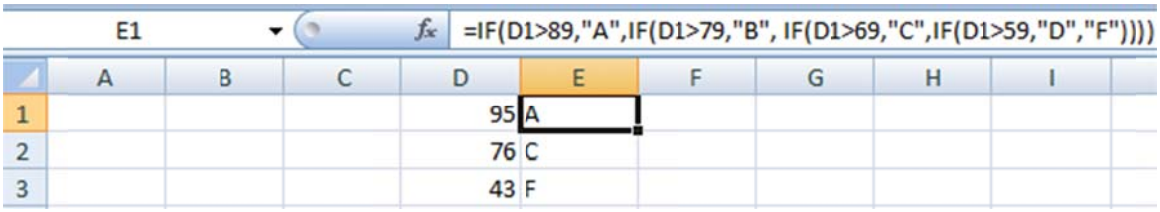


If the value in cell C1 is not greater than the value in D1



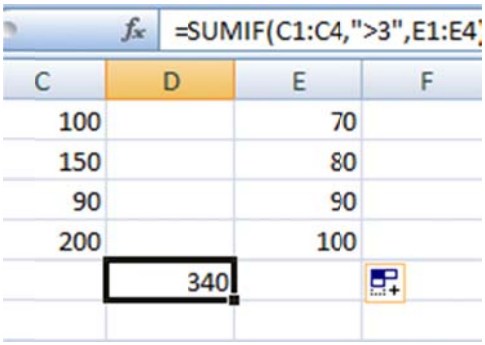
Nested =IF

=IF(D1>89,"A",IF(D1>79,"B", IF(D1>69,"C",IF(D1>59,"D","F")))) is an example of a nested IF. A nested IF is an IF function, within another IF function. The IF function above will output a letter grade based on a numeric grade. If the value in cell D1 is greater than 89, then the test value is true and "A" will be output. If the test value is false, another IF statement will be evaluated. Finally, if all test cases are false, the IF function will return "F", meaning the student has a grade less than or equal to 59.



Using =SUMIF

SUMIF adds the cells specified by a given criteria. The function is in the form **SUMIF**(**range**, **criteria**, sum_range). The range is the range of cells you want evaluated. Criteria is the criteria in the form of a number, expression, or text that defines which cells will be added. For example, criteria can be expressed as 32, "32", ">32" or "oranges". The sum range is the actual cells that will be added if the range meets the criteria.



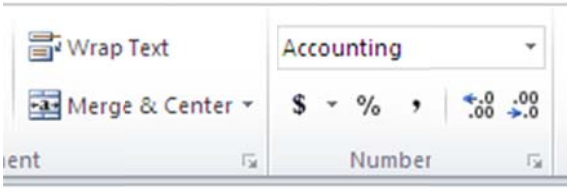
In the example above, if the number of cells in the range C1 to C4 is greater than 3, then the sum of the values in E1 to E4 will be summated.

Formatting

Formatting Cells

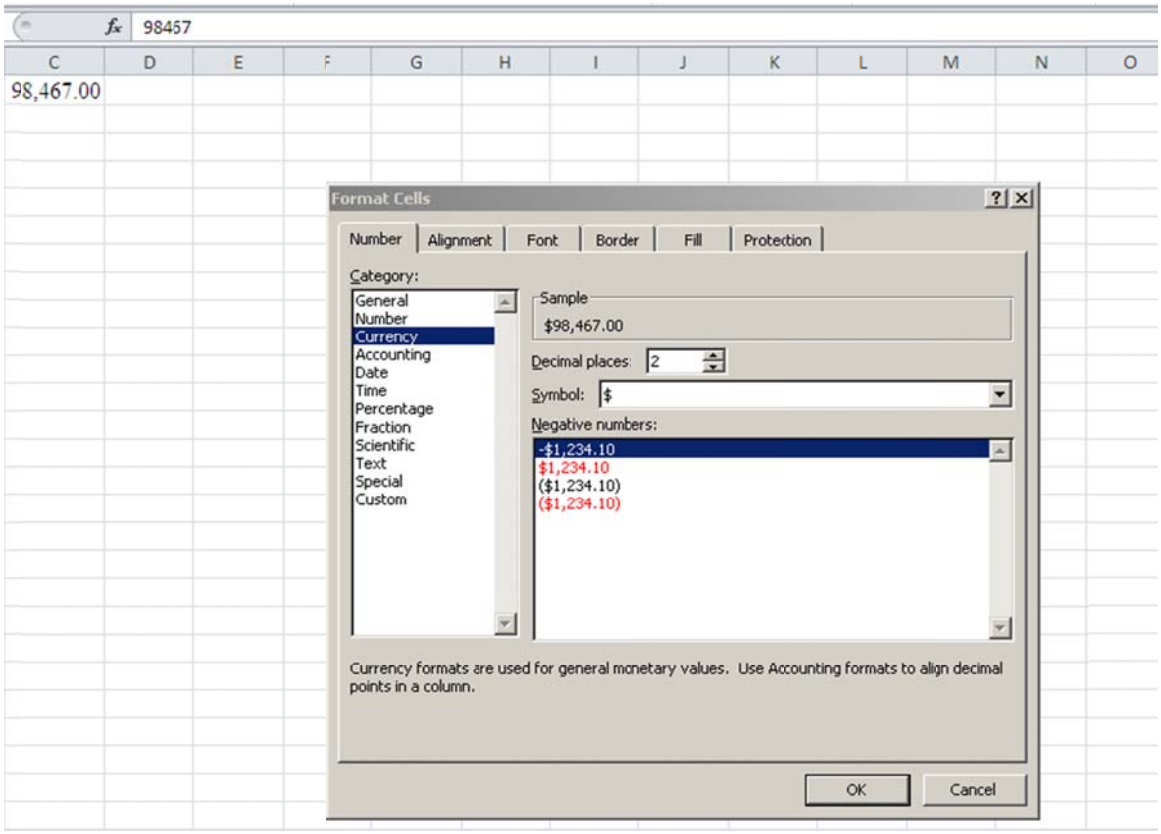
Formatting cells allows you to change the way in which the cell displays the information you enter. Cells can be formatted to show the numbers in many different ways. To begin to format a cell, follow these steps:

1. Type the number 98467 in cell C1 and keep the cursor on this cell
2. Click on Format, which is located on the Menu bar.



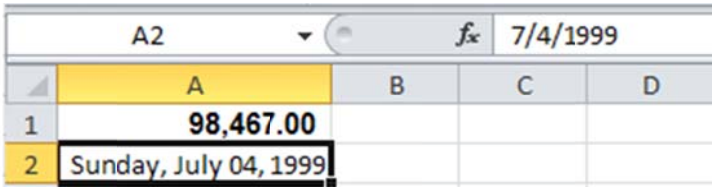
3. Press the down arrow key until Cells is highlighted.
4. Press Enter.
5. Make sure the Number tab is showing in the menu that pops up and click on "Number" under the category.
6. Change the decimal places to 1 by clicking the down arrow and check the box that says use 1000 separator (,).
7. Click Ok

8. The number in cell C1 should now read 98,467.0
9. Now the cell needs to be formatted again to show that it is a monetary value.
10. Click on Format, which is located on the Menu bar.
11. Press the down arrow key until Cells is highlighted.
12. Press Enter
13. Click on Currency under the category. Change the decimal places back to two by clicking on the up arrow.
14. Leave the symbol as a "$" and click Ok.
15. Cell C1 should now read $98,467.00



Formatting Dates

1. Put the cursor on cell C2
2. Click on Format, which is located on the Menu bar.
3. Press the down arrow key until Cells is highlighted.
4. Press Enter.
5. Click on Date under the category.
6. Under type, click on *Wednesday, March 14, 2001 and click Ok
7. Now in type 7/4/99 in cell A2 and hit enter.



8. Cell A2 should now read Sunday, July 04, 1999. Notice how the formatting automatically changed the way in which the date is displayed but the Formula Bar shows the date still as 7/4/1999.
9. Similar procedures are used to format cells to show times and percentages.

Charts and Graphs

Creating Charts and Graphs

Charts and graphs are a useful way to display information in a graphical sense without having to write anything out. Below is a brief description of how to create several types of charts and graphs.

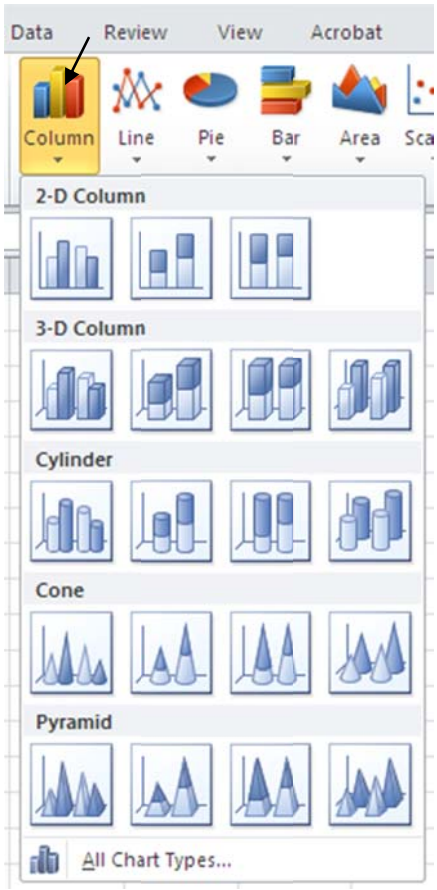
1. First in cell A1 type “Days of the Week”. In cell A2 type “Monday” and in cell A3 type “Tuesday”
2. Highlight cells A2 and A3 and use the fill handle to fill cells A4-A8 with the rest of the days of the week.
3. Now type “Number of Pancakes” in cell B1 In cell B2 type “2”, B3 “4”, B4 “5”, B5 “3”, B6 “2”, B7 “4”, B8 “3”
4. Highlight cells A1-A8 and B1-B8 at the same time.

B8

	A	B	C
1	Days of th	Number of pancackes	
2	Monday	2	
3	Tuesday	4	
4	Wednesd	5	
5	Thursday	3	
6	Friday	2	
7	Saturday	4	
8	Sunday	3	

5. On the menu bar click on insert.

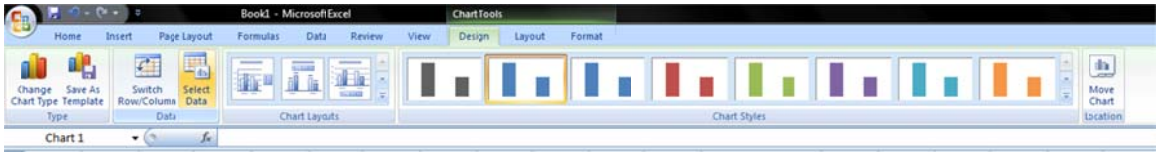
6. Scroll down and select chart. The Chart Wizard will show on the screen showing step 1 of 4.



7. Notice that you are able to chose many different types of charts in this step including Column, Bar, Line, Pie etc.
8. Select Column (it should already be selected) then chose the type of sub-chart that you want.
9. By clicking on each sub-chart type a brief description of what type of information that is displayed will work best for that chart. You can also view a sample of what your chart would look like by clicking and holding on the Press and Hold to View Sample button.
10. Click Next on the bottom of the Chart Wizard

11. In step 2 of 4 the Chart Wizard shows you what your chart will look like.
12. Click on the Rows button and observe how the data is displayed on the chart. You my have to click back and forth between the columns and rows button to recognize all the changes in the chart.
13. Leave the columns button selected and click Next
14. The next step in the Chart Wizard will allow you to name the Chart Title and the X and Y axis.
15. In the Chart Title space type “Average Number of Pancakes Consumed Per Day” In the Category (X) axis space type “Days of the Week” and in the Category (Y) axis space type “Number of Pancakes”
16. Click Next (Using the rest of the tabs in this step will be discussed later on)
17. Step 4 in the Chart Wizard is deciding whether or not you want the chart to show up in a new sheet or as an object in the sheet that you are working on.
18. Select as a new sheet and click Finish.
19. Your chart will show up as a new sheet
20. Examine your chart in the new sheet titled “Chart 1”
21. Notice how the information is presented in an easy to see manner. You can see that this individual ate an average of 4 pancakes on Tuesdays and 2 on Fridays.

Formatting the Chart



Now that you have a chart created there are many ways in which you can change its appearance and add different features.

1. The chart tool bar should be showing in the screen when the chart is first created. If it is not then it can be brought by clicking on Toolbar in the Insert menu and selecting Chart.
2. The chart tool bar will allow you to change the appearance of the chart rather easily.
3. On the chart tool bar click on the drop down menu and select chart area.
4. Notice that the whole graph is outlined by small black boxes. These boxes indicate which are you have selected.
5. Now that you have "chart area" selected you can customize the way the chart looks using several different methods. You can either use the chart toolbar or you can right click to get a drop down menu with options on it.
6. The options included are Format Chart Area, Chart Type, Source Data, Chart Options, Location, and Clear. Under each of these selections there is a multitude of ways in which you can change the way the chart looks and displays your information.
7. You can also choose other parts of the chart other than the Chart Area. These are shown in the dropdown menu and include; Category Axis, Category Axis Title, Chart Title, Legend, Plot Area, Value Axis, Value Axis Major Gridlines, Value Axis Title, and Series (Series Name).
8. Selecting each of these gives you different options in the way in which you can display the information on the chart.

HLOOKUP

Hlookup refers to Horizontal lookup. Its purpose is to look up a value or text horizontally across a row. When the value is found, it will return a value in another row that corresponds to the column of that value. Assuming that you have a table which presents the ages in the top row (header row) and the left column presents the height. In the table are the weight range that corresponds to the age and the height as shown below:

	A	B	C	D	E	F	G
1		Age 0	Birth	3 mths	6 mths	9 mths	1 year
2	Height (cm)	50.5	3.3	4.3	5.3	6.3	7.3
3		61.1	4.3	6.0	7.0	8.0	9.0
4		67.8	5.3	7.0	7.8	8.8	9.8
5		72.3	6.3	8.0	8.8	9.2	10.2
6		76.1	7.3	9.0	9.8	10.2	10.2

Using the formula, you can lookup the age (6 mths) across row 1. We will find 6 mths in column E. The formula can return any value below column E, depending on the value given in the formula. Here is how you should input the formula:

1. Select a blank cell.

2. Enter the formula (without the square brackets) "=Hlookup("6 mths",$B1:$G6,4,false)".

3. The formula will look for the value "6 mths" in the 1st row $B1:$G1.

4. The horizontal position (Column E) will be captured.

5. The number 4 in the formula "....$B1:$G6,**4**,false)" indicates that the result to return, when the value "6 mths" is found, is in row 4 (the result returned is 7.8).

6. The false that follows is a switch, to indicate that the exact value must be found. Without the false, it will return the closest value that is greater than the value to be found.

HLOOKUP searches for a value in the top row of a table or an array of values, and then returns a value in the same column from a row you specify in the table or array. Use HLOOKUP when your comparison values are located in a row across the top of a table of data, and you want to look down a specified number of rows. Use VLOOKUP when your comparison values are located in a column to the left of the data you want to find. The H in HLOOKUP stands for "Horizontal."

VLOOKUP

Say that your travel agency sends you a month end report of all the places that your employees have traveled. The report uses airport codes instead of city names. It would be helpful if you could easily put in the real city name instead of just the code.

	A	B	C	D
1	Travel Audit Report			
2				
3	Name	Date	From	To
4	David	6/22/2005	YYZ	YST
5	Lisa	6/27/2005	YYZ	YVZ
6	Matt	6/3/2005	YYZ	YJT
7	Angela	6/12/2005	YYZ	YQC
8	Heather	6/1/2005	YYZ	XDX
9	Angela	6/8/2005	YYZ	XDQ
10	Brian	6/29/2005	YYZ	YKF
11	Jim	6/20/2005	YYZ	YXX
12	Michelle	6/22/2005	YYZ	YWJ

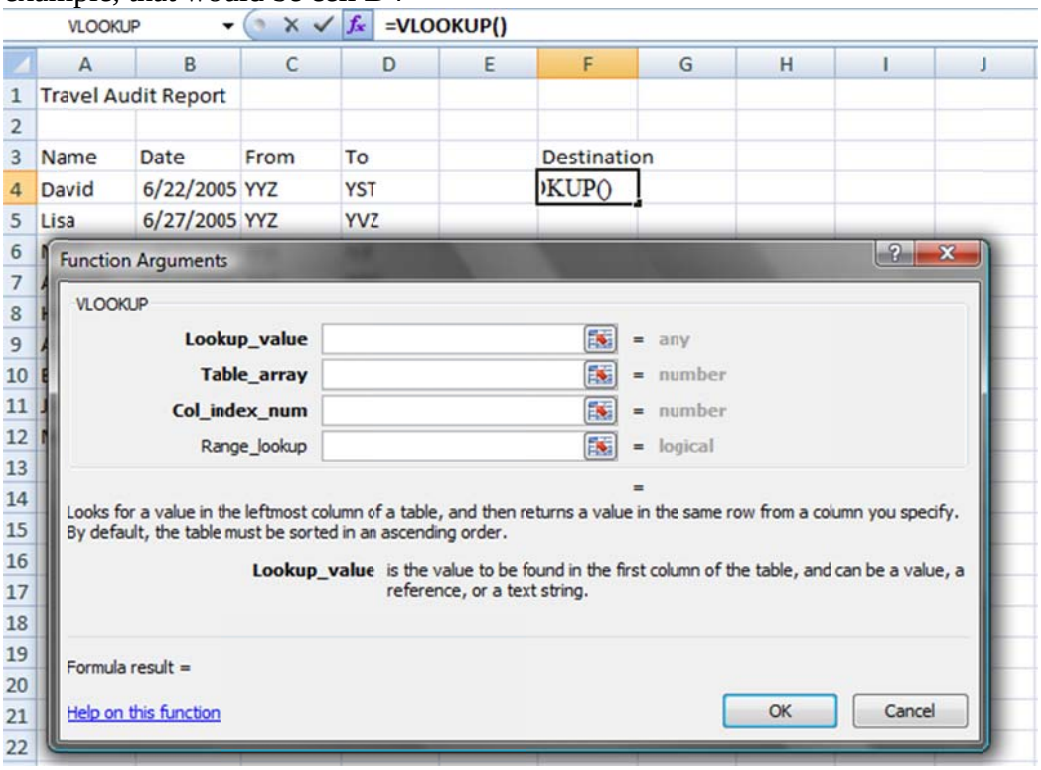
On the Internet, you find and import a list showing the city name for each airport code.

	I	J	K	L
3	**Code**	**Airport**		
4	AKV	Akulivik, QC		
5	CXH	Vancouver, BC - Coal Harbour		
6	DUQ	Duncan/Quam, BC		
7	ILF	Ilford, MB		
8	KEW	Keewaywin, ON		
9	KIF	Kingfisher Lake, ON		
10	MSA	Muskrat Dam, ON		
11	QBC	Bella Coola, BC		

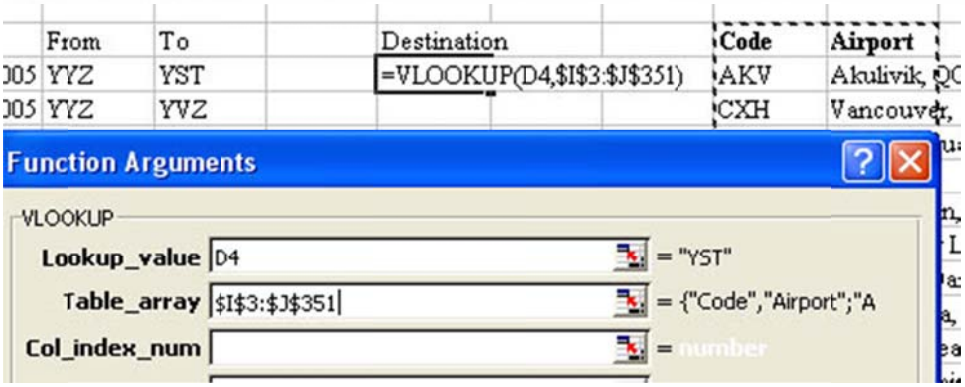
But, how do you get this information on each record in the report?
1 Use the VLOOKUP function. VLOOKUP stands for “Vertical Lookup”. It can be used anytime that you have a list of data with the key field in the left-most column.
2. Start to type the function, =VLOOKUP(. Type Ctrl+A to get help with the function.

Code	Airport
AKV	Akulivik, QC
CXH	Vancouver, BC
DUQ	Duncan/Quam, BC
ILF	Ilford, MB
KEW	Keewaywin, ON
KIF	Kingfisher Lake, ON
MSA	Muskrat Dam, On

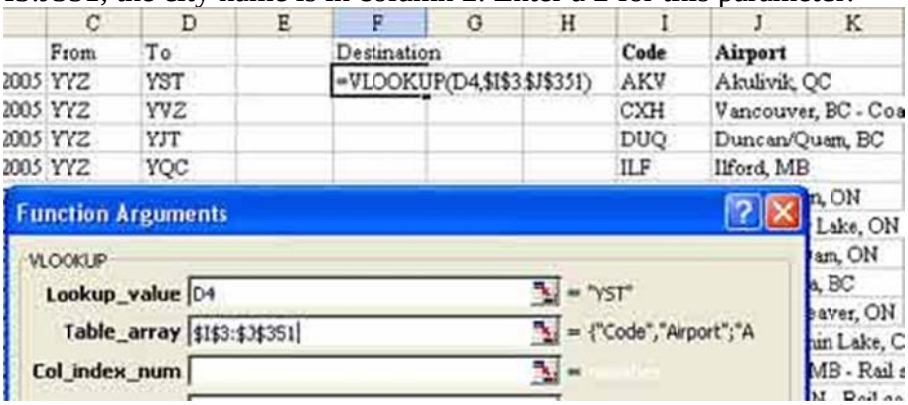
3. VLOOKUP needs four parameters. First is the city code in the original report. In this example, that would be cell D4



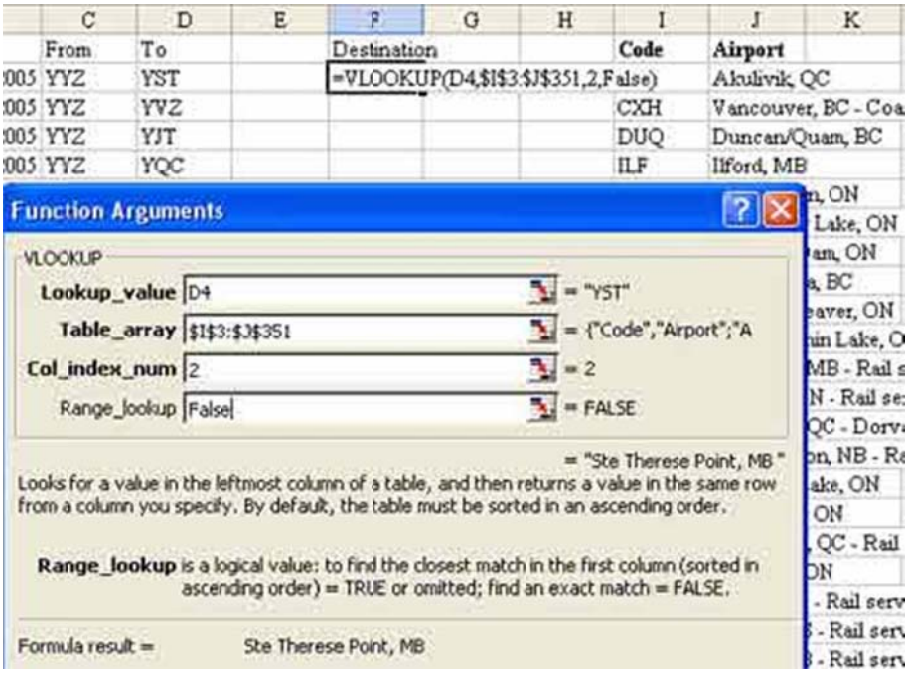
4. The next parameter is the range with your lookup table. Highlight the range. Be sure to use F4 to make the range be absolute. (An absolute reference has a dollar sign before both the column number and row number. When the formula is copied, the reference will continue to point towards I3:J351.



5. The 3rd parameter tells Excel in which column the city name is found. In the range of I3:J351, the city name is in column 2. Enter a 2 for this parameter.



6. The 4th parameter tells Excel if a "close" match is OK. In this case, it is not, so enter False.



7. Click OK to complete the formula. Drag the fill handle to copy the formula down.

To	From	Destination
yst		Ste Therese Point, MB
yvz		Deer Lake, ON
yjt		Stephenville, NL
yqc		Quaqtaq, QC
xdx		Sarnia, ON - Rail service

8. Because you carefully entered absolute formulas, you can copy column E to column D to get the destination city. In this case, all of the departures are from Pearson International Airport in Toronto.

E4 =VLOOKUP(C4,$I$3:$J$351,2,FALSE)

	A	B	C	D	E
4	David	6/22/2005	YYZ	YST	Toronto, ON - International
5	Lisa	6/27/2005	YYZ	YVZ	Toronto, ON - International
6	Matt	6/3/2005	YYZ	YJT	Toronto, ON - International

While this example worked out perfectly, when viewers use VLOOKUP, it usually means that they are matching up lists that came from different sources. When lists come from different sources, there can always be subtle differences that make the lists hard to match. Here are three examples of what can go wrong and how to correct them.

A) One list has dashes and the other list does not. Use the =SUBSTITUTE() function to remove the dashes. The first time that you try the VLOOKUP, you will get N/A errors.

B4 =VLOOKUP(A4,$E$4:$F$157,2,FALSE)

	A	B	C	D	E	F
1	Purchase Order					
2						
3	Item	Description	Quantity		SKU	Description
4	G-59	#N/A	12		E84	2005 PMP
5	M-39		82		G33	2005 FUEL

To remove the dashes with a formula, use the SUBSTITUTE formula. Use 3 arguments. The first argument is the cell containing the value. The next argument is the text that you would like to change. The final argument is the replacement text. In this case, you want to change dashes to nothing, so the formula is =SUBSTITUTE(A4,"-","").

B4 =SUBSTITUTE(A4,"-","")

	A	B	C	D	
1	Purchase Order				
2					
3	Item	Description	Quantity		SKU
4	G-59	G59	12		E84
5	M-39		82		G33

You can wrap that function in the VLOOKUP to get the description.

B4 =VLOOKUP(SUBSTITUTE(A4,"-",""),$E$4:$F$157,2,FALSE)

	A	B	C	D	E	F	G
1	Purchase Order						
2							
3	Item	Description	Quantity		SKU	Description	
4	G-59	1996 CARB TUNEUP KIT	12		E84	2005 PMP ASY&PWR	
5	M-39	2005 PRESSURE REG.	82		G33	2005 FUEL PRESS. REC	
6	J-94	2004 PMP ASY&PWR VLV	41		F38	2005 AIR CONT. VALV	
7	A-37	1996 PRESSURE REG	18		S65	2005 IDLE AIR CNTL	

B) This one is subtle, but very common. One list has a trailing blank space after the entry. Use =TRIM() to remove excess spaces. When you initially enter the formula, you find all of the answers are N/A errors. You know for sure that the values are in the list and everything looks OK with the formula.

=VLOOKUP(D4,$I$3:$J$351,2,FALSE)

D	E	F
To	From	Destination
YST	#N/A	#N/A
YVZ	#N/A	#N/A

One standard thing to check is to move to the cell with the lookup value. Press F2 to put the cell in Edit mode. Once in edit mode, you can see that the cursor is located one space away from the final letter. This indicates that there is a trailing space in the entry.

To	Fr
'YST	
YVZ	

To solve the problem, use the TRIM function. =TRIM(D4) will remove leading spaces, trailing spaces, and will replace any internal double spaces with a single space. In this case, TRIM works perfectly to remove the trailing space.
=VLOOKUP(TRIM(D4),$I$3:$J$351,2,FALSE) is the formula.

=VLOOKUP(TRIM(D4),$I$3:$J$351,2,FALSE)

D	E	F
To	From	Destination
YST	Toronto, ON - International	Ste Therese Point, MB
YVZ	Toronto, ON - International	Deer Lake, ON

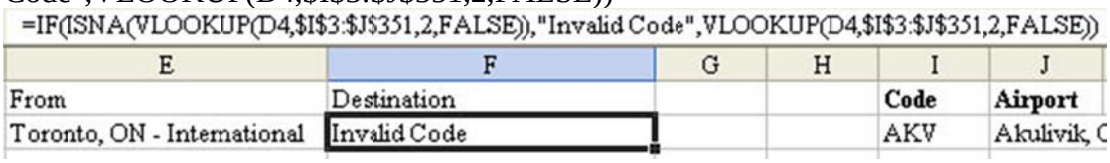
C) I mentioned a bonus tip in the show notes: how to replace the #N/A result for missing values with a blank. If your lookup value is not in the lookup table, VLOOKUP will return an N/A error.

=VLOOKUP(TRIM(C4),$I$3:$J$351,2,FALSE)

D	E	F
To	From	Destination
YYA	Toronto, ON - International	#N/A
YVZ	Toronto, ON - International	Deer Lake, ON

This formula uses the =ISNA() function to detect if the result of the formula is an N/A error. If you get the error, the 2nd argument in the IF function will tell Excel to put in any text you wish.

=IF(ISNA(VLOOKUP(D4,$I$3:$J$351,2,FALSE)),"Invalid Code",VLOOKUP(D4,$I$3:$J$351,2,FALSE))



E	F	G	H	I	J
From	Destination			**Code**	**Airport**
Toronto, ON - International	Invalid Code			AKV	Akulivik, C

VLOOKUP allows you to save time when matching lists of data. Take the time to learn the basic use and you will be able to do far more powerful tasks in Excel.

The V in VLOOKUP stands for "Vertical."

VLOOKUP searches for a value in the leftmost column of a table, and then returns a value in the same row from a column you specify in the table.

Use VLOOKUP instead of HLOOKUP when your comparison values are located in a column to the left of the data you want to find.