

Excel 2010 Advanced Features

Pivot tables

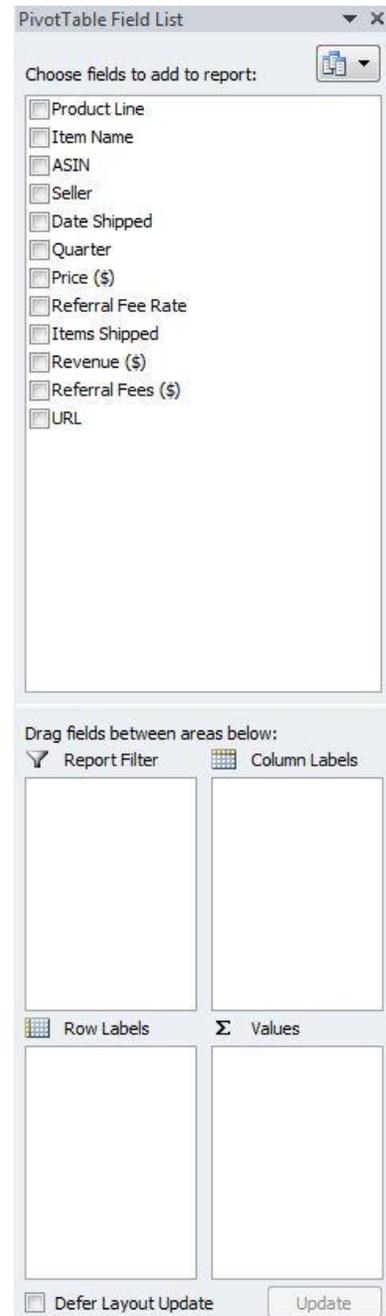
A pivot table breaks down and summarizes a large amount of data. It gives the user the ability to easily rearrange, or pivot, the data displayed. Open the pivot table practice workbook. This is a spreadsheet detailing Amazon affiliate income. Data is organized by product line, item name, ASIN, seller, date shipped, price, referral fee rate, items shipped, revenue, referral fees, and URL. A pivot table helps the user analyze this large amount of data by category.

To create a pivot table, click on the top left (Product Line) cell. Click on Insert, then on PivotTable. Table1 is automatically selected as the range. The default is for the PivotTable to be placed in a new worksheet. Leave these settings as they are and click on OK.

Notice the PivotTable Field List at the right. Any field in the list may be dragged to one of the four areas at the bottom of the same window. In this case, we want to break down quarterly revenue by product line. Drag the **Product Line** field into the **Row Labels** area. The list of product lines populates the rows of the pivot table. Next, drag **Revenue** into the **Values** area. Now the total revenue for each product line displays. To break that down into quarterly figures, drag **Quarter** into the **Column Labels** area.

Great! We got what we wanted, but the formatting could use some work. Right click on any of the quarterly or grand total numbers, and then click on Number Format. Next, click on Currency and then click on OK. Now all the numbers are displayed consistently with two decimal places and a dollar sign.

Let's make this pivot table do a little more work for us. We want to be able to see the items sold under each product line and we want to compare Amazon.com sales to third party sales. First, drag **Item Name** into the **Row Labels** area, below **Product Line**. Now each product line's sales are broken down by item. Use the minus icon at the left of each product line to collapse each category as you wish. Next, drag **Seller** into the **Report Filter** area. Now you can use the dropdown at the top of the pivot table to toggle between Amazon.com sales, third party sales and all sales. You may continue to manipulate the data using the PivotTable Field List.



You also have the option to insert a PivotChart based on the data in your PivotTable. Before you do this, remove **Item Name** from the pivot table (click on the down arrow next to **Item Name** in the **Row Labels** area, then click on Remove Field.) To create the pivot chart, make sure you are in the Options section of the PivotTable Tools area in the ribbon. Click on PivotChart. Choose the type of chart you prefer and click OK. Notice that you can rearrange the data displayed on the chart using dropdown menus on the chart, similarly to the way you can rearrange data in the pivot table.

3D Sums

Let's say I track how much I spend on food, transportation, and entertainment every day for five weeks. Open the 3D Sums practice workbook. I have these figures broken down by day in five different worksheets in the same workbook. Click through the weeks listed in tabs along the bottom of the workbook to see the statistics for each week.

	A	B	C	D	E	F	G	H
1		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	Food	15	9.74	11	37.21	23.45	31.5	74.17
3	Transportation	12.5	4.5	6.95	29.53	6.95	16.75	33.64
4	Entertainment	25	7.25	5.49	41.28	17.74	20.58	23.77
5								
6								
7								
8								
Week 1 Week 2 Week 3 Week 4 Week 5 TOTAL								

I can use 3D Sums to calculate the total for each day of the week across the five week period. This way, I can see which day of the week tends to be most expensive and which day tends to be least expensive. In the Total tab, click cell B2, and type **=SUM** to start the formula. Click the Week 1 tab, then hold down the shift key and click the Week 5 tab to select it and all the tabs in between. Click cell B2, then type a close parenthesis to close the formula. Hit enter, and the total will appear in the Total tab, cell B2. From there, click cell B2, hover the mouse over the lower right corner of the cell until the cursor turns in to a plus sign. Double click the plus sign to duplicate the formula in the cells below then drag the formula across to fill the remaining cells in the table.

Try adding a total column to each week's worksheet. Enter formulas to calculate the total spent on food, transportation and entertainment each week. Then use 3D Sums to calculate the total amount spent in each category during the five week period.

IF Formulas

Now that we have seen how pivot tables and 3D sums enable us to get a different picture of our data, let's use Amazon affiliate income to learn how we can use formulas to quickly deduce things from large amounts of data. Open the IF formulas practice workbook.

Now let's say that we are interested in which items shipped for free from Amazon. Customers qualified for free shipping in 2009 if the price of their item exceeded \$25. We could probably go from row to row, check the price under column "G", and enter data in the "Free Shipping" column next to URL, but that would take hours to do by hand! Let's simplify this task by using an IF formula.

An **IF formula** is a logic statement that tells Excel if a statement is true do A, and if it isn't true do B:

=IF(logical_test, [value_if_true], [value_if_false])

In this case, we will have the formula look at the price and put down "YES" in the column "Free Shipping?" if the value is greater than or equal to \$25, and do nothing if the price is less than \$25. Enter this formula in cell M2:

=IF(G2>=25,"YES","")

Fill down the formula to apply to the rest of column M by clicking and dragging on the bottom right corner of cell M2.

	G	H	I	J	K	L	M	N
	Price (\$)	Referral Fee Rate	Items Shipped	Revenue (\$)	Referral Fees (\$)	URL	Free Shipping?	
	\$21.69	6.99%	1	\$21.69	\$1.52 <link>			
	\$20.52	6.97%	1	\$20.52	\$1.44 <link>			
	\$20.25	6.99%	1	\$20.25	\$1.42 <link>			
	\$27.48	7.00%	1	\$27.48	\$1.92 <link>		YES	
	\$34.65	6.99%	3	\$103.95	\$7.29 <link>		YES	
	\$26.39	7.02%	1	\$26.39	\$1.85 <link>		YES	

But what if we want to locate items that were shipped for free and that were sold by a third party? We need to combine two IF formulas: one testing if the price in column G is less than or equal to \$25, and the other testing if the seller in column D was a third party. To do this, we need to use an AND formula.

An **AND formula** embeds into the IF formula to include up to 30 logical tests:

=IF(AND(condition1, [condition2]...), [value if true], [value if false])

Enter this formula in cell N2:

=IF(AND(\$G2>=25,\$D2="Third Party"),"YES","")

Fill down the formula to apply to the rest of column N.



D	E	F	G	H	I	J	K	L	M	N	O
Seller	Date Shipped	Quarter	Price (\$)	Referral Fee R	Items Shipped	Revenue (\$)	Referral Fees	URL	Free Shipping?	Third Party Free Ship?	
Third Party	15-Dec-09	Q1	\$21.69	6.99%	1	\$21.69	\$1.52	<link>			
Third Party	15-Dec-09	Q1	\$20.52	6.97%	1	\$20.52	\$1.44	<link>			
Third Party	15-Dec-09	Q1	\$20.25	6.99%	1	\$20.25	\$1.42	<link>			
Third Party	15-Dec-09	Q1	\$27.48	7.00%	1	\$27.48	\$1.92	<link>	YES	YES	
Amazon.com	15-Dec-09	Q1	\$34.65	6.99%	3	\$103.95	\$7.29	<link>	YES		
Third Party	15-Dec-09	Q1	\$26.39	7.02%	1	\$26.39	\$1.85	<link>	YES	YES	
Third Partv	16-Dec-09	Q1	\$9.95	6.99%	1	\$9.95	\$0.70	<link>			

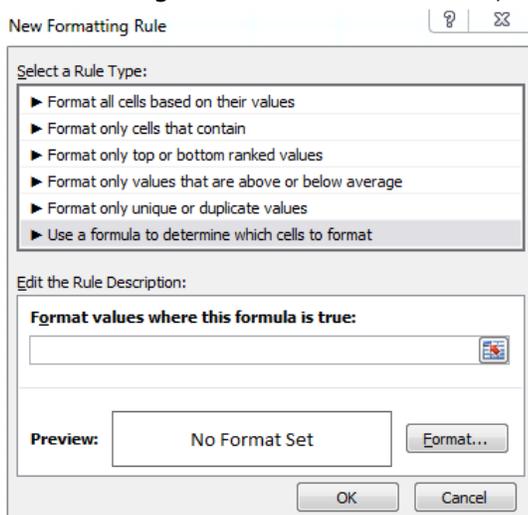
Conditional formatting

Let's say you have a large set of data and rather than manipulating it, you want to highlight portions of the data that meet certain conditions. Conditional formatting can help. Open the conditional formatting practice workbook. This shows batting statistics for the 2015 MLB season. We can use conditional formatting to call out specific parts of the data. We want to know who had more RBI than the league average. First, click on the letter K above the RBI column to select that data. Under the Home ribbon, click on Conditional Formatting. Hover over Top/Bottom Rules and click on Above Average. This highlights cells in the RBI column that are above the average number in that column.



Since this data includes all MLB players, even if they only had a few at bats during 2015, you will notice that players with as few as 31 RBI are above the average. Let's get a better idea of the players with the most RBI in the league last year. Click on the letter K again at the top of the RBI column. Click on Conditional Formatting, then click on Manage Rules. This shows any conditional formatting rules that are in effect for the selected cells. Click on Edit Rule. Click on Format only top or bottom ranked values. This defaults to the top 10 percent, but you can change that if you wish. Click on OK, then click on OK again. You should see a much smaller amount of cells highlighted in the RBI column.

Let's try a more complex use of conditional formatting. First, click on Conditional Formatting. Hover over Clear Rules, then click on Clear Rules From Entire Sheet. This gives



us a fresh start. Now we want to find any second baseman who had at least 100 at bats and a batting average of at least .250. Hit Ctrl+A to select all cells. When you have multiple conditions, or a condition that is not ready-made in the Conditional Formatting menu, click on New Rule under Conditional Formatting, then click on Use a formula to determine which cells to format.

In this case, an AND formula will do the job. Type in the following in the field under Format values where this formula is true:

=AND(\$B1="2B",\$E1>99,\$P1>0.249)

Formulas always begin with the = sign. \$B1="2B" tells Excel to look for the text "2B" in column B.



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\$E1>99 tells Excel to look for values greater than 99 in column E. \$P1>0.249 tells Excel to look for values greater than 0.249 in column P. We need to enclose these in parentheses because they are all part of the same AND formula. Don't forget to click on Format to select how you want the matches to be highlighted. Click on OK when you are finished. Any rows matching all three conditions will be highlighted.

Questions? Contact Adult Services at askref@elmwoodparklibrary.org or 708-395-1217.

