



Excel Help Bedford

Excel 2010: Pivot Tables

2010

Analyse even the largest datasets quickly and clearly

Excel Guides

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3. Inserting a Pivot Table

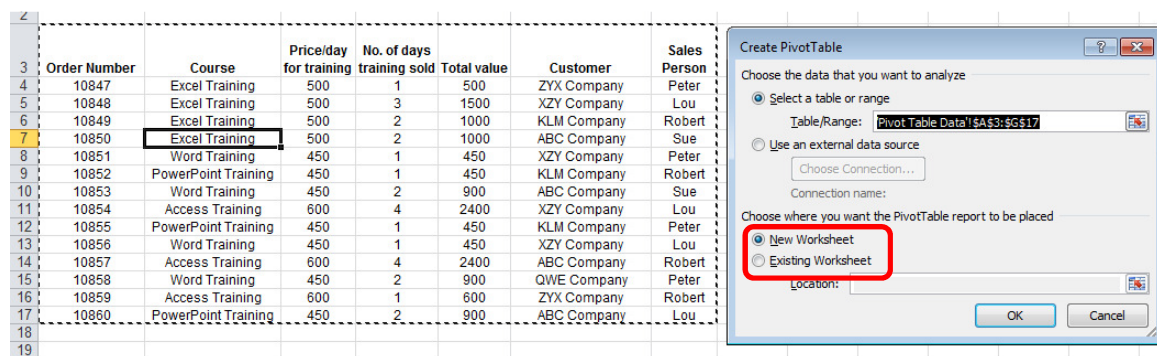
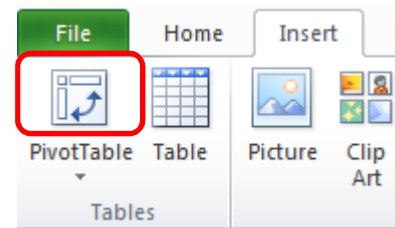
As with every element of Excel, clearly **structuring** the data is fundamental to allowing you to analyse it. You need to set it out in well-defined columns that stick to one data type (e.g. numbers, text, currency) as below,¹ the dataset we'll use to model examples in this guide:

Order Number	Course	Price/day for training	No. of days training sold	Total value	Customer	Sales Person
10847	Excel Training	500	1	500	ZYX Company	Peter
10848	Excel Training	500	3	1500	XZY Company	Lou
10849	Excel Training	500	2	1000	KLM Company	Robert
10850	Excel Training	500	2	1000	ABC Company	Sue
10851	Word Training	450	1	450	XZY Company	Peter
10852	PowerPoint Training	450	1	450	KLM Company	Robert
10853	Word Training	450	2	900	ABC Company	Sue
10854	Access Training	600	4	2400	XZY Company	Lou
10855	PowerPoint Training	450	1	450	KLM Company	Peter
10856	Word Training	450	1	450	XZY Company	Lou
10857	Access Training	600	4	2400	ABC Company	Robert
10858	Word Training	450	2	900	QWE Company	Peter
10859	Access Training	600	1	600	ZYX Company	Robert
10860	PowerPoint Training	450	2	900	ABC Company	Lou

Select the data you want to analyse. As long as you have set it up without blank rows or columns, all you need to do is select one cell in the whole array.

Then under the **Insert** tab, click **Pivot Table**.²

The data range Excel thinks you want to tabulate will then be dynamically highlighted (as shown by the 'running ants' around its perimeter), and the accompanying dialogue box will be shown:

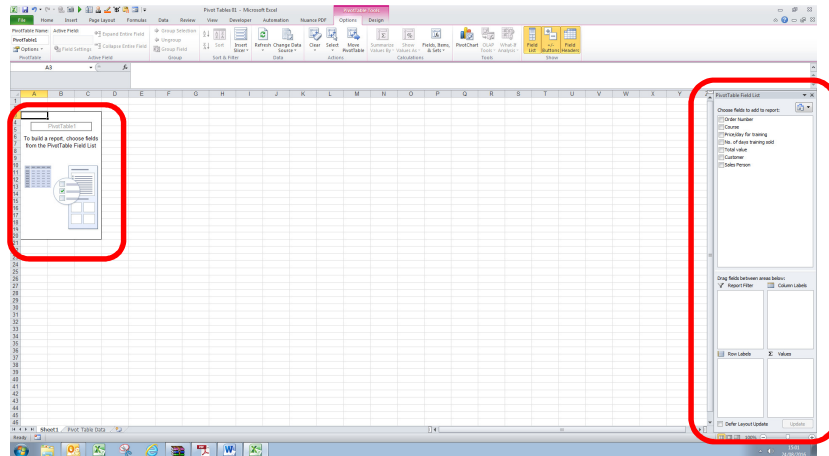


¹ Contact [Mark Jenner](#) if you want to receive this dataset, with which you can practice.

² You will see that the Pivot Table button is split into two halves. Clicking the top half proceeds to insert a Pivot Table in the standard manner. The bottom half (where the downwards arrow is) brings up the option of automatically graphing your data, which we will cover in [Pivot Charts, section 7](#).

Excel's default mode is to assume you want to put the Pivot Table into a **New Worksheet** (see selected option above). You can, though, put it into an *existing* worksheet by selecting the other radio button and selecting the cell in the sheet where you want the Pivot Table to be located.

Once you click **OK**, you will see a blank report at the left of the screen, with a new **Field List** pane on the right:



Click and drag the fields from the top of the field list pane to one of the bottom four areas:

- Click the field you want as your row headers to the **Row Labels** section. In our case, this is the **Customer** field.
- Do the same for **Column Labels**; in our case, this is the **Sales Person** field.
- Click and drag the field you want to sum, count or perform other operations on to the **Values** section. In our case, this is the **Total Value** field.
- (The **Report Filter** field allows you to remove or include selected items from visibility in the Pivot Table)

Excel takes a (good!) guess at whether you want to sum or count the values based on what type of data is in that column. For example, if you dragged a field that listed names such as **Sales Person** (i.e. text), it would default to **Count of Sales Person**, since names can't be arithmetically summed.³ Of course, you can control this as your needs dictate in the **Value Field settings** (see [Number formats, section 4.1](#)).

Your Pivot Table will then appear thus:

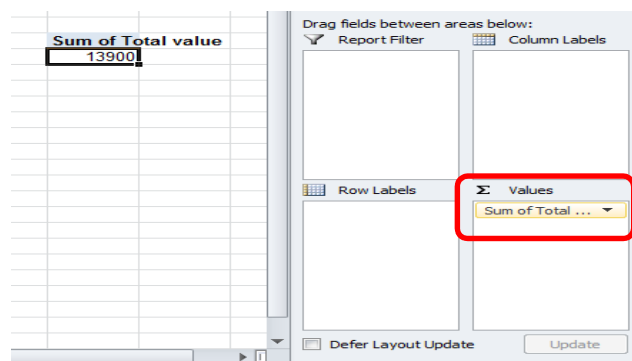
³ Something to look out for is when digits are used as *codes*. For example, the Skills Funding Agency use a range of numbers to denote a learner's employment status: code 10 for 'employed', code 11 for 'unemployed and looking' and code 12 for 'unemployed, not looking'.

Excel may assume that multiple entries of 10, 11 and 12 are meant to be added together, when in actual fact each occurrence needs to be **counted** (not summed) to provide the number of people with a particular employment status.

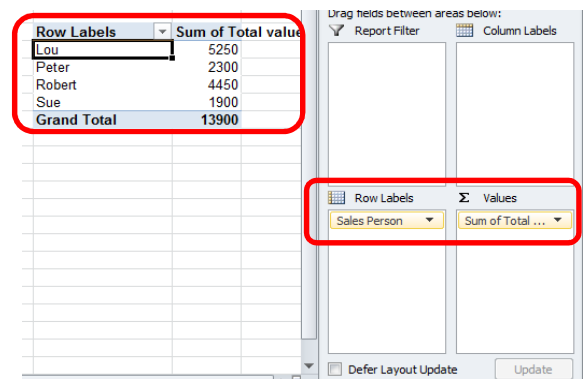
Sum of Total value	Column Labels				
Row Labels	Lou	Peter	Robert	Sue	Grand Total
ABC Company	900		2400	1900	5200
KLM Company		450	1450		1900
QWE Company		900			900
XZY Company	4350	450			4800
ZYX Company		500	600		1100
Grand Total	5250	2300	4450	1900	13900

This is a good end product in itself. It quickly informs us of the total sales value for each company, the total sales that each team member has achieved and every combination within those parameters.

We could achieve this result using a combination of SUM and SUMIFS functions entered in the relevant cells, but even with a small dataset like this that would take some work. Moreover, the Pivot Table provides a range of built-in options for us to further analyse the data that would need lots of filtering and other functions⁴ for us to achieve manually.



Note also that you don't have to put a field in all of the areas. The example on the left has removed everything save for the **Total Value**, which is the field in the **Values** area.



The example on the right has the **Total Value** values, and **Sales Person** entries listed as the row headers.

While these are rarer uses of a Pivot Table, it exemplifies that you control what you want to see.

One more crucial element of using Pivot Tables is **refreshing** them when the data source changes. For example, say the first course, one of Peter's, was corrected to £600 a day instead of £500:

Order Number	Course	Price/day for training	No. of days training sold	Total value	Customer	Sales Person
10847	Excel Training	600	1	600	ZYX Company	Peter
10848	Excel Training	500	3	1500	XZY Company	Lou
10849	Excel Training	500	2	1000	KLM Company	Robert

Right click the Pivot Table, choose **Refresh**, and you will see that only *then* will Peter's value have been updated. This command is also under **Data > Refresh**.

⁴ E.g. SUBTOTAL function with specialised function numbers as arguments.

4.7 Grouping

Grouping Pivot Tables gathers together data items that can be held together. For example, total value of purchases may be arranged by *month* in your source data, but you want a broader view of what the values were for a whole *quarter* or *year*. This would be a prime case for *automatic* grouping of data.

Another example is when several individual data items come under a broader umbrella. For instance, the Employment and Skills Service categorise learners as 'below Level 2' if they have either no, only Level 1 or some other, prior attainment equivalent to Level 1. The split is less important than the accumulated numbers across the categories.

Or it may be that several people's performance is being analysed, but they are grouped together in teams. The *team* performance can then be evaluated (while retaining data for every single member). These latter examples require *manual* grouping of data.

4.7.1 Automatic grouping

Imagine our dataset has an extra column giving a course date:⁷

Order Number	Course	Price/day for training	No. of days training sold	Total value	Customer	Sales Person	Date
10847	Excel Training	500	1	500	ZYX Company	Peter	02/12/2015
10848	Excel Training	500	3	1500	XZY Company	Lou	19/12/2015
10849	Excel Training	500	2	1000	KLM Company	Robert	11/01/2016
10850	Excel Training	500	2	1000	ABC Company	Sue	14/01/2016
10851	Word Training	450	1	450	XZY Company	Peter	15/01/2016
10852	PowerPoint Training	450	1	450	KLM Company	Robert	31/01/2016
10853	Word Training	450	2	900	ABC Company	Sue	04/02/2016
10854	Access Training	600	4	2400	XZY Company	Lou	02/03/2016
10855	PowerPoint Training	450	1	450	KLM Company	Peter	06/03/2016
10856	Word Training	450	1	450	XZY Company	Lou	15/03/2016
10857	Access Training	600	4	2400	ABC Company	Robert	30/03/2016
10858	Word Training	450	2	900	QWE Company	Peter	21/05/2016
10859	Access Training	600	1	600	ZYX Company	Robert	22/06/2016
10860	PowerPoint Training	450	2	900	ABC Company	Lou	05/12/2016

And we rearrange our Pivot table selections:⁸

Sum of Total value		Sales Person			
Date	Lou	Peter	Robert	Sue	Grand Total
02/12/2015			£500.00		£500.00
19/12/2015	£1,500.00				£1,500.00
11/01/2016			£1,000.00		£1,000.00
14/01/2016				£1,000.00	£1,000.00
15/01/2016		£450.00			£450.00
31/01/2016			£450.00		£450.00
04/02/2016				£900.00	£900.00
02/03/2016	£2,400.00				£2,400.00
06/03/2016		£450.00			£450.00
15/03/2016	£450.00				£450.00
30/03/2016			£2,400.00		£2,400.00
21/05/2016		£900.00			£900.00
22/06/2016			£600.00		£600.00
05/12/2016	£900.00				£900.00
Grand Total	£5,250.00	£2,300.00	£4,450.00	£1,900.00	£13,900.00

Drag fields between areas below:

Report Filter

Row Labels

Date

Column Labels

Sales Person

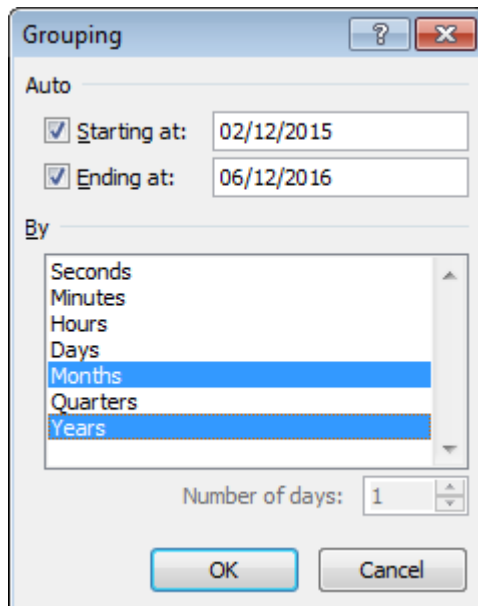
Σ Values

Sum of Total ...

⁷ For information on ensuring the Pivot Table references an expanded data range (not just updated values), see [Changing your data source, section 5](#) or [Excel Tables, section 6](#).

⁸ To remove fields from display, you can drag them back up to the Field List pane.

Now, right clicking on one of the dates brings up an option to **Group** data, and the following dialogue box duly appears:



This is automatic grouping. Excel recognises the data as dates, and enters start and end points accordingly. It assumes you want to organise them into months, but you can click other options to (de)select alternate and / or additional selections.

For example, you may want to choose both **Months** and **Years** here, as there is data from December 2015 and December 2016. We *don't* want them both categorised as just 'December', but rather to put them into separate groups.

Click OK and your Pivot Table display will change to group course dates (and all other associated values) by Year and Month:

Sum of Total value		Sales Person				
Years	Date	Lou	Peter	Robert	Sue	Grand Total
- 2015	Dec	£1,500.00	£500.00			£2,000.00
- 2016	Jan		£450.00	£1,450.00	£1,000.00	£2,900.00
	Feb				£900.00	£900.00
	Mar	£2,850.00	£450.00	£2,400.00		£5,700.00
	May		£900.00			£900.00
	Jun			£600.00		£600.00
	Dec	£900.00				£900.00
Grand Total		£5,250.00	£2,300.00	£4,450.00	£1,900.00	£13,900.00

The little minus signs (circled) are called **outline buttons**, showing you can collapse the data to show the total for the larger range (year) rather than each individual month. Collapse them, and the minus signs become plus signs, showing you can expand them again.

Collapsing groups triggers the Pivot Table to show a subtotal for the group, i.e.:

Sum of Total value		Sales Person				
Years	Date	Lou	Peter	Robert	Sue	Grand Total
+ 2015	Dec	£1,500.00	£500.00			£2,000.00
+ 2016		£3,750.00	£1,800.00	£4,450.00	£1,900.00	£11,900.00
Grand Total		£5,250.00	£2,300.00	£4,450.00	£1,900.00	£13,900.00

Expanded group (red) shows individual lines of data

Collapsed group (blue) shows subtotalled data