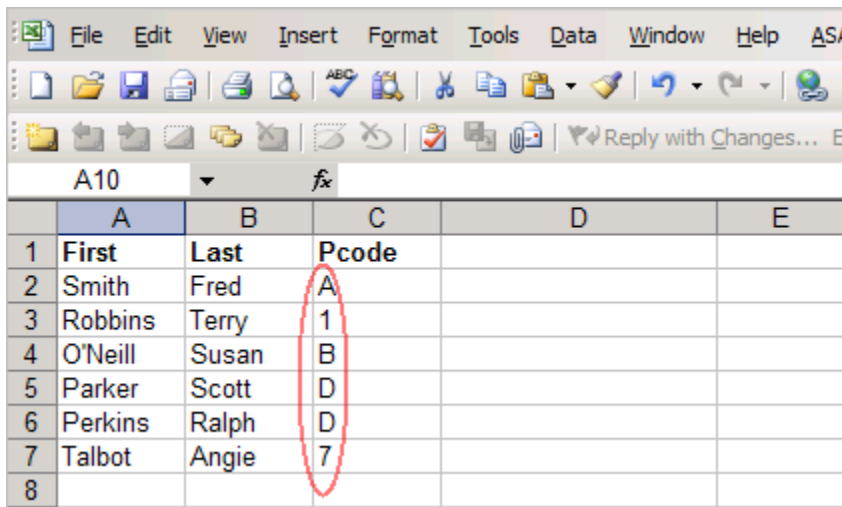


How to Use Excel VLOOKUP

As September approaches, I can count on a series of spreadsheet questions. One of the popular ones is how can you look up a value on one worksheet and use it on another worksheet. For example, you need to translate a product number into a product name or look up the price. One of my favorite Excel functions called VLOOKUP can help with this task.

A recent example was some voter registration data I needed to use. On one Excel file, the voter's party was listed as a two character code and not the party name. This coding didn't always make sense to the user. For example, "D" was for "American Independent Party", but some thought it meant "Democratic Party".



	A	B	C	D	E
1	First	Last	Pcode		
2	Smith	Fred	A		
3	Robbins	Terry	1		
4	O'Neill	Susan	B		
5	Parker	Scott	D		
6	Perkins	Ralph	D		
7	Talbot	Angie	7		
8					

One way to solve this problem is to create a worksheet with the Pcode and translation and have Excel do a VLOOKUP for the party name. You might think of VLOOKUP as an Excel translator. I could then add a column called "Political Party" to my original worksheet to show the information from a lookup table.

Creating a Lookup Table

A lookup table includes the values you wish to "lookup" such as our Pcode and the translation such as political party. You can place this table on the same worksheet, but for this Excel tutorial I'll add a worksheet called "Political Party".

How to Create a Lookup Table,

1. Right-click your spreadsheet's tab and select **Insert...**
2. On the Insert dialog, double-click **Worksheet**. This will be on the **General** tab.

3. Rename this new worksheet tab with a descriptive name such as “Party Codes”
4. In Column A, enter the **unique values** that exist on your main worksheet. In my example, these were the codes that showed in the Pcode column in the thumbnail. These values should be in **ascending order**.
5. In Column B, enter the translated value. You can have more values in column A than appear on your main spreadsheet. For example, I have an entry for “Citizen Party” even though I didn’t show a registered voter with that affiliation.

A	B
PARTY CODE	NAME
A	Democratic
B	Republican
C	Decline to State
D	American Independent
E	Citizen Party
F	Communist
G	Conservative
H	Environmentalist
I	Ind. Progressive
J	Liberal

Using the VLOOKUP Function

Excel’s VLOOKUP function uses 4 pieces of information. The function panel may seem intimidating with the terms, but it’s simpler than it looks.

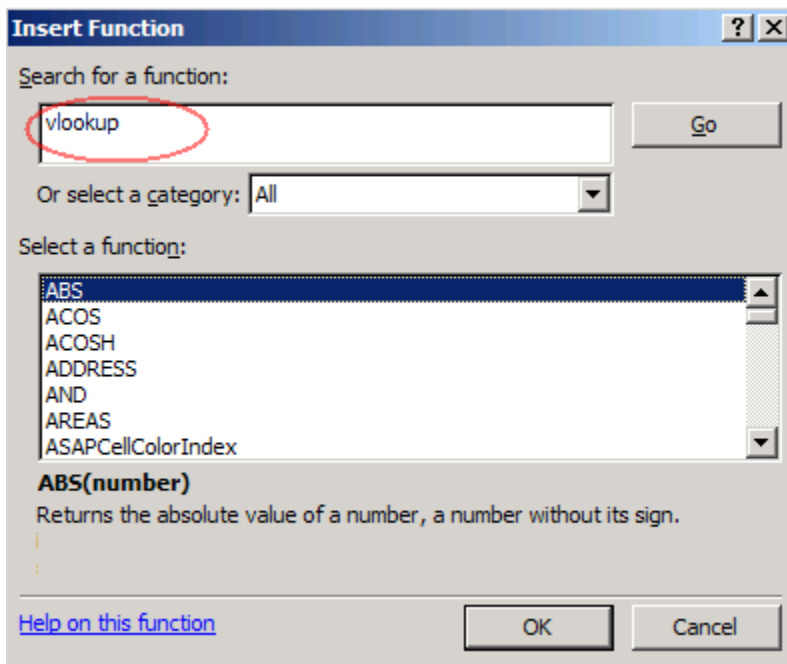
To lookup a value using VLOOKUP,

1. Add your new column on your original worksheet that will display the info pulled from the Lookup table. In my example, I added a column called Political Party in Column D. This is where I will insert the Excel function.

	A	B	C	D	E
1	First	Last	Pcode	Political Party	
2	Smith	Fred	A		
3	Robbins	Terry	1		
4	O'Neill	Susan	B		
5	Parker	Scott	D		
6	Perkins	Ralph	D		
7	Talbot	Angie	7		
8					
9					

2. Place your cursor in the first blank cell in that column. In our example, this is cell D2.

3. From the **Insert** menu, select **Function....** The Insert Function dialog will appear.



4. In the **Search for a function:** text box, type “vlookup” and click **Go**.

5. Highlight **VLOOKUP** and click **OK**.

Defining the VLOOKUP Values

After you click **OK**, Excel's **Function Arguments** dialog appears and allows you to define the four values. You'll see that your starting cell has the beginning part of the function and shows **=VLOOKUP()**. The Function Arguments dialog adds the needed elements that will display between **()**.

For illustration purposes, I have overlaid the Party Codes worksheet on top to make it easier to show relationships.

The screenshot shows the Microsoft Excel interface with the **Function Arguments** dialog box for the **VLOOKUP** function. The dialog box has four input fields, each with a red circle and a number:

- 1. **Lookup_value**: Points to cell C2 (A).
- 2. **Table_array**: Points to the range A20:B35 in the overlaid **Party Codes** worksheet.
- 3. **Col_index_num**: Points to cell B2 (NAME).
- 4. **Range_lookup**: Points to the **Range_lookup** checkbox, which is checked.

The worksheet data is as follows:

	A	B	C	D
1	First	Last	Pcode	Political Party
2	Smith	Fred	A	=VLOOKUP()
3	Robbins	Terry	1	
4	O'Neill	Susan	B	
5	Parker	Scott	D	
6	Perkins	Ralph	D	
7	Talbot	Angie	7	

	A	B	C
1	PARTY	NAME	
2	CODE		
20	A	Democratic	
21	B	Republican	
22	C	Decline to State	
23	D	American Independent	
24	E	Citizen Party	
25	F	Communist	
26	G	Conservative	
27	H	Environmental	
28	I	Ind. Progressive	
29	J	Liberal	
30	K	Peace & Freedom	
31	L	Prohibition	
32	M	New Economy	
33	N	Socialist	
34	O	Socialist Labor	
35	P	Pot Party	

1. Lookup_value – Think of this field as your starting point. In my example, I'll click cell C2 so the value is filled in the dialog. I'm requesting Excel take the value of C2, which displays as the Pcode of "A", and find the corresponding political party on our lookup table on the Party Codes worksheet.

2. Table_array – This is the range for your lookup table. The range can be on your existing worksheet or another worksheet such as our "Party Codes". When you click another tab and define the range, Excel prepends that tab name to the range such as 'Party Codes'.

Rules & Caveats

There are several rules to remember about this table array.

Rule 1 - The **left column must contain the values being referenced**. In other words, I couldn't have our first column be Political Party.

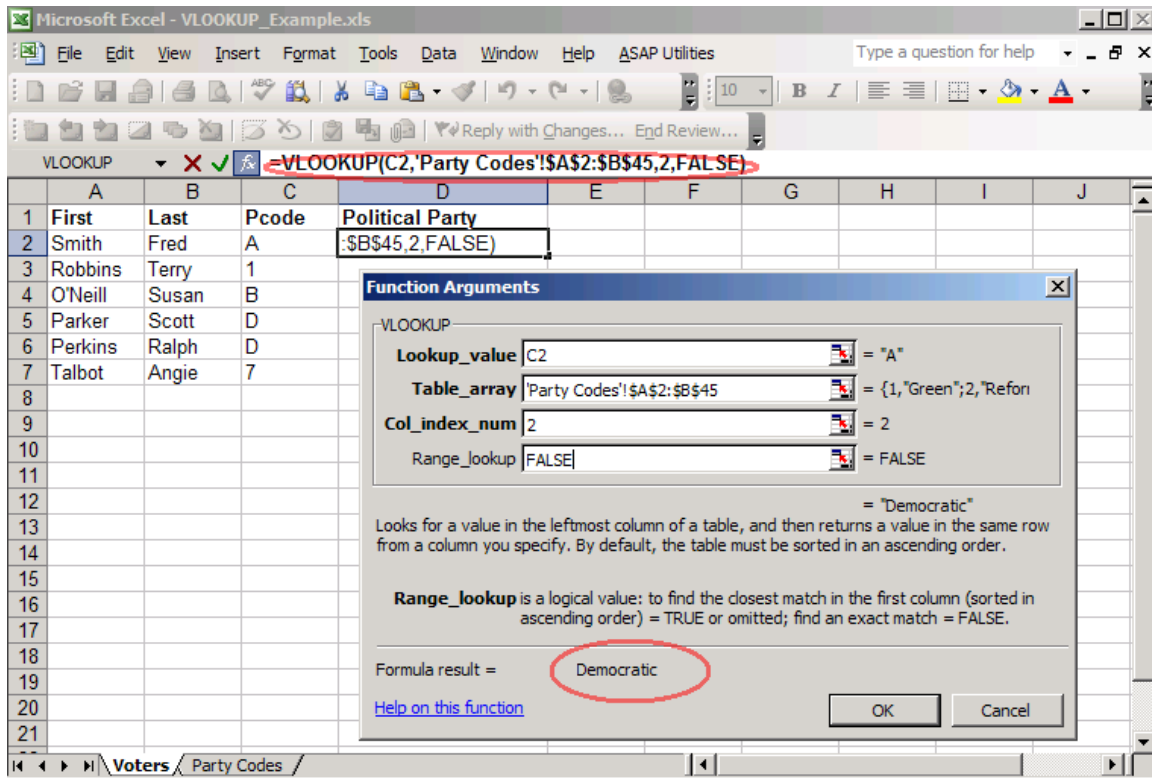
Rule 2 - **You can't have duplicate values** in the leftmost column of the lookup range. I couldn't have two entries with the value "A" with one being "Democratic" party and another "A" for the "Humanist" party. Excel would complain.

Rule 3 - **When referencing a lookup table, you don't want your cell references to change when you drag and fill to populate the other cells** with the VLOOKUP function. As example, if I want to use the same function in cells D3 through D7, I don't want my lookup cell references to shift each time I move down to the next cell. I need the cell references to be the same. After you define your range, you need to press **F4** which will cycle through absolute and relative references. You want to select the option that includes a \$ before your Column and Row. ('Party Codes'!\$A\$2:\$B\$45.) You can get around this if you know how to use Excel name ranges.

Col_index_num – This is the number of the column on your lookup table that has the information you need. In our example, we want column 2 from the Party Codes worksheet which has the name of the political party.

Range-lookup – this field defines how close a match should exist between your Lookup_value (C2) and the value in the leftmost column on our lookup table. In our case, we want an exact match so we'll use "FALSE".

After clicking various cells, my dialog looks like this:



You can see in the circled formula area, we now have more information based on our entries in the **Function Arguments** dialog box.

The other item of interest is that when you build these functions, Excel displays the result in the Formula result text line. This is great feedback which can show if your function is on target. In our example, we can see Excel looked up the Pcode of "A" and returned the Political Party "Democratic".

Copying the VLOOKUP Function to Other Cells

It doesn't make sense to use VLOOKUP for one cell in your Excel spreadsheet. Instead, you want to copy the function to other cells in the same column.

To copy VLOOKUP to other column cells,

1. Click the cell containing the valid arguments for VLOOKUP. In our example, this would be D2.
2. Grab the cell handle that displays in the lower right corner.
3. Left-click and drag down to cover your column range.

Note: *If we hadn't changed to absolute reference as mentioned in Rule 3, we would've seen our table array entry shift by one cell as we dragged down through the other cells.*

VLOOKUP is a powerful Excel function that can leverage spreadsheet data from other sources. There are many ways you can benefit from this function. In our example, we simply used a 1:1 code translation, but you could also use it for group assignments. For example, you could assign state codes to a geographic region such as CT, VT, and MA and so on translate to a geographic region called "New England". And for the adventurous, you can use VLOOKUP in your formulas.

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