



# Astute Excel: Table Feature

Written and Presented by  
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**About the speaker:**

David H. Ringstrom, CPA, is an author and nationally recognized instructor who teaches scores of webinars each year. His Excel courses are based on over 25 years of consulting and teaching experience. His mantra is “Either you work Excel, or it works you.” David offers spreadsheet and database consulting services nationwide.

# Excel Versions

I'll be teaching from the Office 365 version of Excel, and noting any differences or limitations in the legacy versions of Excel.

## The Future of Excel

### Office 365

Subscription-based version of Microsoft Office, which includes Excel. Use the software on multiple devices, new calculation engine, services and more features are rolling out that will dramatically set this version apart from past Excel versions.

[www.office365.com](http://www.office365.com)

## Legacy Versions

### Perpetual Licenses

Pay once for the software to use on a single computer. No new features added until you buy a new license.

Includes

Excel 2019

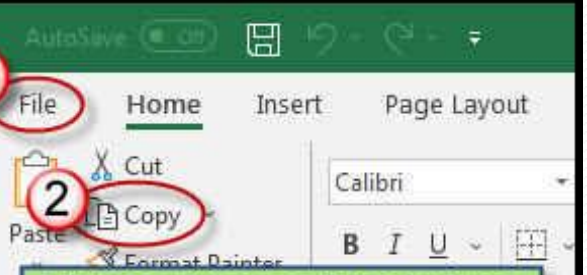
Excel 2016

Excel 2013

Excel 2010

Excel 2007 and earlier

1



I demonstrate each technique at least twice, first by way of numbered steps in PowerPoint, and then in Excel.

Handouts include PDF of today's presentation along with an example workbook that contains most examples I'll teach from as well as related articles.

Email [ask@davidringstrom.com](mailto:ask@davidringstrom.com) if you haven't received the handouts.

7 Excel Tip: Data Entry Shortcut

Related Articles



# Table Feature

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit

**1** Click on any cell within your list of data.

**Fruit Sales**

**2** Insert

**3** Table

**4** OK

**Create Table**  
Where is the data for your table?  
=SAS1:SFS51  
 My table has headers

FruitSales.xlsx - Excel

File Home Insert Page Layout Formulas Data Review View Design

Table Name: Table1

Summarize with PivotTable  
Remove Duplicates  
Convert to Range  
Insert Slicer  
Export Refresh  
External Table Data

Header Row  
Total Row  
Banded Rows  
First  
Last  
Band

Region	City	Vendor	Product	Cases Sold	Total Sales
North GA	Atlanta	Fruit R Us	Oranges	6168	6168
North GA	Atlanta	Fruit R Us	Apples	6079	8510
North GA	Atlanta	Fruit R Us	Kiwi	6058	6663
North GA	Atlanta	Fruit R Us	Bananas	6868	7554
North GA	Atlanta	Fruit R Us	Mixed Berries	1996	2994

**5** The list has been made into a table, which offers the following benefits:

- Formulas copy up and down columns automatically.
- Column headings move up into the worksheet frame when row 1 isn't onscreen.
- Tables resize themselves automatically when additional data is added below or to the right.
- Excel features that rely on tables do not require ongoing maintenance to expand ranges when additional data is added.

**Fruit Sales**



# Data Table - Two Variables

**1** Place a formula in the top left-corner the table. The formula needs at least two arguments you want to swap, in this case Interest (cell B1) and Term (cell B2)

	A	B	C	D
1	Interest	3.25%		
2	Term	120		
3	Principal	350,000		
4				
5	\$3,420			

`=PMT(B1/12,B2,B3)`

**3** Select the table area.

	A	B	C	D	E
1	Interest	3.25%			
2	Term	120			
3	Principal	350,000			
4					
5	\$3,420	120	180	240	360
6	3.25%				
7	3.75%				
8	4.25%				
9	5.25%				
10					

**4** Select What-If Analysis from the Data menu.

**5** Data Table...

**2** Position the alternate values you want to swap into the formula.

	A	B	C	D	E
1	Interest	3.25%			
2	Term	120			
3	Principal	350,000			
4					
5	\$3,420	120	180	240	360
6	3.25%				
7	3.75%				
8	4.25%				
9	5.25%				
10					

**6** The alternate Term periods are on row 5 so specify B2 from the original formula as the Row Input.

**7** The alternate Interest rates are in column B, so specify B1 from the original formula as the Column Input.

	A	B	C	D	E
1	Interest	3.25%			
2	Term	120			
3	Principal	350,000			
4					
5	\$3,420	120	180	240	360
6	3.25%				
7	3.75%				
8	4.25%				
9	5.25%				
10					

**8** OK

**Data Table**

Row input cell:

Column input cell:



# Undoing the Table Feature

**1** Design

**2** Convert to Range

**3** Light

**4** The formatting is removed but the list is still a table.

**5** Optional: Click Convert to Range on the Design menu.

**6** Yes

**7** The list is now a normal range of cells. Any pivot tables based on the table are now based on a static range of cells.

Region	City	Vendor	Product	Cases Sold	Total Sales
4	North GA	Atlanta	Fruit R Us	Kiwi	6,058
5	North GA	Atlanta	Fruit R Us	Bananas	6,868
6	North GA	Atlanta	Fruit R Us	Mixed Berries	1,996
7	North GA	Atlanta	Fruit R Us	Mixed Berries	1,996
8	North GA	Atlanta	Fruit R Us	Mixed Berries	1,996
9	North GA	Atlanta	Bob's Fruit	Kiwi	9,907
10	North GA	Atlanta	Bob's Fruit	Bananas	9,842
11	North GA	Atlanta	Bob's Fruit	Mixed Berries	8,993
12	North GA	Atlanta	Fruitju	Oranges	4,933
13	North GA	Atlanta	Fruitju	Apples	7,704
14	North GA	Atlanta	Fruitju	Kiwi	5,519

	A	B	C
4	North GA	Atlanta	Fruit R Us
5	North GA	Atlanta	Fruit R Us
6	North GA	Atlanta	Fruit R Us
7	North GA	Atlanta	Bob's Fruit
8	North GA	Atlanta	Bob's Fruit
9	North GA	Atlanta	Bob's Fruit
10	North GA	Atlanta	Bob's Fruit
11	North GA	Atlanta	Bob's Fruit
12	North GA	Atlanta	Bob's Fruit
13	North GA	Atlanta	Fruitju



# Managing Table Styles

**1** Click the **Design** tab in the Table Tools ribbon.

**2** Right-click a style in the Table Styles gallery.

**3** Select **Duplicate...** from the context menu.

**4** In the **Modify Table Style** dialog box, enter a name for the new style (e.g., **Custom Table - Stripe Size 5**).

**5** Select the **Second Row Stripe** table element.

**6** Change the **Stripe Size** to **5**.

**7** Change **Second Row stripe size to 5 as well.**

**8** Click **OK** to apply the changes.

**9** The new custom style is now available in the Table Styles gallery.

**10** Choose your custom style from the Table Styles section.

**11** The rows are shaded in bands of 5.

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit



# Table Feature Total Row

**1** Column headings and filter arrows move up to worksheet frame when the first row of a table is no longer visible.

Region	City	Vendor	Product	Cases Sold	Total Sales
South GA	Brunswick	Navel Oranges & More	Mixed Berries	5668	6801
			Oranges	5240	5240
			Apples	4728	6146
			Kiwi	1062	1168
			Bananas	6165	8014
51	South GA	Valdosta	Oranges 'n Onions	Mixed Berries	835
52					
53					
54					
55					

**5** Click the arrow in any cell within the total row to add more formulas.

Cases Sold	Total Sales	G
51	835	8350
52		3249638
53	None	
54	Average	
55	Count	
56	Count Number	
57	Max	
58	Min	
59	Sum	
60	StdDev	
61	Var	
62	More Functions...	

**2** Design

**3** Header Row

**4** Total Row

**6**

**7** The total row values include visible cells only.

Product	Cases Sold	Total Sales	
3	Apples	6079	85106
8	Apples	1565	21910
13	Apples	7704	107856
18	Apples	2605	31260
52		17953	246132
53			
54			
55			
56			
57			

**4** The last column of a table is either summed or counted when you enable the Total Row feature.

Region	City	Vendor	Product	Cases Sold	Total Sales
50	South GA	Valdosta	Oranges 'n Onions	80145	80145
51	South GA	Valdosta	Oranges 'n Onions	Mixed Berries	8350
52					3249638



# Table Feature Filtering Nuance

AutoSave On Fruit Sales Lists.xlsx - Excel Sign in

File Home Insert Page Layout Formulas **Data** Review View Help Tell me what you want to do Share

Queries & Connections Sort Filter Clear Reapply Advanced Text to Columns What-If Analysis Forecast Sheet Outline

**3** You can only filter one list at a time, and must turn Filter off and back on again to filter another list on the same worksheet.

City	Vendor	Product
Atlanta	Fruit R Us	Oranges
Blue Ridge	Bob's Fruit	Apples

**2**

**4** If you make the lists into tables, you can filter any list on demand without activating the Filter command. Keep in mind that filtering one list will hide rows on all other lists, but it can streamline filtering various lists on a single worksheet.

City	Vendor	Product
Atlanta	Fruit R Us	Oranges
Blue Ridge	Bob's Fruit	Apples
Clarkesville	Fruitju	Kiwi
Macon	Orange U Glad	Bananas
Brunswick	Mountain Fruit	Mixed Berries
Valdosta	Fruit Direct	
	Middle Georgia Fruit	
	Whistlestop Fruit Stand	
	Navel Oranges & More	

Fruit Sales Lists





# Slicers with Tables (Excel 2013+)

**1** Select any cell within a table.

**2** Choose Insert Slicer from the Design or Insert menus.

**3** Select the field(s) that you wish to filter on.

**4** Click OK to create the slicer.

**5** Choose a city the slicer to filter the list. Hold down the Ctrl key to make multiple choices. Shaded items are shown in the table, non-shaded items are presently filtered.

**6** Click to clear the filter and show all items again.

**7** Optional: Right-click on a slicer and choose Remove from the menu to delete a slicer from the worksheet.

Region	City	Vendor	Product	Case Sold	Total Sales
North GA	Atlanta	Fruit R Us			
North GA	Atlanta	Fruit R Us			
North GA	Atlanta	Bob's Fruit			
North GA	Atlanta	Bob's Fruit			
North GA	Atlanta	Bob's Fruit			
North GA	Atlanta	Bob's Fruit			
Atlanta	Bob's Fruit	Apples			
Atlanta	Bob's Fruit	Kiwi			
Atlanta	Bob's Fruit	Bananas			
Atlanta	Bob's Fruit	Mixed Berries			
Atlanta	Fruitju	Oranges			
Atlanta	Fruitju	Apples			
Atlanta	Fruitju	Kiwi			
Atlanta	Fruitju	Bananas			
Atlanta	Fruitju	Mixed Berries			
Orange U Glad	Oranges				
Orange U Glad	Apples				

Slicers can be also used with pivot tables and pivot charts in Excel 2010 and later.

Optional: Right-click on a slicer and choose Remove from the menu to delete a slicer from the worksheet.



# Filtering Data with Custom Views

**1** Click any cell within the list.

**2** Data

**3** Filter

**4**

**5**

**6** OK

**7** Filter column D for Apples and Oranges.

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit

City	Vendor	Product
Atlanta	Fruit R Us	Oranges
Atlanta	Fruit R Us	Apples
Atlanta	Bob's Fruit	Oranges
Atlanta	Bob's Fruit	Apples
Atlanta	Fruitju	Oranges
Atlanta	Fruitju	Apples
Atlanta	Orange U Glad	Oranges
Atlanta	Orange U Glad	Apples

Product	Cases Sold	Total Sales
Oranges	6168	61680
Apples	6079	85106



# Filtering Data with Custom Views

**8** Choose Custom Views on the View menu.

**9** Add...

**10** Name: Atlanta Apples/Oranges

**11** OK

**12** Data

**13** Filter

**14** The list is no longer filtered.

**15** Choose Custom Views on the View menu.

**16** Atlanta Apples/Oranges

**17** Show

**18** The custom view applies the filter settings.

	C	D	E	F
		Product	Cases Sold	Total Sales
Us		Oranges	6168	61680
Us		Apples	6079	85106
Us		Kiwi	6058	66638
Us		Bananas	6868	75548
Us		Mixed Berries	1996	29940
fruit		Oranges	7818	93816
fruit		Apples	1565	21910
fruit		Kiwi	9967	99670
fruit		Bananas	9842	98420
fruit		Mixed Berries	8993	89930
fruit		Oranges	4933	54263

	B	C	D
1	City	Vendor	Product
2	Atlanta	Fruit R Us	Oranges
3	Atlanta	Fruit R Us	Apples
7	Atlanta	Bob's Fruit	Oranges
8	Atlanta	Bob's Fruit	Apples
12	Atlanta	Fruitju	Oranges
13	Atlanta	Fruitju	Apples
17	Atlanta	Orange U Gla	Oranges



# Tables Conflict With Custom Views

The image consists of three sequential screenshots of the Microsoft Excel interface, illustrating the process of creating a table and its effect on custom views.

**Panel 1 (Left):** Shows the 'Insert' tab on the ribbon. The 'Table' button is circled in red and labeled with a '1'. A red circle labeled '2' highlights the 'Table' button. A 'Create Table' dialog box is open, with the 'OK' button circled in red and labeled with a '3'. The dialog box contains the following text: 'Where is the data for your table?' with the input '=SAS1:SF551' and a checked box for 'My table has headers'.

**Panel 2 (Middle):** Shows the 'Custom Views' button on the ribbon, circled in red and labeled with a '4'. A red callout box contains the text: 'Adding a table anywhere in a workbook disables the custom views command in Excel for Windows. You can use the Table feature and Custom Views together in Excel for Mac.' The 'Custom Views' button is disabled (greyed out).

**Panel 3 (Right):** Shows the 'Custom Views' task pane. A green callout box labeled '5' contains the text: 'Removing all tables from a workbook restores access to custom views. The views remain intact while tables are present in the workbook.' The 'Custom Views' task pane shows a list of views with 'Atlanta Apples/Oranges' selected.

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit



# Locate Tables Within a Workbook

**1** Click the arrow in the Name Box.

**2** Table1

**3** Excel activates the table.

**4** Formulas

**5** Name Manager

**6** The Refers To column provides the address of the table. You cannot delete tables from the Name Manager but you can identify the location of any tables.

Name	Value	Refers To	Scope	Comment
Table1	["North GA", "Atlant...	= 'Fruit Sales'!\$A\$2:\$F\$51	Workbook	

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit
North GA	Atlanta	Bob's Fruit



# Table Navigation Shortcuts

**1** Press Ctrl-Down within any cell in a table.

**2** As with a normal range of cells, the cursor moves to the last row of the table, or stops short at the first blank cell in a column.

**3** Press Ctrl-Down within any cell of a blank column in a table.

**4** Unlike a normal range of cells, the cursor moves to the last row of the table. You can use Ctrl and any arrow key to navigate.

**5** Double-click the bottom border of any header cell.

**6** Excel selects the entire column within the table.

Region	City	Vendor	Total Sales	Per Case Price	Cases Sold	Total Sales	Per Case Price
North GA	Atlanta	Fruit R Us	61680	61680	6168	61680	61680
North GA	Atlanta	Fruit R Us	29940	29940	1996	29940	29940
North GA	Atlanta	Bob's Fruit	93816	93816	7818	93816	93816
North GA	Atlanta	Bob's Fruit	21910	21910	1565	21910	21910
North GA	Atlanta	Bob's Fruit	99670	99670	9967	99670	99670
North GA	Atlanta	Bob's Fruit	98420	98420	9842	98420	98420
South GA	Brunswick	Navel Oranges & M	64669	64669	6168	61680	61680
South GA	Brunswick	Navel Oranges & M	23415	23415	1996	29940	29940
South GA	Brunswick	Navel Oranges & M	93816	93816	7818	93816	93816
South GA	Brunswick	Navel Oranges & M	21910	21910	1565	21910	21910
South GA	Brunswick	Navel Oranges & M	99670	99670	9967	99670	99670
South GA	Brunswick	Navel Oranges & M	98420	98420	9842	98420	98420
South GA	Valdosta	Oranges 'n Onions	83500	83500	9967	99670	99670
Total			3249658	3249658	9842	98420	98420





# Formula Management Within a Table

	E	F	G
1	Cases Sold	Total Sales	Per Case Price
2	6168	61680	=F2/E2
3	6079	85106	
4	6058	66638	
5	6868	75548	
6	1996	29940	
7	7818	93816	
8	1565	21910	
9	9967	99670	
10	9842	98420	

**1** Type =F2/E2 and then press Enter.

	E	F	G	H	I	J	K	L
1	Cases Sold	Total Sales	Per Case Price					
2	6168	61680	=[@[Total Sales]]/[@[Cases Sold]]					
3	6079	85106						
4	6058	66638						
5	6868	75548						
6	1996	29940						
7	7818	93816						
8	1565	21910						
9	9967	99670						
10	9842	98420						

**3** If you click on cells F2 and E2 while writing the formula (instead of typing the cell Address, Excel inserts the field names. This improves readability of formulas.

	E	F	G
1	Cases Sold	Total Sales	Per Case Price
2	6168	61680	10
3	6079	85106	14
4	6058	66638	11
5			11
6			15
7			12
8	1565	21910	14
9	9967	99670	10
10	9842	98420	10

**2** Excel automatically copies the formula down the length of the column.

	E	F	G
1	Cases Sold	Total Sales	Per Case Price
2	6168	61680	10
3	6079	85106	14
4	6058	66638	11
5			11
6			15
7	7818	93816	12
8	1565	21910	=F8/E8*100
9	9967	99670	10
10	9842	98420	10

**4** Modify any formula in the column and press Enter.

	E	F	G
1	Cases Sold	Total Sales	Per Case Price
2	6168	61680	1000
3	6079	85106	1400
4	6058	66638	1100
5			1100
6			1500
7			1200
8			1400
9	9967	99670	1000
10	9842	98420	1000

**5** Excel automatically updates the formula in the entire column.



# Table Formulas: Column Names vs. Cell References

The image illustrates the process of configuring Excel to use column names in table formulas. It shows the File menu (1), the Excel Options dialog (3) with the Formulas section selected, and the 'Use table names in formulas' checkbox checked (4). A callout explains that clearing this checkbox would result in cell references like =J2/I2 instead of =[@Total Sales]/[@Cases Sold]. The table below shows the resulting formula in the Price Per Case column.

Item ID	Product	Cases Sold	Total Sales	Price Per Case
100	Oranges	6168	61680	=[@Total Sales]/[@Cases Sold]
200	Apples	6079	85106	14
300	Kiwi	6058	66638	11
400	Bananas			
500	Mixed Berries			
100	Oranges			
200	Apples			
300	Kiwi	9967	99670	10
400	Bananas	9842	98420	10
500	Mixed Berries	8993	89930	10

By default Tables use field names instead of cell references when your workbook is an .xlsx, .xlsm, or .xlsb file.



# VLOOKUP Introduction

	A	B	C	D	E	F	G	H	I
1	<b>VLOOKUP</b>	<b>March</b>		<b>Account #</b>	<b>Account Name</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>
2	40100	92,741		40100	Product Sales	99,738	113,689	92,741	109,467
3	40100	92,741		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				=H2					
7				=VLOOKUP(A3,D1:H5,5,FALSE)					
8									
9									
10									
11									
12									
13									
14									
15									

<b>=VLOOKUP(A3,D1:H5,5,FALSE)</b>			
<b>lookup_value</b> <b>A3</b> what to look for <i>(in this case, account 40100)</i>	<b>table_array</b> <b>D1:H5</b> cell coordinates of our list	<b>col_index_num</b> <b>5</b> column from which to return data	<b>[range_lookup]</b> <b>FALSE</b> type of match 0 or FALSE: exact match 1 or TRUE: approximate match

VLOOKUP-Introduction



# VLOOKUP with Table Feature

Account #	Account Name	January
40100	Product Sales	99,738
40200	Services	32,914
40300	Other Income	19,948
40400	Interest Income	2,992

1 Select any cell within your list.

VLOOKUP-Table

5 Design

Table Name: Budget

6 Optional: assign a meaningful name in place of Table1 (no spaces allowed, first character must be a letter)

Account	Account Name	January	February	March	April	May
40100	Product Sales	99,738	113,689	92,741	109,467	90,962
40200	Services	32,914	37,517	30,605	36,124	30,017

2 Insert

3 Table

4 OK

Create Table

Where is the data for your table?

=SDS1:SQ5

My table has headers

VLOOKUP	March	Account	Account Name	January	February	March
40100	92,741	40100	Product Sales	99,738	113,689	92,741
		40200	Services	32,914	37,517	30,605
		40300	Other Income	19,948	22,738	18,548
		40400	Interest Income	2,992	5,684	3,710

7 Optional: Table name simplifies formula, table automatically encompasses new data. =VLOOKUP(A2,D1:H5,5,0) is acceptable as well.

=VLOOKUP(A2,Budget,5,0)



# SUMIF Introduction

	D	E	F	G	H	I	J	K	L	M
1	Product	Cases Sold	Total Sales							
2	Oranges	6168	61680		Oranges	58,854	=SUMIF(\$D\$1:\$D\$51,H2,\$E\$1:\$E\$51)			
3	Apples	6079	85106		Apples	48,236				
4	Kiwi	6058	66638		Kiwi	53,671				
5	Bananas	6868	75548		Bananas	63,093				
6	Mixed Berries	1996	29940		Mixed Berries	43,733				
7	Oranges	7818	93816							
8	Apples	1565	21910							
9	Kiwi	9967	99670							
10	Bananas	9842	98420							
11	Mixed Berries	8993	89930							
12	Oranges	4933	54263							
13	Apples	770					=SUMIF(\$D\$1:\$D\$51,H2,\$E\$1:\$E\$51)			
14	Kiwi	55								
15	Bananas	8442	136638							
16	Mixed Berries	889								
17	Oranges	6551								
18	Apples	2605								
19	Kiwi	3317								

range  
\$D\$1:\$D\$51  
where to look

criteria  
H2  
what to look for

sum\_range  
\$E\$1:\$E\$51  
what to add up when matches are found

Fruit Sales





# Simplify Formula Writing with Tables

**1** Make sure that the list is in the form of a table, and then add a new worksheet.

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Bob's Fruit

**2** Type =SUMIF( and then the name of the table.

**3** Type an opening square bracket after the table name and then choose a column.

**4** Close the square bracket, add a comma, reference the criteria range, and add another comma.

**5** Close the square bracket, add a comma, reference the criteria range, and add another comma.

**6** Add the table name again, and choose another column. This approach means you can create formulas that reference data on other worksheets without leaving the worksheet where your formula resides.

**7** The Table Name field on the Design menu enables you to change the name of a table. First character must be a letter, and spaces are not permitted.



# In-Cell Drop-Down Lists

**1** Create a list of products.

**2** Select a cell.

**3** Choose Data Validation from the Data menu.

**4** Allow: List

**5** Source: =SAS2:SAS6

**6** Show input message when cell is selected

**7** Title: Product

**8** Input message: Choose a product from the list.

**9** Error Alert

**10** Title: Invalid Input

**11** Error message: You must choose a product from the list.

**12** OK

**13** Canteloupe

Invalid Input: You must choose a product from the list.



# In-Cell Drop-Down Lists

**14** Add Canteloupe to the list.

**15**

**16** The Data Validation list does not show Canteloupe.

**17** Resize to `=A$2:A$7` and click OK.

`=A$2:A$7`

**23** Add a new fruit to the list.

**16** Choose Data Validation from the Data menu.

**19**

**20**

**18**

**21** `=A$1:A$7`

**22** OK

**24**

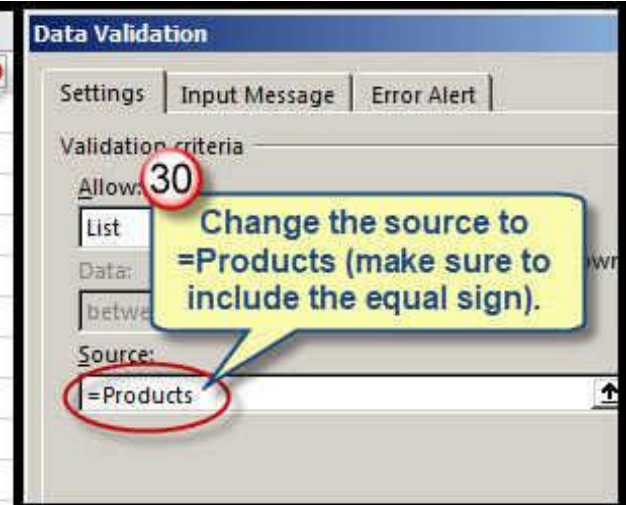
**25** Data Validation is an exception to the rule, the new product doesn't appear.



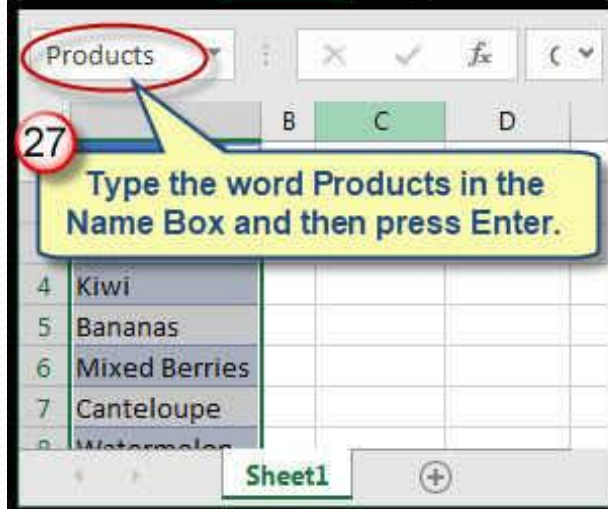
# In-Cell Drop-Down Lists

26 Select the second row through the last row.

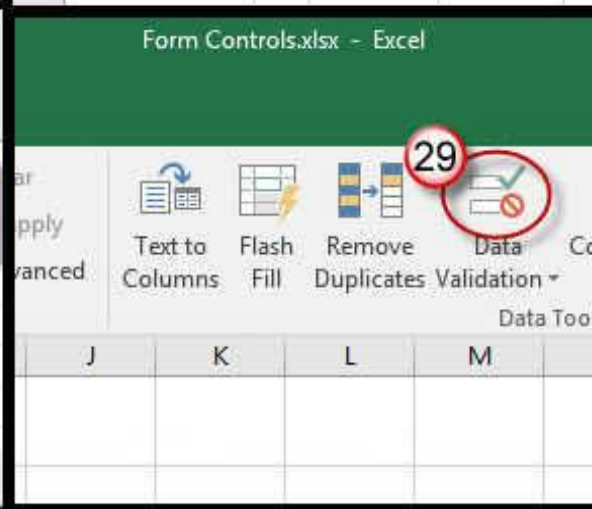
28



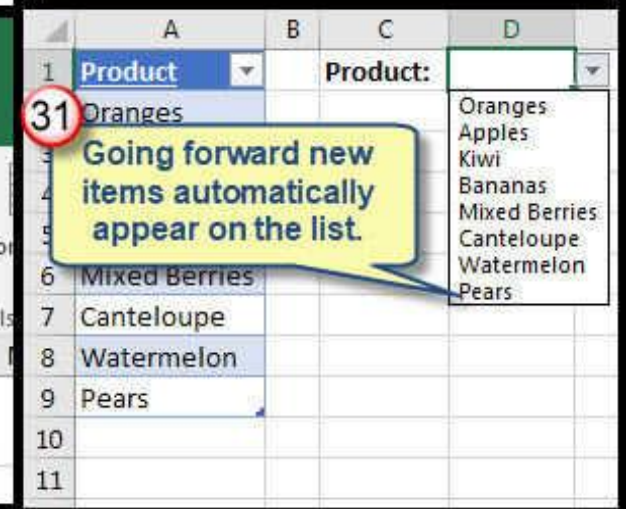
30 Change the source to =Products (make sure to include the equal sign).



27 Type the word Products in the Name Box and then press Enter.



29



31 Going forward new items automatically appear on the list.





# Self-Expanding Charts

**Step 1:** Select any cell within the chart data.

Fruit	January	February	March
Apples	327	192	397
Oranges	466	449	370

**Step 2:** Insert > Table

**Step 3:** Create Table

Where is the data for your table?  

 My table has headers

**Step 4:** OK

**Step 5:** Add new data

Fruit	January	February	March	April
Apples	327	192	397	400
Oranges	466	449	370	500

**Step 6:** The chart shows the new data automatically.

Month	Apples	Oranges
January	327	466
February	192	449
March	397	370
April	400	500



# Pivot Tables with Table Feature

**1** Insert a blank row between Mid GA and South GA.

**2** Select any cell within the list above the blank row.

**3** Click the 'Table' icon in the Insert ribbon.

**4** Click the 'Table' icon in the Insert ribbon.

**5** Click OK in the 'Create Table' dialog box.

**6** Choose Summarize with PivotTable from the Design menu.

**7** Click OK in the 'Create PivotTable' task pane.

	A	B	C
30	North GA	Clarkesville	Fruit Direct
31	North GA	Clarkesville	Fruit Direct
32	Mid GA	Macon	Middle Georgia Fru
33	Mid GA	Macon	Middle Georgia Fru
34	Mid GA	Macon	Middle Georgia Fru
35	Mid GA	Macon	Middle Georgia Fru
36	Mid GA	Macon	Middle Georgia Fru
37	Mid GA	Macon	Whistlestop Fruit St
38	Mid GA	Macon	Whistlestop Fruit St
39	Mid GA	Macon	Whistlestop Fruit St
40	Mid GA	Macon	Whistlestop Fruit St
41	Mid GA	Macon	Whistlestop Fruit St
42			
43	South GA	Brunswick	Navel Oranges & M
44	South GA	Brunswick	Navel Oranges & M
45	South GA	Brunswick	Navel Oranges & M
46	South GA	Brunswick	Navel Oranges & M
47	South GA	Brunswick	Navel Oranges & M
48	South GA	Valdosta	Oranges 'n Onions
49	South GA	Valdosta	Oranges 'n Onions
50	South GA	Valdosta	Oranges 'n Onions
51	South GA	Valdosta	Oranges 'n Onions

**Table Name:**  Summarize with PivotTable  
 Remove Duplicates

**Create PivotTable**

Choose the data that you want to analyze

Select a table or range  
 Table/Range: Table1

Use an external data source  
 Choose Connection...

Connection name:

Use this workbook's Data Model

Choose where you want the PivotTable report to be placed

New Worksheet  
 Existing Worksheet

Location:

Choose whether you want to analyze multiple tables

Add this data to the Data Model

OK



# Pivot Tables with Table Feature

**1** Region

**3** Delete the blank row.

**5** Drag the handle at the bottom corner of the table down to include the new rows.

**2** South GA is missing.

**4** Tables do not automatically expand when you delete rows.

Alternative: Cut and paste the additional rows. Tables expand automatically when you paste new data adjacent to the table.

Product	Region	Cases Sold	Total Sales	
Macon	Whistlestop Fruit Stand	Kiwi	7994	87934
Macon	Whistlestop Fruit Stand	Bana	7404	81444
Macon	Whistlestop Fruit Stand	Mixe	5591	61501
			1481	17772
Brunswick	Navel Oranges & More	Oran		69
Brunswick	Navel Oranges & More	Appl		15
Brunswick		Kiwi		16
Brunswick		Bana		00
Brunswick	Navel Oranges & More	Mixe		64
Valdosta	Oranges 'n Onions	Oran	1062	11682

Region	City	Vendor
Mid GA	Macon	Whistlestop Fruit St
Mid GA	Macon	Whistlestop Fruit St
Mid GA	Macon	Whistlestop Fruit St
Mid GA	Macon	Whistlestop Fruit St
Mid GA	Macon	Whistlestop Fruit St
Mid GA	Macon	Whistlestop Fruit St
South GA	Brunswick	Navel Oranges & M
South GA	Brunswick	Navel Oranges & M



# Pivot Tables with Table Feature

**1** Pivot tables display data from a cache, so new records don't appear automatically.

**2** Right-click any cell within the pivot table.

**3** Click Refresh to update the pivot table cache.

**4** The new data appears.

**5** Choose Total Sales from the Pivot Table Field List to add number to the report.

**1** Analyze

**2** If a pivot table is not based on a table you must manually resize the source data.

**3** Resize the range to A1:A51 to include the South GA data.

**4** OK

Row Labels	Sum of Total Sales
Mid GA	691787
North GA	2108437
South GA	449414
Grand Total	3249638



# Table Conflicts: Copying Grouped Sheets

**1** Add a new worksheet.

**2** Create a group of worksheets: Select the first sheet, and hold down the Shift key as you click on the last worksheet.

**3** Right-click.

**4** Move or Copy.

**5** Move selected sheets.

**6** To book: (new book).

**7** Before sheet:

**8** Create a copy.

**9** OK.

**10** You can copy worksheets that contain a table, but must do so individually.

Region	City	Vendor	Product	Cases Sold	Total Sales
North GA	Atlanta	Fruit R Us	Oranges	6168	6168
North GA	Atlanta	Fruit R Us		79	8510
North GA	Atlanta	Fruit R Us		58	6663
North GA	Atlanta	Fruit R Us		68	7554
North GA	Atlanta	Fruit R Us		96	2994
North GA	Atlanta	Bob's Fruit		18	9387
North GA	Atlanta	Bob's Fruit	Apples	165	2193
North GA	Atlanta	Bob's Fruit			



# SUM/OFFSET functions

	A	B	C	D	E	F	G	H
1	Analysis Term	5						
2	Total Cash Flow	5,247,000						
3	Total Cash Flow	5,247,000						
4								
5		2018	2019	2020	2021	2022	2023	2024
6	Net Cash Flow	1,074,000	1,000,000	1,061,000	1,031,000	1,081,000	1,016,000	1,031,000
7								
8								
9								
10								
11								
12								
13								
14								
15								

Change cell B1 to see OFFSET in action.

`=SUM(B6:F6)`

`=SUM(OFFSET(B6,0,0,1,B1))`

**OFFSET is a volatile worksheet function, which means it recalculates every time a change is made anywhere in the worksheet.**

**`=SUM(OFFSET(B6,0,0,1,B1))`**

reference <b>B6</b> starting point for the virtual range	rows <b>0</b> rows away from reference to shift the virtual range	columns <b>0</b> columns away from reference to shift the virtual range	height <b>1</b> number of rows high the virtual range should be	width <b>B1</b> number of columns wide the virtual range should be
--	---	---	---	--

OFFSET



# COUNTA Function

	A	B	C	D	E	F	G	H	I	J
1	Region	City	Vendor	Product	Cases Sold	Total Sales				
2	North GA	Atlanta	Fruit R Us	Oranges	6,168	61,680		Number of Columns:		
3	North GA	Atlanta	Fruit R Us	Apples	6,079	85,106		6		
4	North GA	Atlanta	Fruit R Us	Kiwi	6,058	66,638		=COUNTA(\$1:\$1)		
5	North GA	Atlanta	Fruit R Us	Bananas	6,868	75,548		Number of Rows:		
6	North GA	Atlanta	Fruit R Us	Mixed Berries	1,996	29,940		51		
7	North GA	Atlanta	Bob's Fruit	Oranges	7,818	93,816		=COUNTA(\$A:\$A)		
8	North GA	Atlanta	Bob's Fruit	Apples	1,565	21,910				
9	North GA	Atlanta	Bob's Fruit	Kiwi	9,967	99,670				
10	North GA	Atlanta	Bob's Fruit	Bananas	9,842	98,420				
11	North GA	Atlanta	Bob's Fruit	Mixed Berries	8,993	89,930				
12	North GA	Atlanta	Fruitju	Oranges	4,933	54,263				
13	North GA	Atlanta	Fruitju			56				
14	North GA	Atlanta	Fruitju			47				
15	North GA	Atlanta	Fruitju	Bananas	6,442	126,630				
16	North GA	Atlanta	Fruitju							
17	North GA	Atlanta	Orange U							
18	North GA	Atlanta	Orange U							
19	North GA	Atlanta	Orange U							
20	North GA	Atlanta	Orange U							
21	North GA	Atlanta	Orange U							
22	North GA	Blue Ridge	Mountain							

**=COUNTA(\$1:\$1)**

array  
**\$1:\$1**

COUNTA returns the number of non-blank cells in a given range. Omit column letters or row numbers to count the non-blank cells in an entire row or column, respectively.

Fruit Sales



# Creating a Dynamic Range

**1**

Select the top left cell in a list to create a dynamic range name, which can serve as an alternative to the Table feature for preserving referential integrity in formulas and in most Excel features that reference ranges of cells.

Region	City	Vendor
North GA	Atlanta	Fruit R Us
North GA	Atlanta	Fruitju
North GA	Atlanta	Fruitju

**2** Formulas

**3** Define Name

**4** Name: FruitSales

Scope: Workbook

Comment: You can use OFFSET and COUNTA together to create a dynamic range that will resize itself automatically as you add or remove data. This gives you the referential integrity of a table for most Excel features (except charts) while eliminating Table conflicts

**5** Refers to: =OFFSET('Fruit Sales'!\$A\$1,0,0,COUNTA('Fruit Sales'!\$A:\$A),COUNTA('Fruit Sales'!\$1:\$1))

**6** OK

**=OFFSET('Fruit Sales'!\$A\$1,0,0,COUNTA('Fruit Sales'!\$A:\$A),COUNTA('Fruit Sales'!\$1:\$1))**

reference	rows	columns	height	width
Fruit Sales!\$A\$1 starting point for range	0 rows to shift from reference (change to 1 to skip first row)	0 cols to shift from reference	COUNTA('Fruit Sales'!\$A:\$A) rows tall (subtract 1 if you want to skip first row); COUNTA determines the number of non-blank cells in column A.	COUNTA('Fruit Sales'!\$1:\$1) columns wide; COUNTA determines the number of non-blank cells in row 1.



# Thank you for attending!

I'm happy to hear from you. In particular let me know if you did not receive the handouts for this presentation.

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Is there something you were hoping to learn today but didn't?  
Please let me know. You can ask me anything about Excel.