

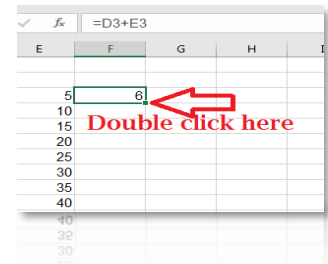
Excel 2016 Staff Class

Names and references of cells

Relative reference	Ex: =A1*B1 When dragging a formula down a column, the references will update automatically. Ex: =A2*B2, =A3*B3
Absolute reference	Ex: =A1*\$F\$1 (tip: use F4 to toggle between reference type) In this case, when dragging the formula down a column, only the first operand will change. Ex: = A2*\$F\$1, =A3*\$F\$1
Mixed reference	Ex: =A1*\$F1 or =A1*F\$1 When dragging the first formula down or across, the part without a \$ sign will change
Named cell / range	Formulas > Defined Names > Define Name Variable can be referenced by its name. Name Manager tracks this info.
Structured Reference	Fields in a Table can be used by name, preceded by an @ sign.
Sheets in a workbook	Rename a sheet by <right click> on tab name. References to a field from Sheet 1 will look like Sheet_1! followed by cell reference.
Fields from other workbooks	Not covered in this class. It is possible for one or more workbooks to refer to fields from another workbook. All workbooks must be open to resolve the data.

Click and Drag - Autofill

To apply a formula all the way down (or across) the rows (or columns) of data, double click the handle in the bottom right corner of the formula.



Useful shortcuts:

<Cntl Enter>	accept value and keep cell active
<Cntl .> (Control + period)	move active cell to corners of range. Useful for exploring the size of the data.
<Cntl ~> (Control + ~) or Formulas > Formula Auditing > Show Formulas	Toggles displaying formulas or the value of the field
<Cntl Shift Enter>	To commit a Trim function.

How to resize columns / rows - Method 1	Double click the column boundary (the vertical line separating the column headers) or on the triangle below the Name Box and then the column width to resize all column sizes.
How to resize columns / rows - Method 2	Click on Column letter. Home > Cells > Format ▼> AutoFit Column Width
F4	Make a reference absolute by selecting the address an pressing F4.
<Cntl Home>	to jump to the first row and column of the data
<Cntl End>	to jump to the last row and column of the data
Double click on the lower right bottom fill handle	to apply the formula all the way down.

Arrays vs Tables

Both Arrays and Tables can be used in VLOOKUP and INDEX MATCH, but using a Table has many advantages over using an Array. As far as I can tell, there are no disadvantages to using a Table.

Arrays and Tables are similar in that they have a unique “key” in the left most column, and the left-most column is referred to as “1”, no matter where it falls in the worksheet.

In Excel, a Table is a specific construct; it has its own formatting style (the zebra rows), it dynamically changes size if new data is added to it, and even has an additional way of referencing its data – structured reference.

Array

	1	2	3
	CC	Cookie Name	vegan
1	10	Thin Mints	Vegan
2	11	Samoas	Regular
3	12	Tagalongs	Regular
4	13	Trefoils	Regular
5	14	Do-si-dos	Regular
6	15	Savannah Smiles	Regular
7	16	Toffee-tastic	Regular
8	17	Girl Scout S'mores	Vegan

Table

	1	2	3
	CC	Cookie Name	vegan
1	10	Thin Mints	Vegan
2	11	Samoas	Regular
3	12	Tagalongs	Regular
4	13	Trefoils	Regular
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6	15	Savannah Smiles	Regular
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8	17	Girl Scout S'mores	Vegan

The little blue corner means End-of-Table.



My favorite links

Bit.ly/mhnVLookup	How to use the Excel VLOOKUP, by Exceljet
Bit.ly/IndexFunction	How to use the Excel INDEX function, by Exceljet
Bit.ly/MatchFunction	How to use the Excel Match function, by Exceljet
Bit.ly/MoveSheet	Move or copy worksheets or worksheet data by support.office.com (MS)
Bit.ly/StructRef	Create and use Structured References in a Table.
Bit.ly/RelateTable	A good primer for how relational tables work, covering primary keys, foreign keys, redundant data, and links for further study. Required to create a good Data Model
Bit.ly/CreateDataModel	Create a Data Model in Excel by MS Good overview to join multiple Tables in a PivotTables and PivotCharts
Bit.ly/CreatePT	How to create a Pivot Table, by MS
Bit.ly/GetPTSubtotal	Access subtotals in PivotTables for use in other reports – works even if / when the PivotTable is updated. By Exeljet.
http://bit.ly/TreeMapGraph	How to make Tree Graphs, Sunburst Graphs,

Pivot Tables

The trickiest thing about Pivot Tables is asking the right question to “see” your data. Do you want to see the sales of cookies broken down by cookie type? Or to see sales by Scout?

Requirements:

- Data must be a Table or an Array. This means all of the cells in a column are filled in (see below). If new rows are added in a Table, the Pivot Table will “see” them after **Refreshing the Cache** (Alt F5)
- No empty rows. If the source of a Pivot Table has an empty row, “Summed” fields become “Count” or other unexpected problems surface.

Test Scout	Test Cookie	Test Qty Sold	Test Total Amount
Alondra Huerta	11	6	\$30.00
Alondra Huerta	12	3	\$15.00
Cesare Valle	16	2	\$10.00
Cesare Valle	16	2	\$10.00
Mary Porterfield	13	5	\$25.00
Mary Porterfield	15	2	\$9.50
Mary Porterfield	10	3	\$14.25
Total			\$113.75

Good example

Test Scout	Test Cookie	Test Qty Sold	Test Total Amount
Alondra Huerta	11	6	\$30.00
Cesare Valle	12	3	\$15.00
Cesare Valle	16	2	\$10.00
Mary Porterfield	16	2	\$10.00
Mary Porterfield	13	5	\$25.00
	15	2	\$9.50
	10	3	\$14.25

Bad example – the Scout names are not on every row.



Click on the Sales Data worksheet tab, this holds the “Many Troops” Table.
 Create a Pivot Table by dragging the Troop label in the Rows area, Cookie in the column, and the sum of Qty label in the Values field.

Row Labels	10	11	12	13	14	15	16	17	Grand Total
34	3	6	3	5	2	4			23
35	16	3	24	15	30	10	2	19	119
44			1	4	5	3	1		14
446	16	3	24	15	30	10	2	19	119
4554	25	14	20	20	11	19	14	19	142
Grand Total	60	26	72	55	75	46	25	58	417

Right click on a field to get this pop up. Click on Value Field Settings.

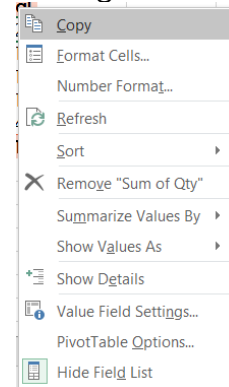
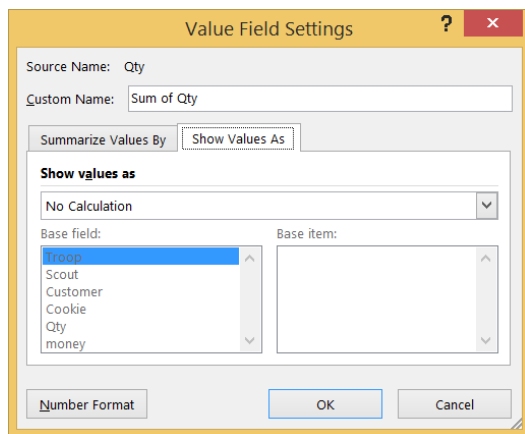
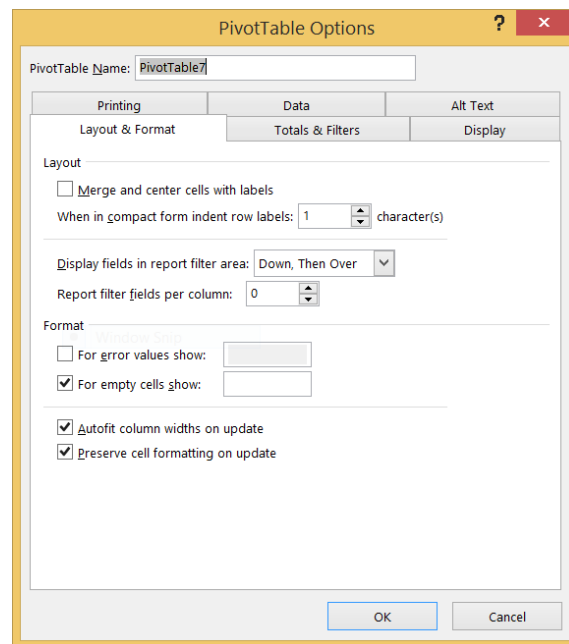
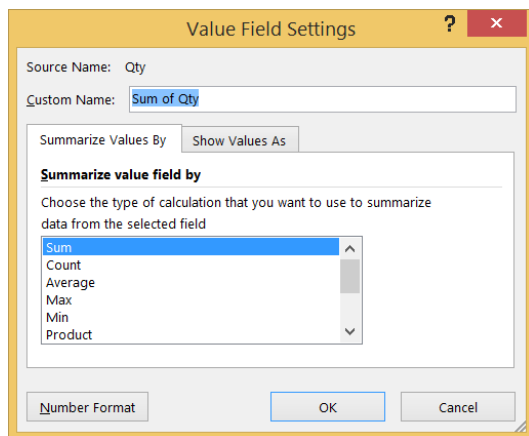


Figure 1 This Excel screen may be slightly different than yours.



Things to try:

Sort

Click the down arrow by Row Labels. Sort the data by Troop number. Or by Grand Total to see the top selling troop first.

Count, Sum, Average

The default in the Values field is to SUM the data, but click on the drop down arrow and change it to COUNT, or Average.

Drag another instance of Qty to the Values field and change it to COUNT.

% as a percentage

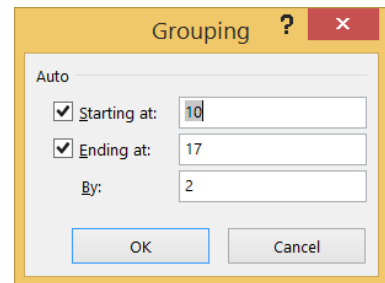
Keep Troop in Row, two instances of Money in Values field, nothing in the column field.

Right click one of the Money fields, Select "Show Values As" to "% of Grand Total".

Group a Pivot Table manually

Create a Pivot table where Cookies is in the Row, and Money is in the Values field

<Right Click> on the Cookie number, select Group, change fields to look like the example on the right.

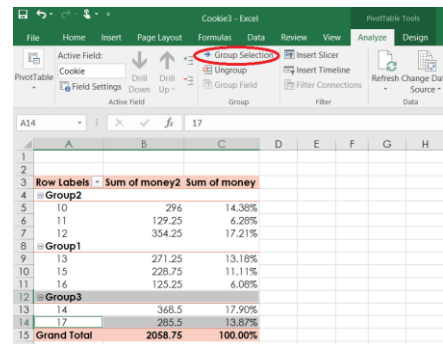


Or

Click on the Pivot Table Tools > Analyze tab. Select one or more Cookie numbers (hold down the Cntl key to select non-contiguous rows). Click on Group > Group Selection.

Select another (or the remainder) cookies for other groupings.

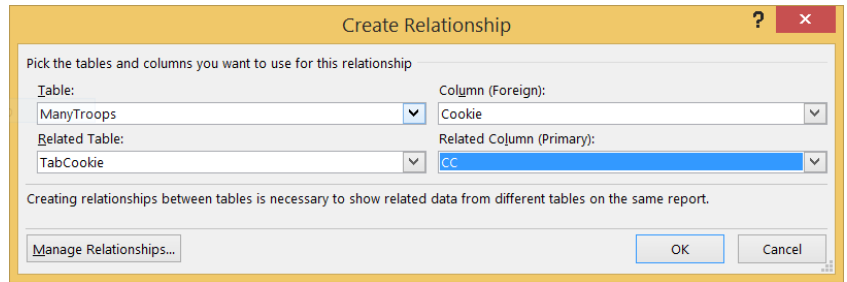
Now the Groups can be sorted.



Power Pivot using data from multiple Tables

Create a relationship between two tables,

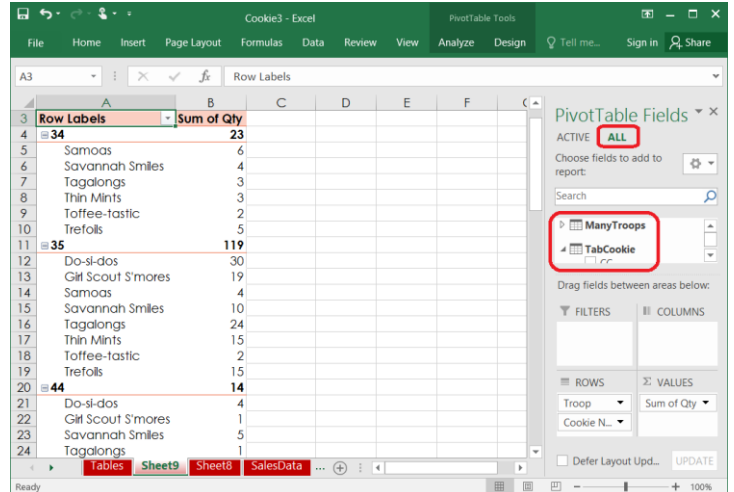
1. Click on ALL in upper right corner under the Pivot Table Fields.
2. Select the fields you want from two different tables – TabCookie and ManyTroops.
3. Click Create Relationship (see upper right picture), click OK.
4. Now select “Cookie Name” from TabCookie, and display that instead of the Cookie number.



Why?

Changing data in one master table will quickly propagate through the rest of the PivotTables.

Ex: a customer changes their phone number, and we update it in a CustomerTable. Now every order for that customer will immediately contain the correct information.



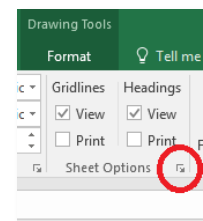
Pivot Table Chart

In the Analyze tab of the PivotTable Tools, click on PivotChart. Select one of the recommended charts – try the Clustered Bars.

Charts

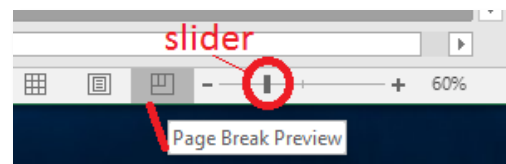
The Library teaches a Charts class where you can learn all about how to make and update Charts. For a quick refresher:

<http://www.gcflearnfree.org/excel2016/charts/1/>



Print preview

In the bottom right corner of Excel, you'll see the zoom slider bar. Drag the vertical bar to the left or right to zoom out or zoom in.



There are three icons to the left of the zoom; these Workbook Views are also accessible by the View Tab. See <http://tinyurl.com/lz5pwqg> for even more information:

Normal: Default view. Dotted grey lines identify page breaks.

Page Layout: Displays exactly what would print on each page, including headers and footers, images, etc.

Page Break Preview: The dashed blue line shows page breaks and identifies the page's number. Very useful for "wide" reports. Identify "orphan" columns or rows disconnected from other pages.

To Create a Custom view, View > see <http://tinyurl.com/m9ltxm8>

Print a basic report

(Note: click on ▼ arrows to see more options) File > Print > click the **Print** button or <Ctrl p> - this brings up the Print dialog box, home to many important options.

Copies: click on up or down arrows to change the number of copies to print.

Printer select available printer to physically print report, or choose PDFCreator to save it as a .pdf file. You may have other choices outside the Library.

Print Active Sheets this is one way to identify which data is to be printed.

Pages when specifying which pages to print, good for testing

Print One Sided or change to duplex

Collated or Uncollated

Portrait Orientation or Landscape. See which one fits the number of

columns best.

Letter or other physical paper size. The Copy Center printers also print 8 ½" x 14" and 11" x 17". B&W for 10 cents, color for 25 cents.

Normal Margins or Narrow or Custom. Some companies have formatting standards.

No Scaling Very powerful tool for fitting big reports on the least amount of paper. The preview on the right side will help you "see" if it is too small. Try Fit All Columns on One Page.

