



Excel's VLOOKUP Unchained

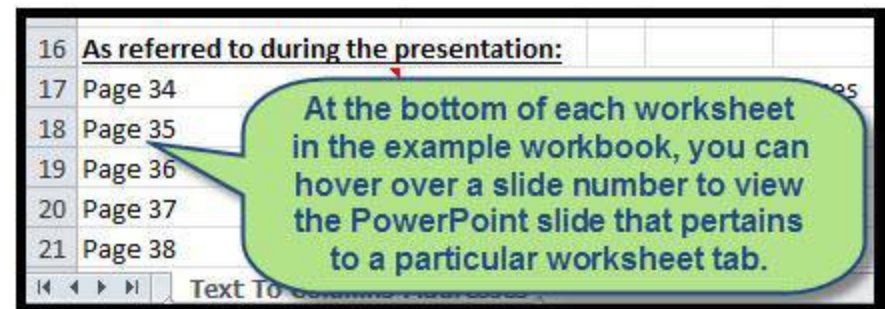
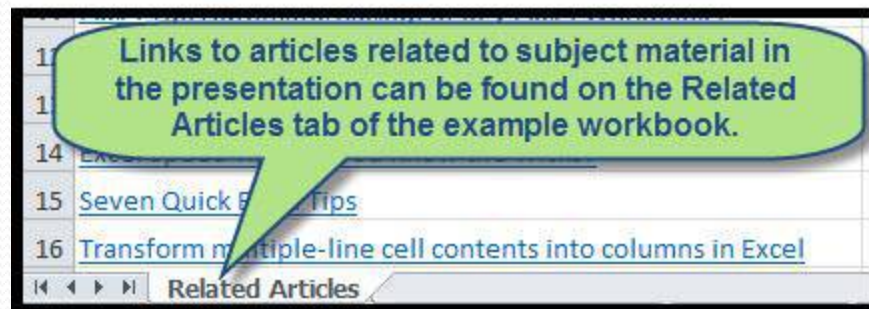
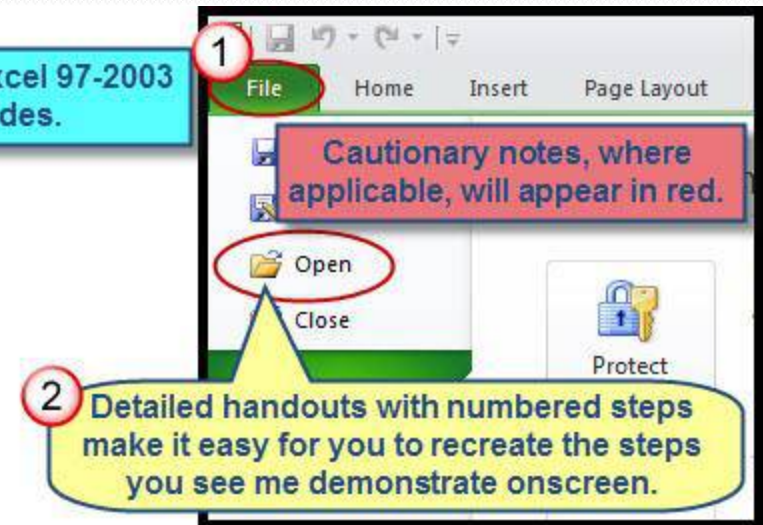
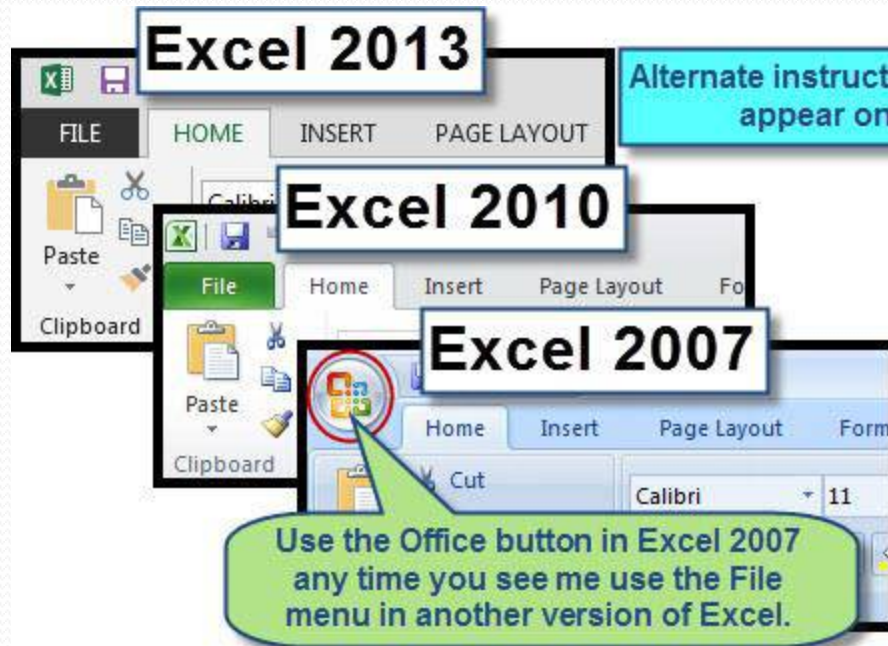


Written and Presented by
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About the speaker:

David is owner of Accounting Advisors, Inc., an Atlanta-based spreadsheet consulting firm that he started in 1991. He shares his 20+ years of hard-fought Excel knowledge by way of consulting engagements, freelance articles, and public speaking. David offers spreadsheet consulting and training services nationwide.

Excel Versions



Introduction to VLOOKUP

	A	B	C	D	E	F	G	H	I
1	VLOOKUP	March		Account #	Account Name	January	February	March	Ap
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741	109
3				40200	Services	32,914	37,517	30,605	36
4				40300	Other Income	19,948	22,738	18,548	21
5				40400	Interest Income	2,992	5,684	3,710	3
6	=VLOOKUP(A2,D1:H5,5,FALSE)								

=VLOOKUP(A2,D1:H5,5,FALSE)

lookup_value
A2
what to look for
(in this case account
40100)

table_array
D1:H5
cell coordinates of our list

col_index_num
5
column to return data
from

range_lookup
FALSE
type of match
FALSE or 0 =
Exact Match
TRUE or 1 =
Approximate Match

VLOOKUP-Introduction

VLOOKUP - Approximate Match

	A	B	C	D	E	F	G	H
1	2015 Income Tax Rates							
2	Single	Tax Rate						
3	0	10.0%		Income	Tax Rate			
4	9,225	15.0%		50,000	25.0%			
5	37,450	25.0%						
6	90,750	28.0%						
7	189,300	33.0%						
8	411,500	35.0%						

Each row should represent the bottom of a tier when performing approximate matches.

=VLOOKUP(D4,A3:B9,2,TRUE)

=VLOOKUP(D4,A3:B9,2,TRUE)

lookup_value D4 what to look for	table_array A3:B9 cell coordinates of our list	col_index_num 2 column to return data from	range_lookup TRUE type of match TRUE = Approximate Match FALSE = Exact Match
--	--	--	--

Introduction to HLOOKUP

	A	B	C	D	E	F	G	H	I
1	HLOOKUP	January		Account #	Account Name	January	February	March	April
2	40100	99,738		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284
6				=HLOOKUP(B1,D1:Q5,2,FALSE)					

=HLOOKUP(B1,D1:Q5,2,FALSE)

lookup_value

B1

what to look for

table_array

D1:Q5

cell coordinates of our list

row_index_num

2

row to return data from

range_lookup

FALSE

type of match
TRUE or 1 =
Approximate Match

FALSE or 0 =
Exact Match

Streamlining VLOOKUP

	A	B	C	D	E	F	G	H	I
1	VLOOKUP	March		Account #	Account Name	January	February	March	April
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4	=VLOOKUP(A2,D:H,5,0)			40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284
6	=VLOOKUP(A2,D:H,5,0)								
7									
8									
9									
15	lookup_value \$A2 what to look for (in this case account 40100)			table_array \$D:\$H cell coordinates of our list Omitting row numbers future-proofs VLOOKUP in case you add more data to the list in the future.		col_index_num 5 column to return data from		range_lookup 0 (zero) type of match 1 (one) or TRUE = Approximate Match 0 (zero) or FALSE = Exact Match	
16									
17									

VLOOKUP-Streamlined

VLOOKUP Duplicate Data Trap

	A	B	C	D	E	F	G	H
1		<u>March</u>		<u>Account #</u>	<u>Account Name</u>	<u>January</u>	<u>February</u>	<u>March</u>
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741
3				40200	Services	32,914	37,517	30,605
4				40100	Other Income	19,948	22,738	18,548
5				40400	Interest Income	2,992	5,684	3,710
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

VLOOKUP stops looking once it finds a match.

VLOOKUP ignores other instances of 40100.

=VLOOKUP(A2,D1:H5,5,0)

lookup_value A2 what to look for (in this case account 40100)	table_array D1:H5 cell coordinates of our list (in this case cells D1:H5)	col_index_num 5 column to return data from	range_lookup 0 type of match 0 = FALSE Exact Match 1 = TRUE Approximate Match
--	--	---	---

Lookup functions such as MATCH, VLOOKUP, and HLOOKUP only find the first instance of a name in a list. Duplicate instances are ignored.

VLOOKUP - #REF! Error

	A	B	C	D	E	F	G
1	VLOOKUP	March		Account #	January	February	March
2	40100	#REF!		40100	99,738	113,689	92,741
3	=VLOOKUP(A2,D1:G5,5,0)			40200	32,914	37,517	30,605
4				40300	19,948	22,738	18,548
5				40400	2,992	5,684	3,710

=VLOOKUP(A2,D1:G5,5,0)

lookup_value
A2
what to look for
(in this case
account 40100)

table_array
D1:G5
cell coordinates of our list

**NOTE: This range only
has 4 columns**

col_index_num
5
column to return data from

**NOTE: This argument
should be 4 or less since our
range only has 4 columns.**

range_lookup
0
type of match
0 (zero) or FALSE =
Exact Match

1 (one) or TRUE =
Approximate Match

VLOOKUP-#REF Error

VLOOKUP - #N/A Error

	A	B	C	D	E	F	G	H	I
1	VLOOKUP	March		Account #	Account Name	January	February	March	April
2	40101	#N/A		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284

Excel returns an #N/A error because the account number 40101 in cell A2 does not appear within the first column of the table array.

=VLOOKUP(A2,D1:H5,5,0)

lookup_value
A2
what to look for
(in this case
account 40101)

table_array
D1:H5
cell coordinates of our list

col_index_num
5
column to return data from

range_lookup
0 (zero)
type of match
0 or FALSE = Exact Match
1 or TRUE = Approximate Match

VLOOKUP-#N/A ERROR

VLOOKUP - Text vs. Numbers

Convert Text to Columns Wizard - Step 1 of 3

The Text Wizard has determined that your data is Delimited.

If this is correct, choose Next, or choose the data type that best describes your data

Original data type

Choose the file type that best describes your data:

- ☒ Delimited - Characters such as commas or tabs separate each field.
- ☐ Fixed width - Fields are aligned in columns with spaces between each field.

Preview of selected cells:

2	40100
3	40200
4	40300
5	40400

Click Finish to bypass the wizard.

Cancel < Back Next > **Finish**

1 Select cells D2:D5 which contain numbers stored as text.

2 (Data tab)

3 (Text to Columns)

4 (Finish)

6 Now cells A2 and D2 both contain numeric values.

Cell A2 contains a number stored as a value, but D2 is stored as text.

The ISTEXT confirms if a number is stored as text.

Worksheet: VLOOKUP-NA Error.xls

	A	B	C	D	E
1	VLOOKUP	March		Account #	Account Name
2	40100	#N/A		40100	Product Sales
3				40200	Services
4	FALSE			40300	Other Income
5				40400	Interest Income
6	TRUE				
7					
8					
9					

Formulas:

- A6:** =ISTEXT(A2)
- A7:** =ISTEXT(D2)
- D6:** =VLOOKUP(A2,D1:H5,5,FALSE)

Worksheet: VLOOKUP-NA Error.xls

	A	B	C	D	H
1	VLOOKUP	March		Account #	March
2	40100	92,741		40100	92,741
3				40200	30,605
4					18,548
5				40400	3,710

Formulas:

- B2:** =VLOOKUP(A2,D1:H5,5,FALSE)

VLOOKUP with Wild-Card Criteria

	A	B	C	D	E	F	G	H
1	VLOOKUP	March		Account	January	February	March	Ap
2	40100	92,741		40100 - Product Sales	99,738	113,689	92,741	109,
3				40200 - Services	32,914	37,517	30,605	36,
4				40300 - Other Income	19,948	22,738	18,548	21,
5				40400 - Interest Income	2,992	5,684	3,710	3,
6				=VLOOKUP(A2&"*",D1:G5,4,0)				

=VLOOKUP(A2&"*",D1:G5,4,0)

lookup_value

A2&"*"

what to look for
(in this case an item
that starts with 40100)

table_array

D1:G5

cell coordinates of our list
(in this case columns D:P)

col_index_num

4

column to return
data from

range_lookup

0

0 or FALSE: Exact Match
1 or TRUE: Approximate Match

VLOOKUP with IFERROR

	A	B	C	D	E	F	G	
1	VLOOKUP	March		Account #	Account Name	January	February	IFERROR returns #NAME? in Excel 2003 and earlier.
2	40500	#N/A		40100	Product Sales	99,738	113,689	
3	40500	Missing		40200	Service		517	Account 40500 is not on the list.
4	40500	Missing		40300	Other Income	19,948	22,738	=VLOOKUP(A2,D:H,5,0)
5				40400	Int		5,684	
6								=IFERROR(VLOOKUP(A3,D:H,5,0),"Missing")
7								=IF(ISERROR(VLOOKUP(A4,D:H,5,0)),"Missing",VLOOKUP(A4,D:H,5,0))
8								
9								IFERROR can mask other problems with VLOOKUP, such as a #REF! error.
10								
11								
12								
13								
14								
15								
16								
17								

=IFERROR(VLOOKUP(A2,D:H,3,0),"Missing")

value

VLOOKUP(A2,G:I,3,0)

A formula that might return a # error
(in this case VLOOKUP if an account doesn't appear in our table_array)

value_if_error

"Missing"

what to display instead of #N/A, #DIV/0!, etc.
(in this case the word Missing. Enclose text in quotes, or just enter a number such as zero)

VLOOKUP with IFNA

	A	B	C	D	E	F	G	H	I
1	VLOOKUP	March		Account #	Account Name	January	February	March	April
2	40500	Missing		40100	Product Sales	99,738	113,689	92,741	109,467
3	40100	#REF!		40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684		
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

IFNA returns #NAME? in Excel 2010 and earlier.

=IFNA(VLOOKUP(A2,D:H,5,0),"Missing")

=IFNA(VLOOKUP(A3,D:G,5,0),"Missing")

In this case IFNA traps the #N/A error because 40500 isn't on the list.

#REF! is displayed because we referred to the 5th column of a 4 column list.

=IFNA(VLOOKUP(A2,D:H,5,0),"Missing")

value
VLOOKUP(A2,D:H,5,0)
a formula that might return a #N/A

value_if_na
"Missing"
what to display instead of #N/A

VLOOKUP-IFNA

Using the Table feature with VLOOKUP

Table Name: Budget

5 Change default name of Table1 to something meaningful.

6 Replace cell or row references within VLOOKUP with the table name.

=VLOOKUP(A2,Budget,5,FALSE)

Tables expand automatically when you add more rows, which future-proofs VLOOKUP. The table name simplifies formula auditing.

The Design tab appears when you create or click on a table.

The Table feature is available in Excel 2007 and later. In Excel 2003 you can use the List feature on the Data menu to make the VLOOKUP range expand automatically. You can't assign a name to the list in Excel 2003, but the cell references will adjust automatically.

1 Choose any cell within your data.

2 Click the 'Table' button in the 'Insert' tab.

3 Click the 'Table' button in the 'Insert' tab.

4 Click 'OK' in the 'Create Table' dialog.

Create Table

Where is the data for your table?

☒ My table has headers

OK Cancel

Account #	Account Name	January	February	March
40100	Product Sales	99,738	113,689	92,741
40200	Service			
40300	Other			
40400	Interest			

VLOOKUP	March	Account #	Account Name
40100	92,741	40100	Product Sales

Introduction to the CHOOSE function

	A	B	C	D	E	F	G
1	1	Apples	=CHOOSE(A1,"Apples","Oranges","Bananas")				
2	2	Oranges	=CHOOSE(A2,"Apples","Oranges","Bananas")				
3	3	Bananas	=CHOOSE(A3,"Apples","Oranges","Bananas")				
4	4	#VALUE!	=CHOOSE(A4,"Apples","Oranges","Bananas")				
5							
6							
7							
8							
9							
10	Alternative to CHOOSE:						
11	3	Bananas					
12							
13			=IF(A11=1,"Apples",IF(A11=2,"Oranges","Bananas"))				

This formula returns #VALUE! because it references the fourth item of a three item list.

CHOOSE let's you return an item from a list based on a number you provide. We can use the CHOOSE function to create an array of columns that VLOOKUP can use to return data from the left. First, let's see a traditional use of CHOOSE.

VLOOKUP with CHOOSE function

	A	B	C	D	E	F	G	H
1		<u>Account Name</u>		<u>Account Name</u>	<u>Account #</u>			
2	40100	Product Sales		Product Sales	40100			
3				Services	40200			
4				Other Income	40300			
5				Interest Income	40400			
6			=VLOOKUP(A2,CHOOSE({1,2},E1:E5,D1:D5),2,0)					

The CHOOSE function provides the Table_Array.

=VLOOKUP(A2,CHOOSE({1,2},E1:E5,D1:D5),2,0)

index_num	value1	value2
{1,2}	E1:E5	D1:D5
always {1,2}	column where look-up value resides	column to return data from

In this example, CHOOSE creates an array of two columns. You'll always specify two columns, and have VLOOKUP return data from the second column.

VLOOKUP-CHOOSE

Introduction to the MATCH Function

	A	B	C	D	E	F	G	H	I
1	MATCH	March		Account #	Account Name	January	February	March	April
2		5		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284
6									
7									
8									
9									
10									
11									

=MATCH(B1,D1:Q1,0)

MATCH returns #N/A if the lookup_value cannot be found within the lookup_array.

=MATCH(B1,D1:Q1,0)

lookup_value
B1
what to look for
(in this case March)

lookup_array
D1:Q1
two or more cells within a single
row or column
(in this case cells D1:Q1)

match_type
0
type of match
1 represents largest value => lookup_value
0 represents first value exactly = lookup_value
-1 represents smallest value <= lookup_value

VLOOKUP with MATCH

	A	B	C	D	E	F	G	H	I
1		March		Account #	Account Name	January	February	March	April
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income				
5				40400	Interest Income	2,992	3,084	3,264	

MATCH future-proofs our VLOOKUP and improves integrity since we don't have to count columns.

=VLOOKUP(A2,D:Q,MATCH(B1,D1:Q1,0),0)

=VLOOKUP(A2,D:Q,MATCH(B1,D1:Q1,0),0)

lookup_value
A2
what to look for
(in this case
account 40100)

table_array
D:Q
cell coordinates of our list
*Omitting row numbers
future-proofs VLOOKUP
in case you add more data
to the list in the future.*

col_index_num
MATCH(B1,D1:Q1,0)
column to return data from

**In this case we look down column D
and across row 1. VLOOKUP returns
the value from the intersection.**

range_lookup
0
type of match
0 (zero) = FALSE
Exact Match
1 (one) = TRUE
Approximate Match

VLOOKUP with MATCH

MATCH/INDEX Example

	A	B	C	D	E	F	G	H
1	<u>MATCH/</u> <u>INDEX</u>	<u>March</u>		<u>Account #</u>	<u>Account Name</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741
3					Services	32,914	37,517	30,605
4					Other Income	19,948	22,738	18,548
5				40400	Interest Income	2,992	5,684	3,710

Unlike VLOOKUP, MATCH/INDEX can return data from the left or right of a look-up column.

=INDEX(H:H,MATCH(A2,D:D,0))

array
H:H
where to look
(in this case column H)

row_num
MATCH(A2,D:D,0)
row number
(in this case MATCH tells INDEX which cell in column H to return a value from)

column_num
Omitted in this case
because our look-up is based on a single column.

SUMIF Function

	A	B	C	D	E	F	G	H	I
1		March		Account #	Account Name	January	February	March	April
2	40200	49,153		40100	Product Sales	99,738	113,689	92,741	109,467
3				40200	Services	32,914	37,517	30,605	36,124
4				40200	Services	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284
6				=SUMIF(D1:D5,A2,H1:H5)					
7				=SUMIF(D1:D5,A2,H1:H5)					
8				=SUMIF(D1:D5,A2,H1:H5)					
9				=SUMIF(D1:D5,A2,H1:H5)					
10				=SUMIF(D1:D5,A2,H1:H5)					
11				=SUMIF(D1:D5,A2,H1:H5)					
12				=SUMIF(D1:D5,A2,H1:H5)					
13				=SUMIF(D1:D5,A2,H1:H5)					
14				=SUMIF(D1:D5,A2,H1:H5)					

range
D1:D5
 where to look
 (in this case cells D1:D5)

criteria
A2
 what to look for
 (in this case account 40200)

sum_range
H1:H5
 the cells to sum
 (in this case cells H1:H5)

SUMIF returns 0 if it doesn't find a match.

SUMIF returns #VALUE! if you attempt to link to another workbook.

SUMIFS - Single Criteria

	A	B	C	D	E	F	G	H	I
1	SUMIFS			Account #	Account Name	January	February	March	April
2	Account	March		40100	Product Sales	99,738	113,689	92,741	109,467
3	40200	52,862		40200	Services	32,914	37,517	30,605	36,124
4				40300	Other Income	19,948	22,738	18,548	21,893
5				40400	Interest Income	2,992	5,684	3,710	3,284
6	SUMIFS returns #NAME? in Excel 2003 and earlier.			=SUMIFS(H1:H5,D1:D5,">="&A3)			The & sign is an alternative to the CONCATENATE function to join pieces of text.		
=SUMIFS(H1:H5,D1:D5,">="&A3)									
sum_range H1:H5 what to add up (in this case column I)			criteria_range1 D1:D5 where to look for 1st criteria (in this case column E)			criteria1 ">="&A3 1st criteria (in this case anything ≥ to account 40100)			
SUMIFS allows for up to 128 criteria pairs. SUMIFS returns 0 if it doesn't find a match.					SUMIFS returns #VALUE! if you attempt to link to another workbook.				

SUMIFS - Account Range

	A	B	C	D	E	F	G	H	I
1	SUMIFS				Account #	Account Name	January	February	March
2	Start	End	February		40100	Product Sales	99,738	113,689	92,741
3	40100	40300	173,944		40200	Services	32,914	37,517	30,605
4	SUMIFS returns #NAME? in Excel 2003 and earlier.				40300	Other Income	19,948	22,738	18,548
5					40400	Interest Income	2,992	5,684	3,710
6					=SUMIFS(H1:H5,E1:E5,">="&A3,E1:E5,"<="&B3)				
7									
8	=SUMIFS(H1:H5,E1:E5,">="&A3,E1:E5,"<="&B3)								
9									
10	sum_range	criteria_range1	criteria1	criteria_range2	criteria2				
11	H1:H5	E1:E5	">="&A3	E1:E5	"<="&B3)				
12	what to add up	where to look for 1st criteria	1st criteria	where to look for 2nd criteria	2nd criteria				
13									
14									
15									
16									
17									

SUMIFS allows for up to 128 criteria pairs. SUMIFS returns 0 if it does not find a match.

SUMIFS returns #VALUE! if you attempt to link to another workbook.

VLOOKUP Resources

1 www.acctadv.com/vlookuprefresher

If this URL doesn't work for you, use this search term on Google: VLOOKUP refresher site:microsoft.com

2 Click here to open a two-page VLOOKUP refresher.

Open the card

This book is available for Excel 2003, 2007, 2010, and 2013. Links to purchase from Amazon.com are available at www.acctadv.com/formulasbooks

Excel 2013 Formulas

Microsoft Excel
VLOOKUP Refresher
When you use VLOOKUP, you're essentially saying, "Here's a value, go to another location, find a match for my value, and then show me the words or numbers that reside
VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

Questions? Spreadsheet Consulting Help?

- I'm happy to hear from you (*e-mail is best*):

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