

Essential Excel Skills
For Business

**DATA
TABLES
AND
PIVOT
TABLES**

By Carl Nixon

Excel Pivot Tables and Data Tables.

Essential Excel Skills for Business.

By Carl Nixon.

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Excel Pivot Tables and Data Tables.

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Introduction.

Welcome to the follow up to the bestselling book, “Learn to Use Pivot Tables in an Hour”. I have now added additional tutorials on how to use Excel data tables. This should give you all the analysis tools you would ever need.

This book is based Excel 2016 which is included in the Microsoft Office 365 package. The vast majority of this book will apply to earlier versions of Excel. The only differences will be cosmetic.

I have purposely designed this book to be a reference tool that you can dip in and out of as needed. There is no need to read it from cover to cover unless you want to learn about every aspect of data tables and pivot tables.

Accompanying Spreadsheet

A spreadsheet containing the example data from the exercises in this book is available from; www.excel-expert.com/downloads/

It is free and no sign up is required.

While there, why not sign up for our newsletter and get free Kindle copies of my future books? We have a whole series of Excel books lined up and each of them will be available for free at launch – these offers only last for 5 days each so you have to be quick!

About the Author.

For the 10 years prior to becoming a freelance Excel consultant, I was a systems and procedures analyst for one of the UK's largest motor Insurance companies, Admiral Insurance. It meant I lived and breathed spreadsheets, day in, day out. Which meant my Excel skills just grew and grew. And before I knew it, I had become the Excel go to guy in and outside of Admiral Insurance.

When I investigated what Excel services were available for local businesses, I was shocked to find that other than training services, there was nothing. Even on a national level there were very few options available. So, I decided to turn my Excel skills in to a career and set out to help businesses make the most of Excel.

I established Excel-Expert.com in 2009 and since then I have gained clients from all around the world including Pepsico, Walmart and General Mills. Since starting out, I have helped companies of all sizes make the most of Excel and in that process, I have helped them save thousands of hours a year.

This Book is Dedicated To

My family Kaiiden, Leiland, Lawson, Debbie, Sophie & Ryan

Data Tables.

Chapter 1

An Introduction to Data Tables .

A data table is a special range of cells that can be used for data analysis. You can experiment with the values in some of the cells and quickly come up with a completely new solution to your problem. This allows you to carry out some very quick “What if” analysis without impacting on your source data. If used correctly it can be one of the most powerful tools in your arsenal.

Chapter 2

Creating a Data Table.

For the purposes of this exercise we will use the sales data from a fictitious sales team. They have 5 sales members spread over 3 offices and they report quarterly. The raw data can be found in the DT 1 tab of the [accompanying spreadsheet](#), and it looks like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
2	Gibson	Bristol	£88,705	Q3
3	Gibson	Bristol	£76,165	Q1
4	Griffiths	Cardiff	£26,576	Q3
5	James	Bristol	£14,487	Q1
6	Gibson	Bristol	£66,621	Q2
7	James	Bristol	£75,935	Q3
8	Hawkins	London	£106,870	Q2
9	Hawkins	London	£11,412	Q1
10	Griffiths	Cardiff	£27,357	Q1
11	Griffiths	Cardiff	£27,742	Q2
12	Andrews	Cardiff	£11,944	Q3
13	Andrews	Cardiff	£34,151	Q4
14	Andrews	Cardiff	£107,074	Q2
15	Hawkins	London	£44,268	Q3
16	Andrews	Cardiff	£44,495	Q1
17	James	Bristol	£28,858	Q4
18	Griffiths	Cardiff	£102,116	Q4
19	Hawkins	London	£86,343	Q4
20	Gibson	Bristol	£35,216	Q4
21	James	Bristol	£45,654	Q2

Fig 2-1 – The data for our exercise.

To create a data table from our data we follow these steps.

1. Click on any cell that contains data
2. On the **Insert** tab of the main ribbon click **Table**.

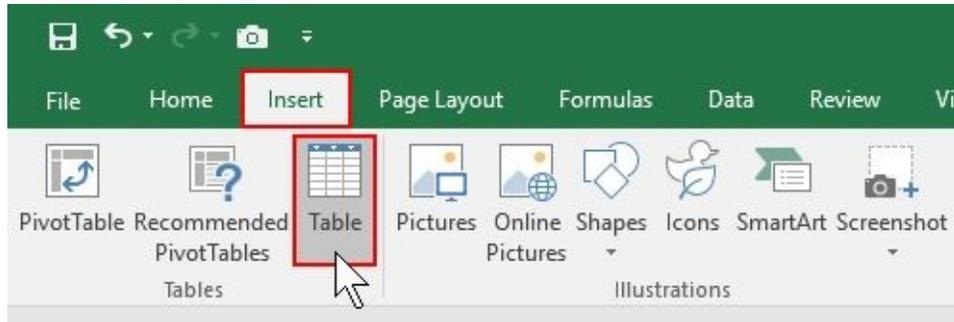


Fig 2-2 – Inserting a data table.

3. This will bring up the **Create Table** window which looks like this;

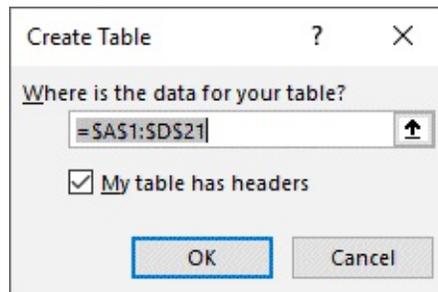


Fig 2-3 – The Create Table window.

Excel automatically detects the create range for you. Should Excel get it wrong edit the selection as required.

If your table has headers (our example does) ensure the **My table has headers** check box is ticked.

4. Click **OK**.

Our data table will now look like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
2	Gibson	Bristol	£88,705	Q3
3	Gibson	Bristol	£76,165	Q1
4	Griffiths	Cardiff	£26,576	Q3
5	James	Bristol	£14,487	Q1
6	Gibson	Bristol	£66,621	Q2
7	James	Bristol	£75,935	Q3
8	Hawkins	London	£106,870	Q2
9	Hawkins	London	£11,412	Q1
10	Griffiths	Cardiff	£27,357	Q1
11	Griffiths	Cardiff	£27,742	Q2
12	Andrews	Cardiff	£11,944	Q3
13	Andrews	Cardiff	£34,151	Q4
14	Andrews	Cardiff	£107,074	Q2
15	Hawkins	London	£44,268	Q3
16	Andrews	Cardiff	£44,495	Q1
17	James	Bristol	£28,858	Q4
18	Griffiths	Cardiff	£102,116	Q4
19	Hawkins	London	£86,343	Q4
20	Gibson	Bristol	£35,216	Q4
21	James	Bristol	£45,654	Q2

Fig 2-4 – Our new data table.

It is worth noting at this point, that while you have a cell in the data table selected you will have access to the **Table Tools** section of the Excel ribbon. If you click a cell outside of the data table, the **Table Tools** section of the Excel ribbon will vanish. To get it back simply click on the data table.

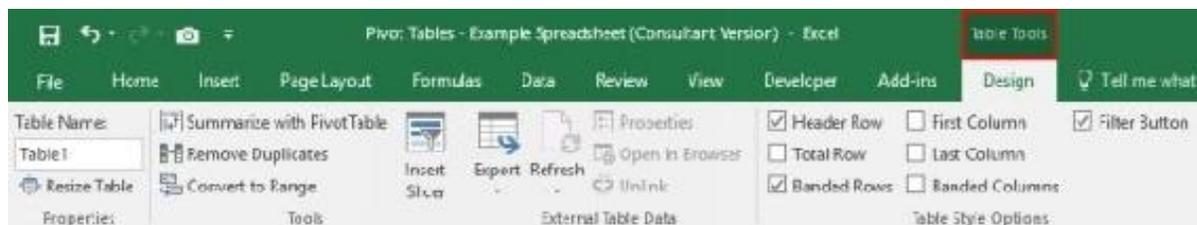


Fig 2-5 – The Table Tools section of the Excel ribbon.

Chapter 3

Sorting a Data Table.

Sorting a data table just takes a couple of clicks. In this exercise, we will sort our data by name and then sales. To ensure things get sorted in to the right order we must sort our data by sales and then by name.

1. Click on the down area next to the **Sales** heading.
2. Click on **Sort Largest to Smallest**.
3. Click on **OK**.

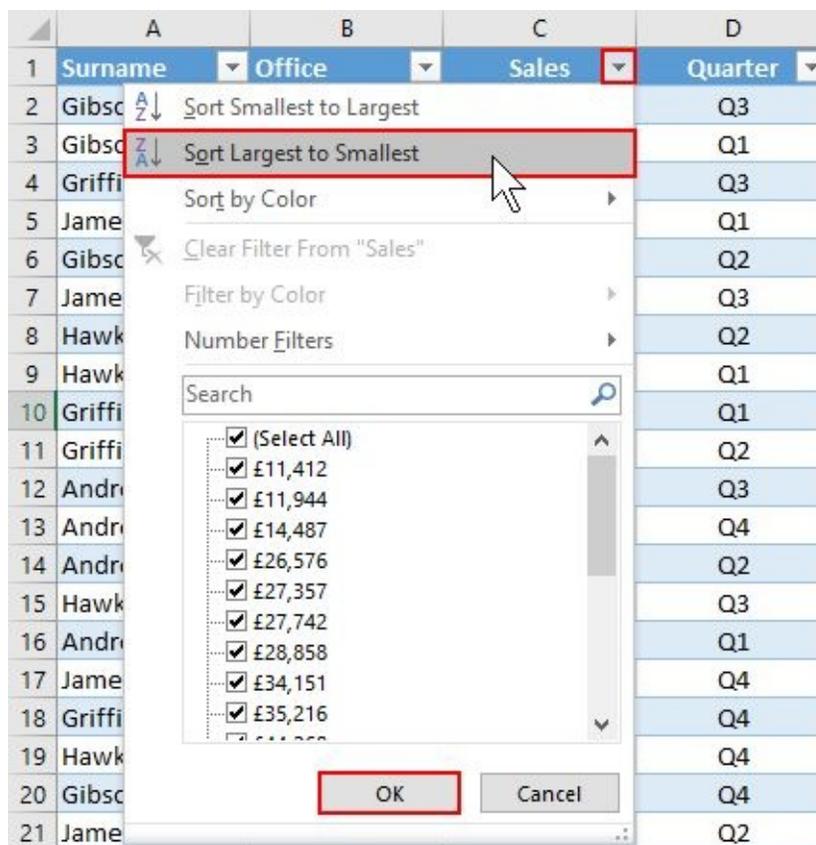


Fig 3-1 – Sorting our data table by sales.

4. Click on the down arrow next to the **Surname** heading.
5. Click on **Sort A to Z**.
6. Click on **OK**.

1	Surname	Office	Sales	Quarter
	Sort A to Z		8,705	Q3
	Sort Z to A		6,165	Q1
	Sort by Color		6,576	Q3
	Clear Filter From "Surname"		4,487	Q1
	Filter by Color		6,621	Q2
	Text Filters		5,935	Q3
	Search		06,870	Q2
	<input checked="" type="checkbox"/> (Select All)		1,412	Q1
	<input checked="" type="checkbox"/> Andrews		7,357	Q1
	<input checked="" type="checkbox"/> Gibson		7,742	Q2
	<input checked="" type="checkbox"/> Griffiths		1,944	Q3
	<input checked="" type="checkbox"/> Hawkins		4,151	Q4
	<input checked="" type="checkbox"/> James		07,074	Q2
			4,268	Q3
			4,495	Q1
			8,858	Q4
			02,116	Q4
			6,343	Q4
			5,216	Q4
			5,654	Q2

Fig 3-2 – Sorting our data table by surname.

Our resultant table will look like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
2	Andrews	Cardiff	£107,074	Q2
3	Andrews	Cardiff	£44,495	Q1
4	Andrews	Cardiff	£34,151	Q4
5	Andrews	Cardiff	£11,944	Q3
6	Gibson	Bristol	£88,705	Q3
7	Gibson	Bristol	£76,165	Q1
8	Gibson	Bristol	£66,621	Q2
9	Gibson	Bristol	£35,216	Q4
10	Griffiths	Cardiff	£102,116	Q4
11	Griffiths	Cardiff	£27,742	Q2
12	Griffiths	Cardiff	£27,357	Q1
13	Griffiths	Cardiff	£26,576	Q3
14	Hawkins	London	£106,870	Q2
15	Hawkins	London	£86,343	Q4
16	Hawkins	London	£44,268	Q3
17	Hawkins	London	£11,412	Q1
18	James	Bristol	£75,935	Q3
19	James	Bristol	£45,654	Q2
20	James	Bristol	£28,858	Q4
21	James	Bristol	£14,487	Q1

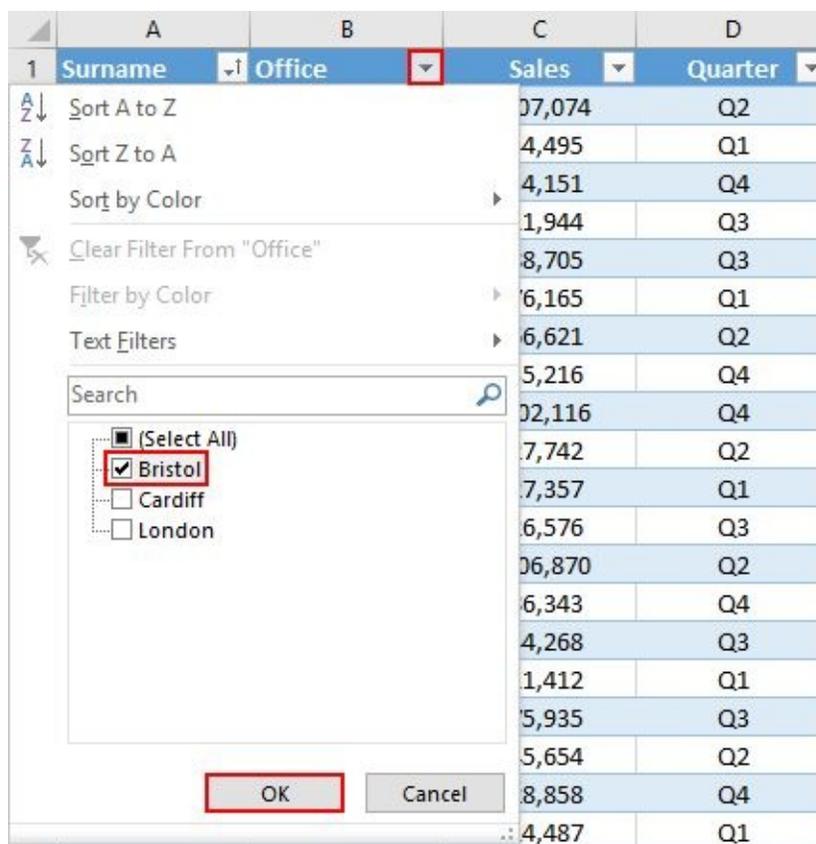
Fig 3-3 – Our sorted data table.

Chapter 4

Filtering a Data Table.

Filtering our data is equally easier. If we wanted to see our sales figures for Bristol during the quarter 2, we would follow these steps;

1. Click on the down arrow on the **Office** heading.
2. Click on the **(Select All)** tick box – this should deselect everything.
3. Click on the **Bristol** tick box.
4. Click on **OK**.



The screenshot shows an Excel spreadsheet with columns A (Surname), B (Office), C (Sales), and D (Quarter). A filter dropdown menu is open for the 'Office' column. The menu includes options for sorting, clearing filters, and filtering by color. Under 'Text Filters', there is a search box and a list of checkboxes: (Select All), Bristol (checked), Cardiff, and London. The 'OK' button is highlighted with a red box.

	A	B	C	D
1	Surname	Office	Sales	Quarter
	Sort A to Z		07,074	Q2
	Sort Z to A		4,495	Q1
	Sort by Color		4,151	Q4
	Clear Filter From "Office"		1,944	Q3
	Filter by Color		8,705	Q3
	Text Filters		6,165	Q1
	Search		6,621	Q2
	<input checked="" type="checkbox"/> (Select All)		5,216	Q4
	<input checked="" type="checkbox"/> Bristol		02,116	Q4
	<input type="checkbox"/> Cardiff		7,742	Q2
	<input type="checkbox"/> London		7,357	Q1
			6,576	Q3
			06,870	Q2
			6,343	Q4
			4,268	Q3
			1,412	Q1
			5,935	Q3
			5,654	Q2
			8,858	Q4
			4,487	Q1

Fig 4-1 – Filtering our data by the Bristol office.

5. Click on the down arrow on the **Quarter** heading.
6. Click on the **(Select All)** tick box – this should deselect everything.
7. Click on the **Q2** tick box.
8. Click on **OK**.

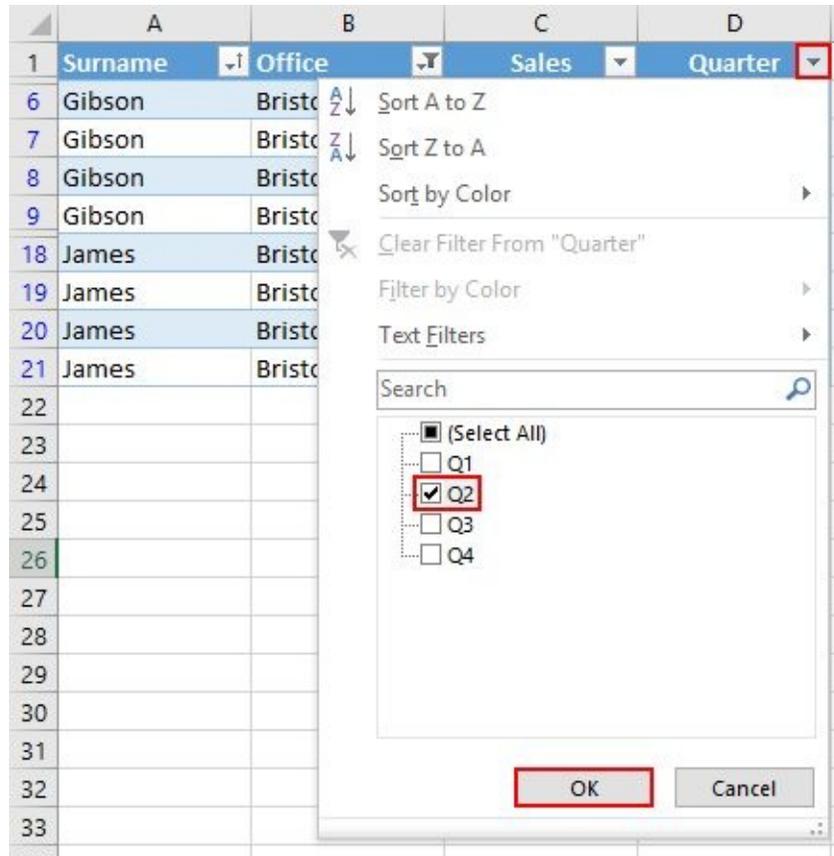


Fig 4-2 – Filtering our data by quarter.

Our resultant table should look like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
8	Gibson	Bristol	£66,621	Q2
19	James	Bristol	£45,654	Q2

Fig 4-3 – Our filtered table.

Note that the **Office** and **Quarter** headings now have a filtered symbol to show they are filtered.

Chapter 5

Summarising a Data Table.

If we want to show a sales total at the bottom of our table or even the average sale, we follow these steps.

1. Click on one of the cells in the data table – this will ensure the **Table Tools** section of the ribbon is available.
2. Click on the **Design** sub area of the ribbon.
3. Click on the **Total Row** tick box.

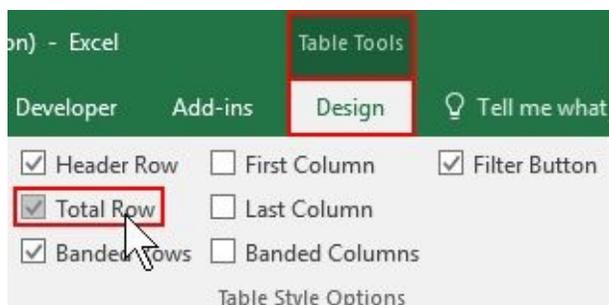


Fig 5-1 – Adding a total row.

This updates our table to look like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
6	Gibson	Bristol	£66,621	Q2
21	James	Bristol	£45,654	Q2
22	Total			2

Fig 5-2 – The first stage of adding a total row.

This obviously only shows a count rather than a total. To get a sales total we carry out these further steps.

4. Click on the cell where the sales total should be – in this case that is cell C22.
5. Click on the down arrow that appears next to the cell.
6. Select **Sum** from the drop down that appears – if you want the average sales value select **Average** instead.

	A	B	C	D
1	Surname	Office	Sales	Quarter
6	Gibson	Bristol	£66,621	Q2
21	James	Bristol	£45,654	Q2
22	Total			2
23				
24				
25				
26				
27				
28				
29				

Fig 5-3 – Adding the sum of our sales to the total rows.

This will update our table to look like this;

	A	B	C	D
1	Surname	Office	Sales	Quarter
6	Gibson	Bristol	£66,621	Q2
21	James	Bristol	£45,654	Q2
22	Total		£112,275	2

Fig 5-4 – Our totaled sales value.

Note that the sales total is the total of the filtered table. If you un-filter or filter the table differently the total will automatically update its self.

Chapter 6

Structured References.

Structured references make formulas in your data table easier to understand and follow. In this exercise, we will add a column to calculate a 10% commission.

1. Remove the filters from our table, so the table looks like this;

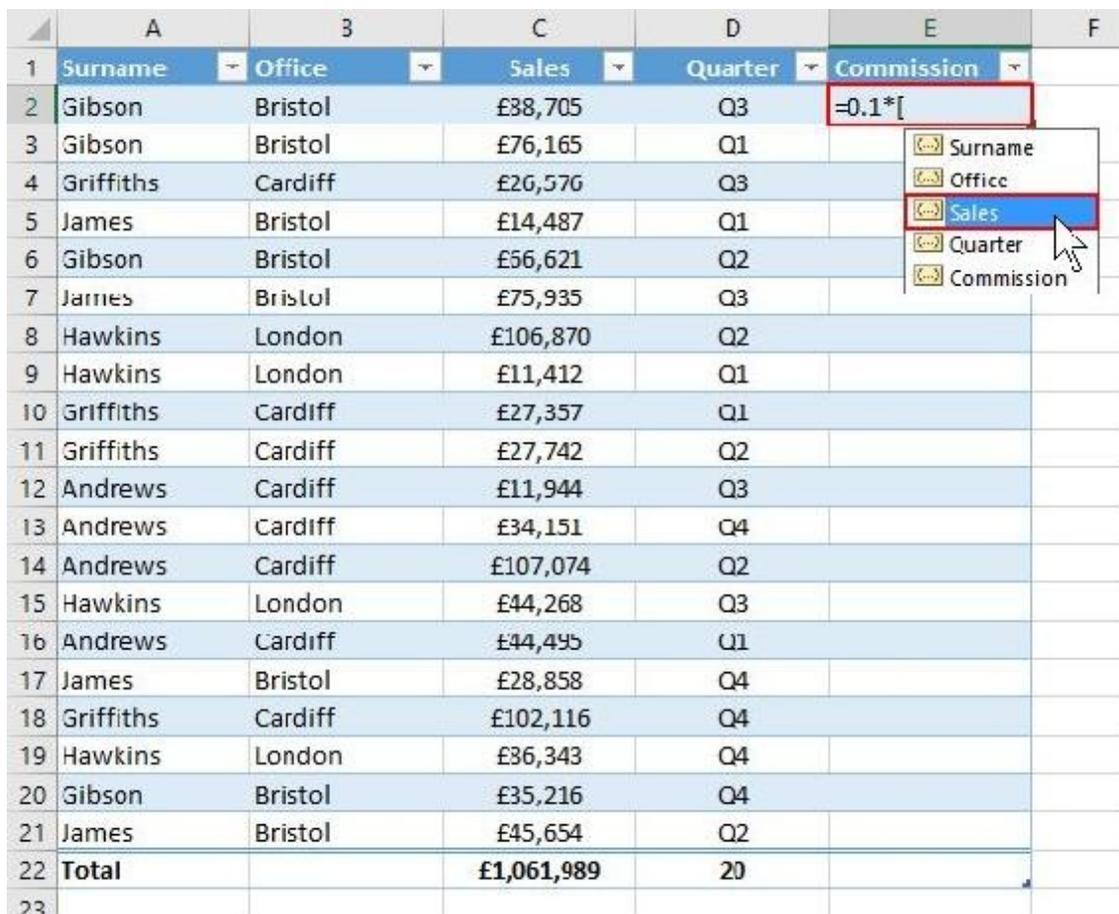
	A	B	C	D
1	Surname	Office	Sales	Quarter
2	Gibson	Bristol	£88,705	Q3
3	Gibson	Bristol	£76,165	Q1
4	Griffiths	Cardiff	£26,576	Q3
5	James	Bristol	£14,487	Q1
6	Gibson	Bristol	£66,621	Q2
7	James	Bristol	£75,935	Q3
8	Hawkins	London	£106,870	Q2
9	Hawkins	London	£11,412	Q1
10	Griffiths	Cardiff	£27,357	Q1
11	Griffiths	Cardiff	£27,742	Q2
12	Andrews	Cardiff	£11,944	Q3
13	Andrews	Cardiff	£34,151	Q4
14	Andrews	Cardiff	£107,074	Q2
15	Hawkins	London	£44,268	Q3
16	Andrews	Cardiff	£44,495	Q1
17	James	Bristol	£28,858	Q4
18	Griffiths	Cardiff	£102,116	Q4
19	Hawkins	London	£86,343	Q4
20	Gibson	Bristol	£35,216	Q4
21	James	Bristol	£45,654	Q2
22	Total		£1,061,989	20

Fig 6-1 – Our unfiltered table.

2. Click on the cell immediately to the right of our headers. In our spreadsheet that is cell **E1**.
3. Type in the word **Commission**. This adds a new blank column to our

table.

- Click on the cell immediately below our new **Commission** header. In our table that is cell **E2**.
- Type in the formula
$$=0.1*[$$
- The **[** indicates to Excel that you want to insert a structured reference here, so it displays a list of available *structured references* – from here select the **Sales** option.



	A	B	C	D	E	F
1	Surname	Office	Sales	Quarter	Commission	
2	Gibson	Bristol	£38,705	Q3	=0.1*[
3	Gibson	Bristol	£76,165	Q1		
4	Griffiths	Cardiff	£26,576	Q3		
5	James	Bristol	£14,487	Q1		
6	Gibson	Bristol	£56,621	Q2		
7	James	Bristol	£75,935	Q3		
8	Hawkins	London	£106,870	Q2		
9	Hawkins	London	£11,412	Q1		
10	Griffiths	Cardiff	£27,357	Q1		
11	Griffiths	Cardiff	£27,742	Q2		
12	Andrews	Cardiff	£11,944	Q3		
13	Andrews	Cardiff	£34,151	Q4		
14	Andrews	Cardiff	£107,074	Q2		
15	Hawkins	London	£44,268	Q3		
16	Andrews	Cardiff	£44,495	Q1		
17	James	Bristol	£28,858	Q4		
18	Griffiths	Cardiff	£102,116	Q4		
19	Hawkins	London	£36,343	Q4		
20	Gibson	Bristol	£35,216	Q4		
21	James	Bristol	£45,654	Q2		
22	Total		£1,061,989	20		
23						

Fig 6-2 – Entering our formula using Structured References.

- Complete the formula by adding a **]** to the end and press enter. Your formula should now read;

$$=0.1*[Sales]$$

Excel will now auto complete the Commission column so it looks like this;

	A	B	C	D	E
1	Surname	Office	Sales	Quarter	Commission
2	Gibson	Bristol	£88,705	Q3	£8,871
3	Gibson	Bristol	£76,165	Q1	£7,617
4	Griffiths	Cardiff	£26,576	Q3	£2,658
5	James	Bristol	£14,487	Q1	£1,449
6	Gibson	Bristol	£66,621	Q2	£6,662
7	James	Bristol	£75,935	Q3	£7,594
8	Hawkins	London	£106,870	Q2	£10,687
9	Hawkins	London	£11,412	Q1	£1,141
10	Griffiths	Cardiff	£27,357	Q1	£2,736
11	Griffiths	Cardiff	£27,742	Q2	£2,774
12	Andrews	Cardiff	£11,944	Q3	£1,194
13	Andrews	Cardiff	£34,151	Q4	£3,415
14	Andrews	Cardiff	£107,074	Q2	£10,707
15	Hawkins	London	£44,268	Q3	£4,427
16	Andrews	Cardiff	£44,495	Q1	£4,450
17	James	Bristol	£28,858	Q4	£2,886
18	Griffiths	Cardiff	£102,116	Q4	£10,212
19	Hawkins	London	£86,343	Q4	£8,634
20	Gibson	Bristol	£35,216	Q4	£3,522
21	James	Bristol	£45,654	Q2	£4,565
22	Total		£1,061,989	20	

Fig 6-3 – Our completed Commission column.

Referring to Structured References in Formulas.

We can also refer to these Structured References outside of our table. In this exercise, we will create a formula that totals the commission to be paid.

1. Click on a cell in the data table.
2. From the **Table Tools** ribbon select the **Design** sub ribbon.
3. In the **Table Name** field enter a name for the table. For this exercise, we will call it **Sales_Data**.

The screenshot shows an Excel spreadsheet with a PivotTable. The PivotTable is named 'Sales_Data' and is located in the range A1:E22. The columns are Surname, Office, Sales, Quarter, and Commission. The data is summarized by Quarter. The total commission for all quarters is £106,198.90.

Surname	Office	Sales	Quarter	Commission
Gibson	Bristol	£38,700	Q3	£3,871
Gibson	Bristol	£76,165	Q1	£7,617
Griffiths	Cardiff	£26,576	Q3	£2,656
James	Bristol	£14,487	Q1	£1,449
Gibson	Bristol	£56,621	Q2	£5,662
James	Bristol	£75,935	Q3	£7,594
Hawkins	London	£106,870	Q2	£10,687
Hawkins	London	£11,412	Q1	£1,141
Griffiths	Cardiff	£27,357	Q1	£2,736
Griffiths	Cardiff	£27,742	Q2	£2,774
Andrews	Cardiff	£11,944	Q3	£1,194
Andrews	Cardiff	£34,151	Q4	£3,415
Andrews	Cardiff	£107,074	Q2	£10,707
Hawkins	London	£14,268	Q3	£1,427
Andrews	Cardiff	£44,495	Q1	£4,450
James	Bristol	£28,858	Q4	£2,886
Griffiths	Cardiff	£102,116	Q1	£10,212
Hawkins	London	£36,343	Q4	£3,634
Gibson	Bristol	£35,216	Q4	£3,522
James	Bristol	£45,654	Q2	£4,565
Total		£1,061,989	Q3	

Fig 6-4 – Renaming our data table.

- Click on any cell outside of the table and enter the formula;
=SUM(Sales_Data[Commission])
- This will result in the total commission being calculated. In our example table this comes to £106,198.90.

Chapter 7

What If Analysis with Data Tables.

What-If analysis is a quick way of applying different values in your formulas. Applying different values is known as applying different scenarios. In this chapter, we will quickly take a look at how these are used in the real world.

For the purposes of this exercise we will use stock data from a computer shop. They have 100 computers sitting in the store room and the older they get, the greater their devaluation. They decide to sell a percentage of computers at a higher price (£500) and the remaining percentage at a lower price (£250). The raw data can be found in the DT 2 tab of the [accompanying spreadsheet](#), and it looks like this;

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					

Fig 7-1 – Our What-If spreadsheet.

This is a rundown of what each cell does

- In cell **B3** we enter the number of computers we have in stock (100).
- In cell **C3** we enter the percentage of computers to be sold at the full price (75%).
- In cell **D6** we enter the unit cost of the higher price (£500).
- In cell **D7** we enter the unit cost of the lower price (£250).
- Cells **C6** and **C7** calculates how many computers are sold in each price band.

- Cells **E6** and **E7** calculates the values of the sales in each price band.
- Cell **E8** calculates the total value of all the sales.

By changing the values in the relevant cells, we can experiment with different percentage splits, initial stock levels and unit prices.

Creating Different Scenarios.

The above solution is very manual and only produces one result at a time. How do we generate a table with all the required variations? In this exercise, we will generate results for 50%, 60%, 70%, 80%, 90% and 100% sales at the higher price band.

1. In the **Data** section of the Excel ribbon, select **What-If Analysis** and then **Scenario Manager....**



Fig 7-2 – Opening the Scenario Manager.

2. When the **Scenario Manager** window opens click on the **Add** button to add a scenario.

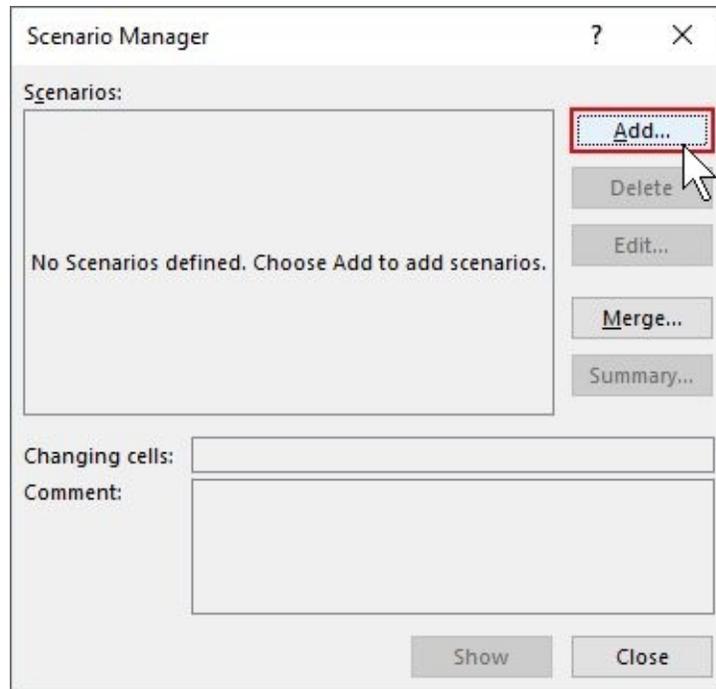


Fig 7-3 – The Scenario Manager.

3. Enter “**50% Highest Band**” in the **Scenario Name** field.
4. Enter **\$C\$3** in the **Changing Cells** field.
5. If you want to record details of the scenario, enter it in the **Comments** field.
6. Click **OK**.

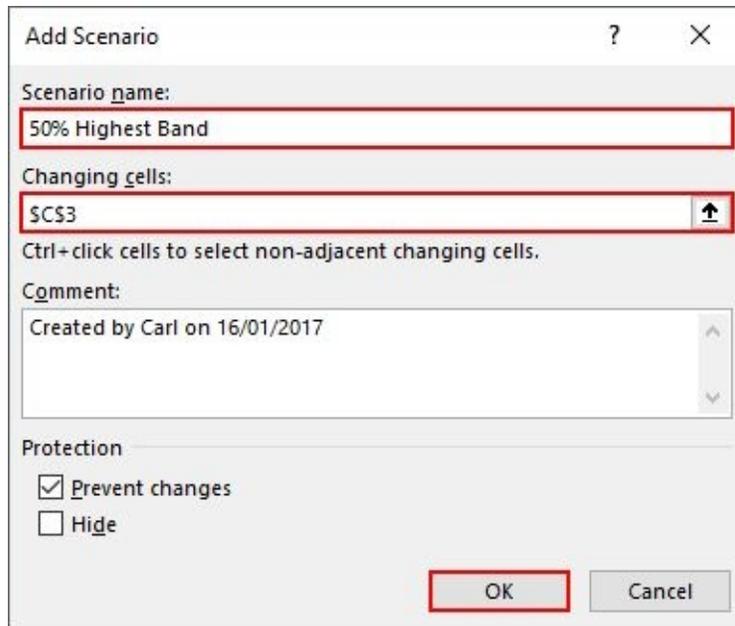


Fig 7-4 – The Scenario Manager.

7. When the **Scenario Values** window opens, enter **0.5** (for 50%) and click **OK**.

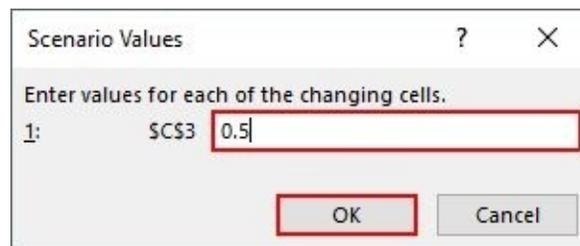


Fig 7-5 – Scenario Values.

8. Repeat these steps for each of the percentages (0.6, 0.7, 0.8, 0.9 and 1.0) until the **Scenario Manager** looks like this;

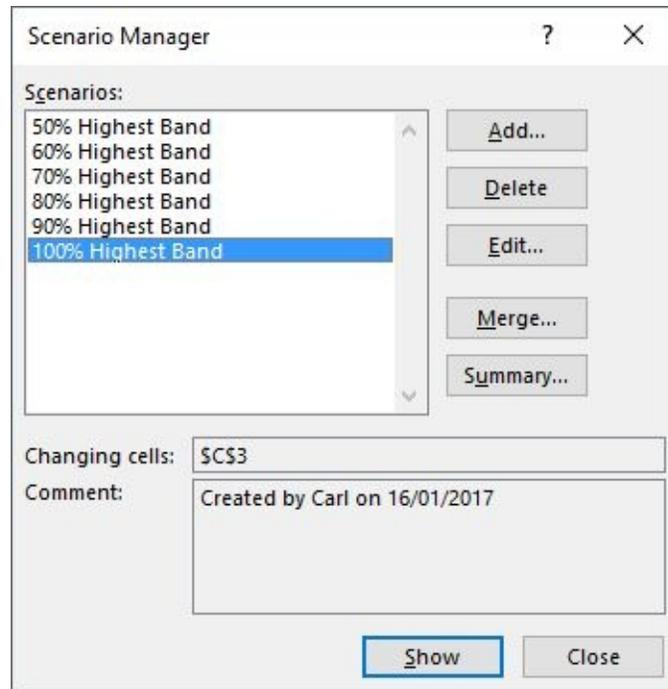


Fig 7-6 – Our collection of scenarios.

9. Click the **Close** button on the **Scenario Manager**.

Creating a Scenario Summary.

The next stage is to create a summary of our results.

1. In the **Data** section of the Excel ribbon, select **What-If Analysis** and then **Scenario Manager....**
2. Click on the **Summary...** button.
3. When the **Scenario Summary** opens enter **=E\$8** in the Results Cells field. This is the cell that holds the overall total, which is the value we want to see how it is impacted upon by the changing percentages.
4. Click the **OK** button.

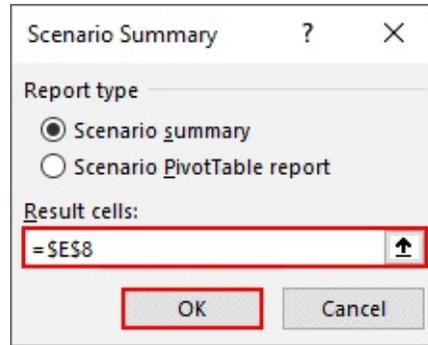


Fig 7-7 – Defining our Scenario Summary.

This will generate a new Scenario Summary sheet with a table that looks like this;

Scenario Summary		Current values	50% highest band	60% highest band	70% highest band	80% highest band	90% highest band	100% highest band
Changing Cells:		\$C\$3	30%	30%	60%	70%	80%	100%
Result Cells:		\$E\$8	£17,000	£17,000	£20,000	£22,000	£26,000	£30,000

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Fig 7-8 – Our Scenario Summary.

Chapter 8

Using the Goal Seeker.

So, what happens if you know sales you want to generate, but don't know how many computers you would need to sell in the highest band to make that happen? In this exercise, we will work out how many full price computers we need to sell to generate £41,000 in sales.

Return to the DT 2 tab of the [accompanying spreadsheet](#) which looks like this;

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					

Fig 8-1 – Our What-If spreadsheet.

1. In the **Data** section of the Excel ribbon, select **What-If Analysis** and then **Goal Seek...**

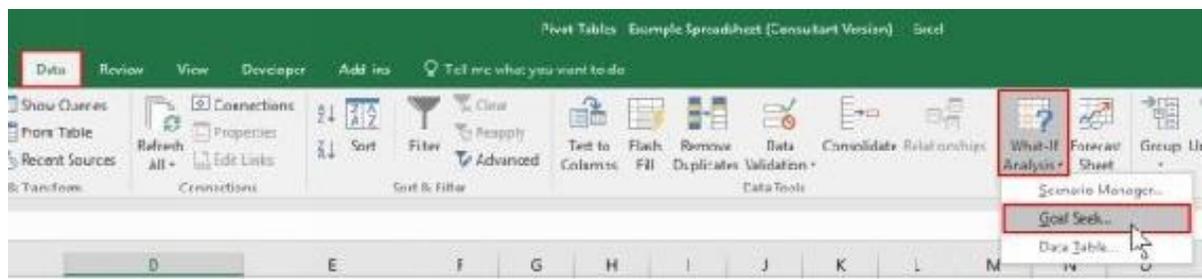


Fig 8-2 – Finding the Goal Seek option.

2. When the **Goal Seek** window opens enter **\$E\$8** in the **Set Cell** field.

This is the cell we want to equal our target sales figure of £41,000.

3. Enter 41000 in the To Value field. This is the sales target we want to achieve.
4. In the **By Changing Cell** field enter **\$C\$3**. This is the percentage we want to find in order to achieve our £41,000 target.
5. Click **OK**.

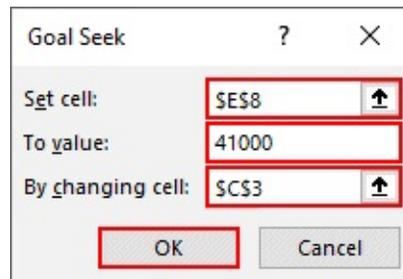


Fig 8-3 – Setting our Goal Seek parameters.

This will bring up a confirmation message like this;

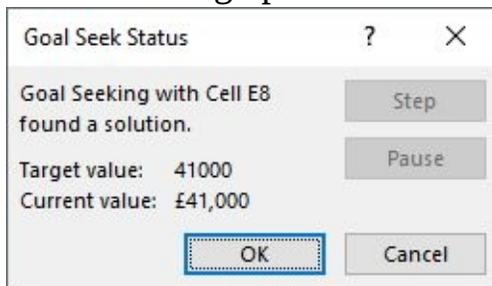


Fig 8-4 – Goal seek confirmation message.

When you click the **OK** button, Excel will insert **64%** into cell **C3**. This produces our desired result of **£41,000** in cell **E8**.

What-If Data Tables.

Instead of manually inputting all of the various scenarios we can quickly and easily create a What-If data table. These data tables come in two flavors, a one-variable data table or a two-variable data table. We will look at each in this

section.

One-Variable Data Table.

Once again, we will return to the **DT 2** tab of the [accompanying spreadsheet](#). To create a one-variable data table, we take the following steps;

1. Select the cell **C10** and enter the formula;
=E8
2. In cells **B11** to **B16** enter the required percentages.
3. Select the range **B10:C16**.

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					
10			£43,750		
11		50%			
12		60%			
13		70%			
14		80%			
15		90%			
16		100%			
17					

Fig 8-5 – Preparing to create a One-Variable Data Table.

4. In the **Data** section of the Excel ribbon, select **What-If Analysis** and then **Data Table....**

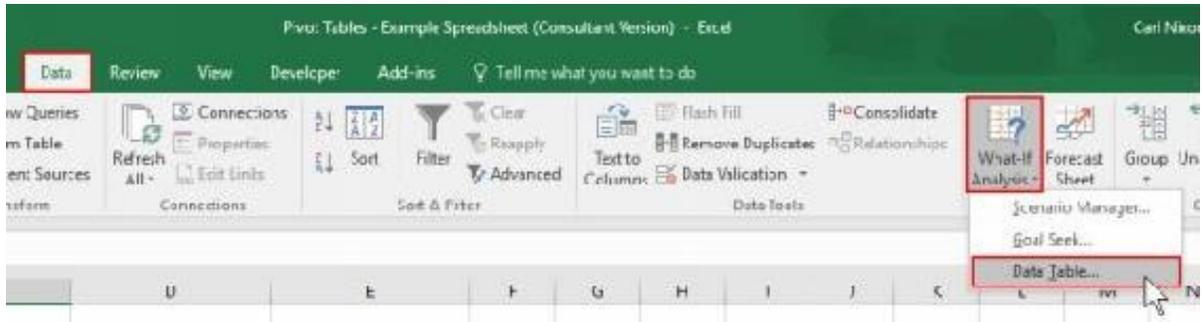


Fig 8-6 – Starting our One-Variable Data Table.

5. When the **Data Table** window opens, enter **\$C\$3** in the **Column Input Cell** field. This tells Excel to insert each of the values in the first of our selected columns, in to cell **C3** so it can calculate all of the values.
6. Click the **OK** button.

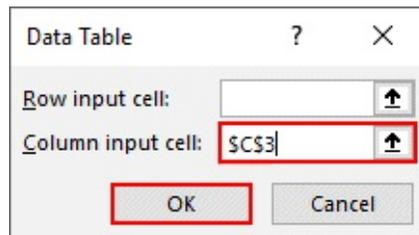


Fig 8-7 – The Data Table window.

This will update our selection to look like this;

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					
10			£43,750		
11		50%	£37,500		
12		60%	£40,000		
13		70%	£42,500		
14		80%	£45,000		
15		90%	£47,500		
16		100%	£50,000		
17					

Fig 8-8 – Our completed One-Variable Data Table.

We now have a table that shows us the total sales for 7 different percentages.

So, what happens if we want to experiment with both percentages and the higher unit price? In this case, we use a two-variable data table.

Two-Variable Data Table

Once again, we will return to the DT 2 tab of the [accompanying spreadsheet](#). To create a two-variable data table, we take the following steps;

1. Select the cell **B10** and enter the formula;

$$=E8$$
2. In cells **B11** to **B16** enter the required percentages.
3. In cells **C10** to **E10** enter the required unit prices.
4. Select the range **B10:E16**.

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					
10		£43,750	£500	£600	£700
11		50%			
12		60%			
13		70%			
14		80%			
15		90%			
16		100%			

Fig 8-9 – Setting up our Two-Variable Data Table.

5. In the **Data** section of the Excel ribbon, select **What-If Analysis** and then **Data Table....**



Fig 8-10 – Starting our Two-Variable Data Table.

6. When the **Data Table** window opens, enter **\$C\$3** in the **Column Input Cell** field. This tells Excel to insert each of the values in the first of our selected columns, in to cell **C3** so it can calculate all of the values.
7. Enter **\$D\$6** in the **Row Input Cell** field. This tells Excel to insert each of the values in the first of our selected rows, in to cell **D6** so it

can calculate all of the values.

8. Click the **OK** button.

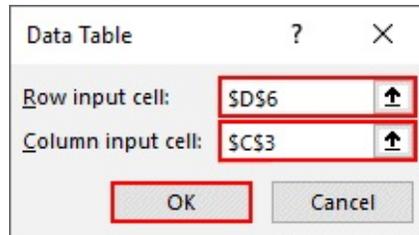


Fig 8-11 – The Data Table window.

This will update our selection to look like this;

	A	B	C	D	E
1					
2		Total number of computers in stock	% of Computers Sold at Higher Price		
3		100	75%		
4					
5			Number of Computers	Unit Price	Sub Totals
6		Higher Price	75	£500	£37,500
7		Lower Price	25	£250	£6,250
8				Total Sales	£43,750
9					
10		£43,750	£500	£500	£700
11		50%	£37,500	£42,500	£47,500
12		60%	£40,000	£46,000	£52,000
13		70%	£42,500	£49,500	£56,500
14		80%	£45,000	£53,000	£61,000
15		90%	£47,500	£56,500	£65,500
16		100%	£50,000	£60,000	£70,000
17					

Fig 8-12 – Our completed Two-Variable Data Table.

Our table now shows every variation of percentage and higher price band.

Chapter 9

Adding a Bit of Style.

You are not stuck with the default blue layout that Excel automatically gives your table. You have a whole range of colour themes available to you, as well as the ability to create your own theme. Follow these steps to change your tables theme.

1. Click on any cell in your data table.
2. In the **Table Tools** ribbon select the **Design** sub ribbon.
3. In the **Table Styles** area pull down the selections available by clicking on the down arrow with the horizontal line above it. (Bottom right corner).
4. Click on the style that you want. In this example, we are choosing a green style.

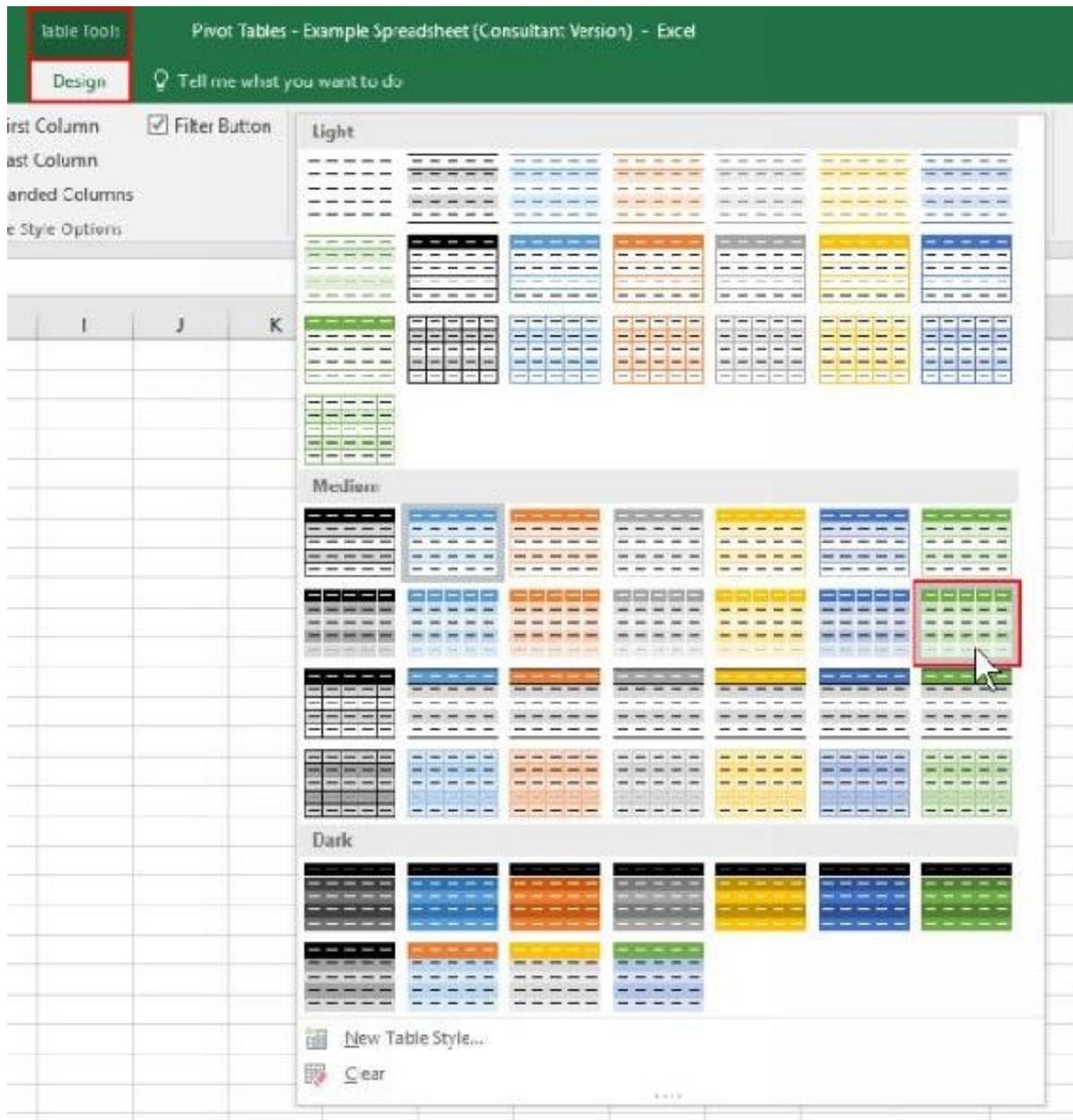


Fig 9-1 – Choosing our new style.

Note – If you wanted to create your own style you would click on **New Table Style...** rather than a readymade theme.

If you wanted to return the data table back to a range and keep the styling, do the following

1. Click on a cell in the data table.
2. In the **Table Tools** ribbon select the **Design** sub ribbon.

3. In the **Tools** section click on **Convert to Range**.

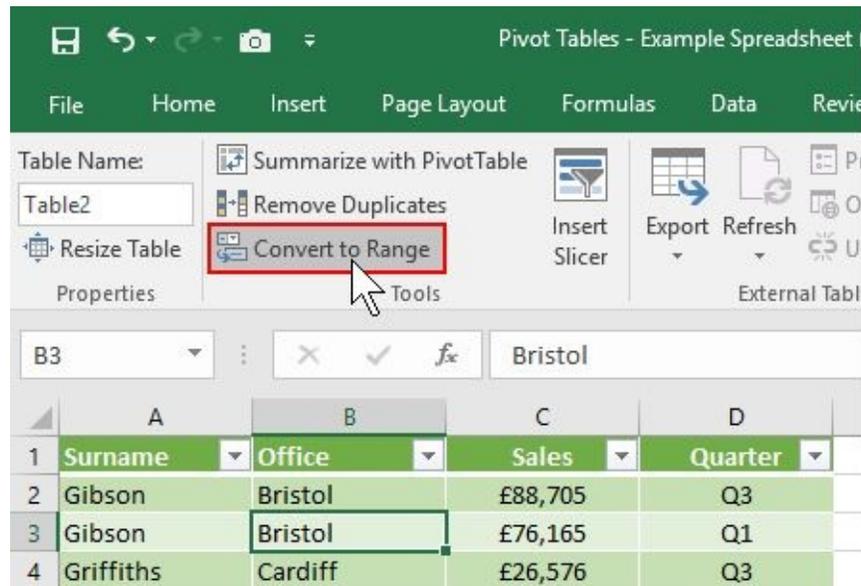


Fig 9-2 – Converting our table to a range.

4. Excel will ask you to confirm that you want to convert the table to a normal range – click **Yes**.

Your data table has now been converted to an ordinary range.

Pivot Tables.

Chapter 10

An Introduction to Pivot Tables.

Pivot Tables are data summarization tools and have been around for almost as long as spreadsheets have been. Pivot Tables were first added to Excel in Excel 5, back in 1994. However, by this time Pivot Tables had already been around for a fair few years and were nothing new. They were first introduced in Lotus Improv on the NeXT platform back in 1991.

So, if Pivot Tables have been around so long and are so powerful, why are they still such a mystery to most people and feared by others?

In this section of the book we will demystify Pivot Tables and learn how to wield their powers in your spreadsheets. We recommend that you download the [accompanying spreadsheet](#).

Chapter 11

Creating a Pivot Table.

In the first part of this tutorial we will build a simple pivot table and look at some of the possibilities they offer us.

Example Data for Our Pivot Table.

We will use data from a fictitious furniture company called “Sofa, So Good”. They have 6 stores around the UK and have 5 different lines (beds, single seaters, multiple seaters, storage and tables). The raw data can be found in the **PT 1** tab of the [accompanying spreadsheet](#).

	A	E	C	D	E	F
1	Order Numbr	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 15	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 15	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 15	£122.63
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32

Fig 11-1 – Some of the annual sales data from “Sofa, So Good”.

Without manual processing, we have no idea of the value of sales per model, type of furniture or even store. This is where the power of pivot tables come in.

Stage 1 – Creating Our Pivot Table.

Now we get to create our first pivot table and it only takes a few clicks! It really is that easy.

1. Click on any cell within your data (it does not matter which one).
2. Go to the Insert tab of the Excel ribbon and click on the Pivot Table option.

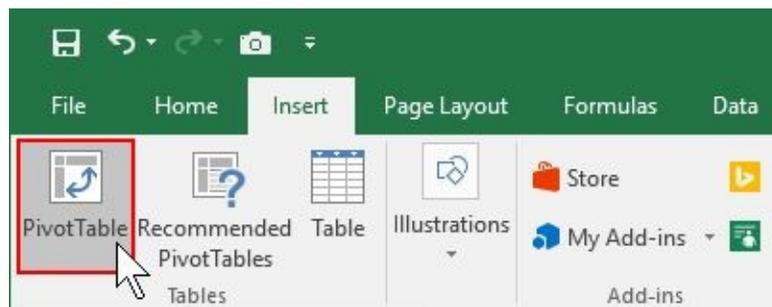


Fig 11-2 – Selections to insert a pivot table.

That will bring up this pop up form.

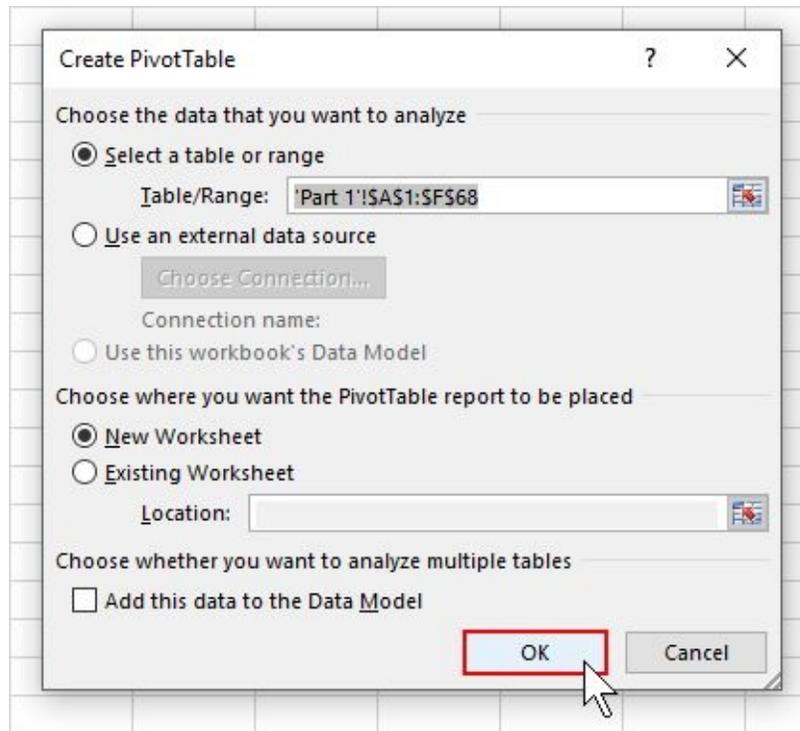


Fig 11-3 – Create Pivot Table pop up form.

There are two basic settings on this form. **Choose the data that you want to analyse** *i.e.* where is the source data and **Choose where you want your Pivot Table report to be placed** *i.e.* where you want your pivot table to appear.

Excel would have automatically selected the data range for you based on the cell you had selected in the first stage.

When it comes to placing the Pivot Table report, it is good practice in Excel to keep reports and data separate, so leave the **New Worksheet** selected.

3. When happy with your selections click **OK**.

This will take you to your blank pivot table report and your screen will look like this;

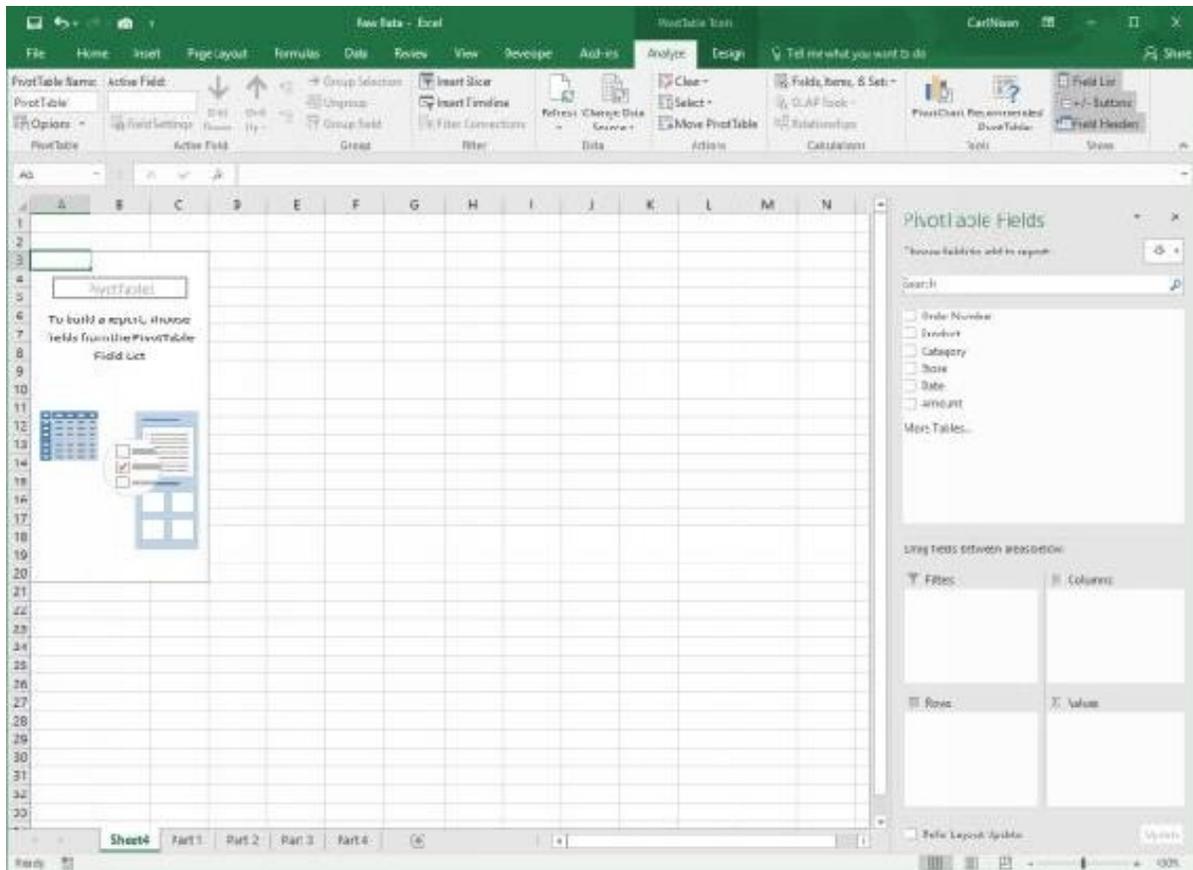


Fig 11-4 – Our blank Pivot Table ready for populating.

To the left, we can see our blank and unpopulated **Pivot Table**. To the right of the spreadsheet is the **Pivot Table Fields** area.

Note – The **Pivot Table Fields** area is only visible when working on your Pivot Table. If you cannot see the **Pivot Table Fields** area, simply click on your **Pivot Table** and it will become visible again.

Stage 2 – Populating Our Pivot Table.

Now we have our blank Pivot Table we can start to populate it with our fields. In the Pivot Table Fields area make the following selections.

1. Select **Category**, **Store** and **Amount**.
2. Click on the **Store** field again and drag it down to the **Filters** area as show.

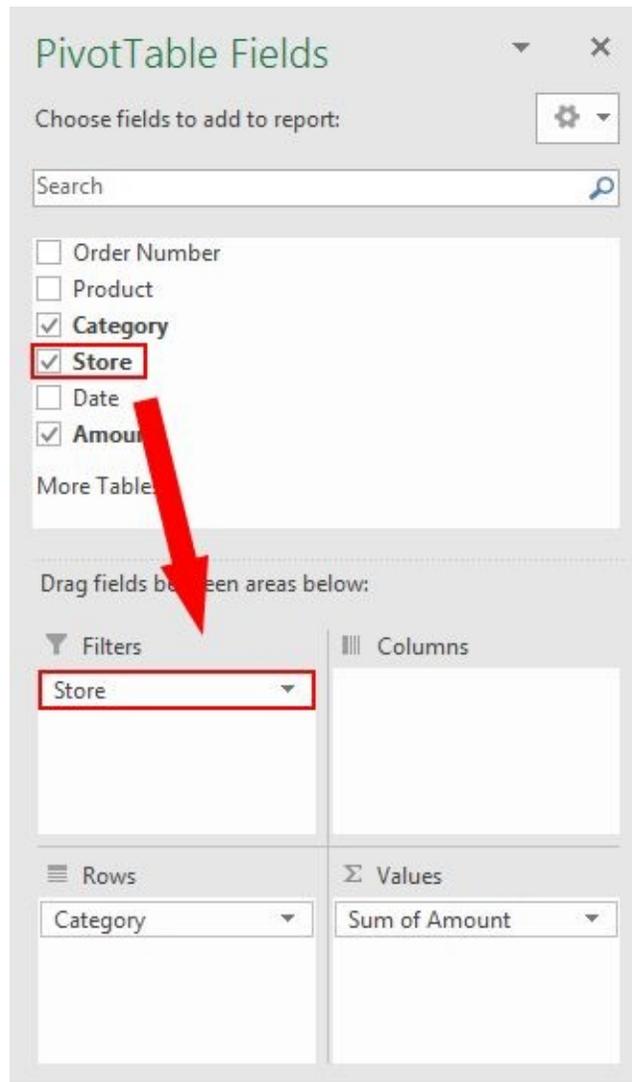


Fig 11-5 – Our Pivot Table Fields selections.

If we look at our **Pivot Table**, it now shows the breakdown of sales by category for the whole company. We can tell it is for the whole area by the **All** selection at the top.

	A	B
1	Store	(All)
2		
3	Row Labels	Sum of Amount
4	Beds	5139.33
5	Multiple Seat Chairs	1776.63
6	Single Seat Chairs	919.31
7	Storage	2054.68
8	Tables	3639.03
9	Grand Total	13528.98
10		

Fig 11-6 – Our populated pivot table.

To change the headings (Row Labels and Sum of Amount) follow these steps.

1. Click on the heading you want to edit.
2. Press **F2**.
3. Type in the new headings.

Stage 3 – Using Our Pivot Table.

If we now want to see sales for our individual offices, we just change the All selection to the office of our choice.

	A	B
1	Store	Bristol
2		
3	Product Group	Total Sales
4	Beds	1119.09
5	Multiple Seat Chairs	512.8
6	Single Seat Chairs	306.92
7	Storage	61.93
8	Tables	444.16
9	Grand Total	2444.9
10		

Fig 11-7 – Our Pivot Table for the Bristol store.

In this example, we are looking at the results for the Bristol store as shown by the **Bristol** selection at the top. Note that the filtered icon appears to the right of the word **Bristol** to indicate that these are filtered results.

In this image (Fig 11-7), I have also changed the column headings to something more meaningful e.g. **Product Group** and **Total Sales** If we were only interested in just some of the product groups, for example we only wanted to look at chairs, we can further refine our pivot table.

1. Click the **Product Group** drop down arrow.
2. From the selections available, select **Multiple Seat Chairs** and **Single Seat Chairs**.
3. Click **OK**.

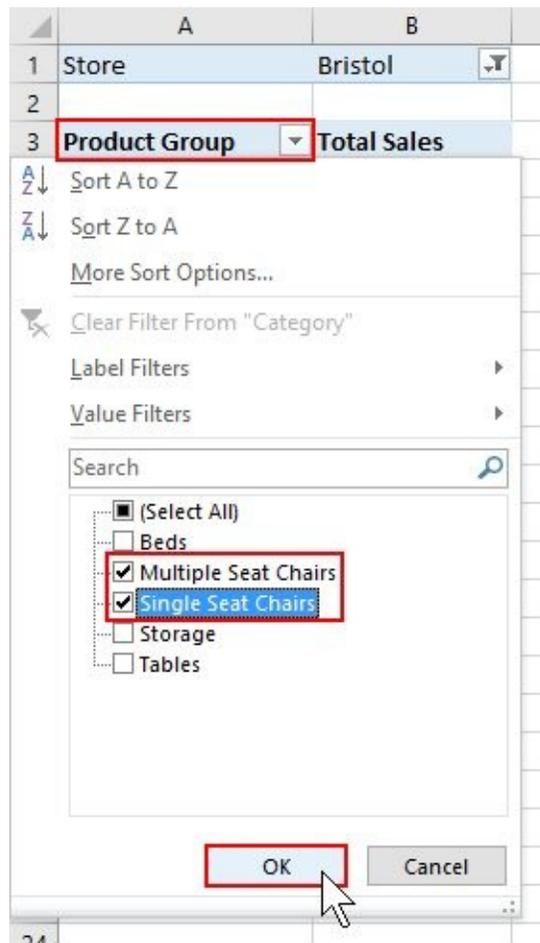


Fig 11-8 – Refining our Pivot Table selections to show chairs only.

When we have made our selections our Pivot Table updates to show;

	A	B
1	Store	Bristol
2		
3	Product Group	Total Sales
4	Multiple Seat Chairs	512.8
5	Single Seat Chairs	306.92
6	Grand Total	819.72
7		

Fig 11-9 – Our refined Pivot Table selections in action.

As a result of our choices, our Pivot Table now only shows chair sales for the Bristol store.

Stage 4 – Getting Even More Information from Our Pivot Table.

Automatically summing up data is a great time saver, but sometimes we need to know other information such as number of sales or average sales values. Pivot tables have you covered there as well.

If you haven't already, set your **Store** field to **All** and your **Product Group** field to **All**. Then follow these steps.

1. Select one of the **Total Sales** values in your **Pivot Table**.
2. Right click on the cell and select **Summarize Values By**.
3. Select if you want to see a **Count**, the **Average** value, the **Minimum** value or the **Maximum** value. In our example, we are selecting count.

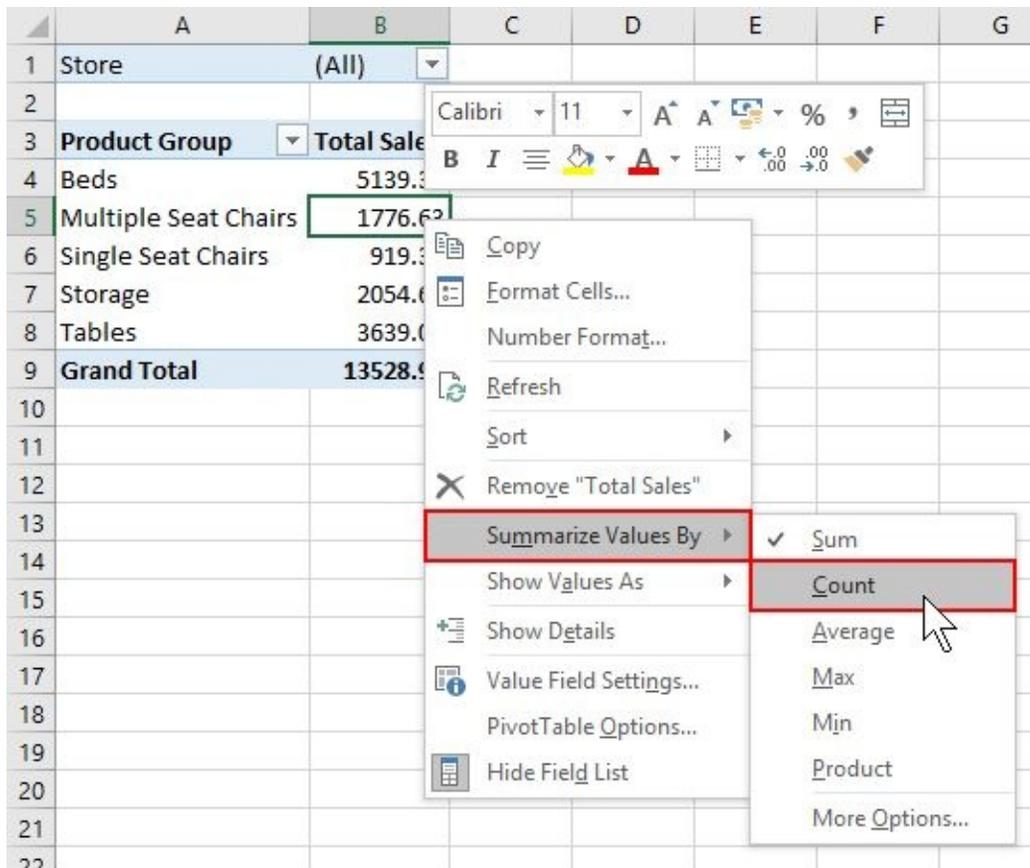


Fig 11-10 – Opting to see sales counts rather than totals.

Once you have made your selections your Pivot Table will update as shown

Store	(All)
Product Group	Count of Amount
Beds	14
Multiple Seat Chairs	5
Single Seat Chairs	8
Storage	20
Tables	20
Grand Total	67

here;

Fig 11-11 – Our Pivot Table now shows sales counts rather than totals.

Stage 5 – Adding Another Dimension to

Our Pivot Table.

So, what if we wanted to see a table that shows a breakdown of the store by sales of each product group? This would need a table with multiple columns.

If we want to see our table with rows for product types and columns for stores, we just rearrange our selections.

1. Drag **Store** out of **Filters** in to **Columns**.
2. Ensure **Category** is in **Rows**.
3. Ensure **Sum of Amount** is in **Values**.

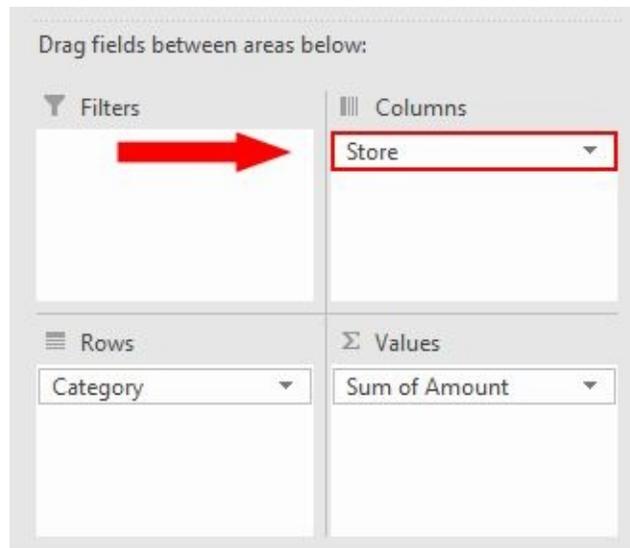


Fig 11-12 – Creating a two-dimensional Pivot Table.

This will convert your pivot table in to this two-dimensional table like this;

	A	B	C	D	E	F	G	H
3	Sum of Amount	Column Labels						
4	Product Group	Birmingham	Bristol	Cardiff	London	Manchester	Swindon	Grand Total
5	Beds	1194.68	1119.09	541.36	1247.57	899.94	136.69	5139.33
6	Multiple Seat Chairs		512.8	212.19	310.59	301.73	349.02	1776.63
7	Single Seat Chairs		305.92		387.57	90.02	134.8	919.31
8	Storage	661.66	61.93	374.7	202.6	349.99	403.8	2054.68
9	Tables	336.21	444.16	557.18	1539.69		761.79	3639.03
10	Grand Total	2192.55	2444.9	1685.43	3688.02	1731.68	1786.4	13528.98

Fig 11-13 – Our two-dimensional Pivot Table.

If you drag the **Store** field from the **Columns** area to the **Rows** area, and then drag the **Category** field from the **Rows** area to the **Columns** area, your pivot table will have stores as rows and product types as columns.

Summary.

Pivot Tables are far easier than they sound or sometimes look. In this tutorial, we covered the basics of Pivot Tables and I'm sure it is already clear to you how simple and powerful they are. Experiment with the example spreadsheet or some of your own data.

Chapter 12

Grouping Pivot Table Items.

In [chapter 11](#) we looked at sales data from an imaginary furniture shop called “Sofa, So Good”. In the sales data, we used in that exercise, we had different types of furniture grouped in their furniture types (beds, tables, storage etc.). But data doesn’t always come grouped like that and we have to add our own grouping at the analysis / reporting stage.

Example Data for Grouping in Our Pivot Tables.

In this tutorial, we will use the same data as in [chapter 11](#), but without the grouping column. The raw data for this tutorial can be in the **PT 2** tab of the [accompanying spreadsheet](#).

Without the grouping column, our data looks like this;

	A	B	C	D	E
1	Order Numb	Product	Store	Date	Amount
2	1	Canopy bed	Manchester	4 Jan 16	£185.94
3	2	Changing table	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Bristol	17 Jan 16	£598.31
5	4	Davenport	London	24 Jan 16	£310.59
6	5	Changing table	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Manchester	2 Feb 16	£76.85
8	7	Bunk bed	Cardiff	3 Feb 16	£541.36
9	8	Chest of drawers	Birmingham	8 Feb 16	£122.63
10	9	Bathroom cabinet	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Swindon	17 Feb 16	£139.30
12	12	Daybed	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	London	1 Mar 16	£125.22
15	15	Chest	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	London	4 Mar 16	£270.78
17	16	Changing table	Swindon	5 Mar 16	£136.82
18	17	Daybed	London	6 Mar 16	£541.32

Fig 12-1 – The annual sales data from “Sofa, So Good” without any grouping data.

As you can see from the data, there is no easy way of finding sales figures per furniture type. So how do we find out the value of bed sales compared to chair sales?

Grouping Text Items in Pivot Tables.

These simple steps will allow you to group your data in to product types.

1. Use the data in the **PT 2** tab of the [accompanying spreadsheet](#) to create a Pivot Table using these settings;

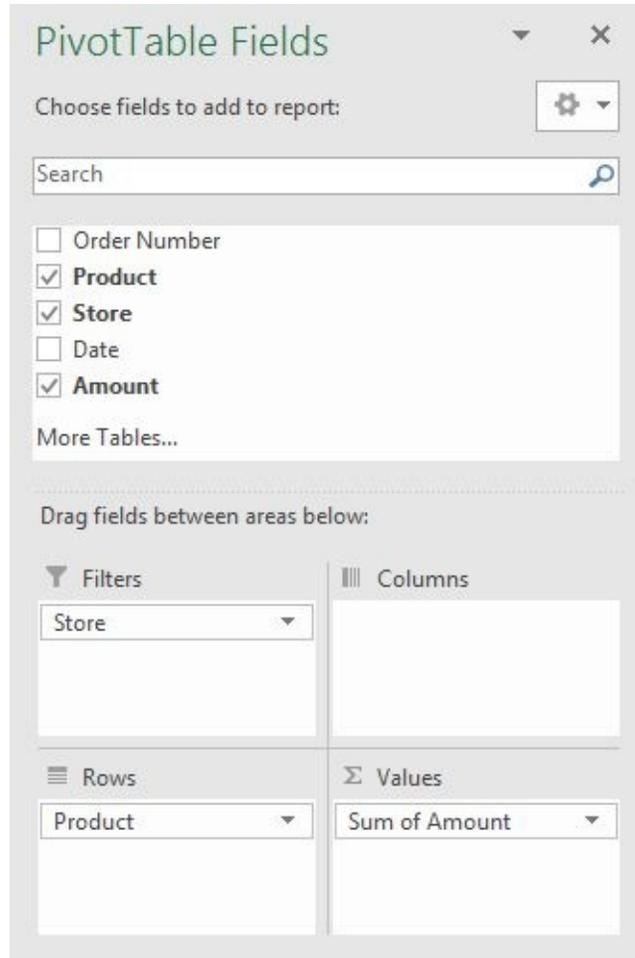


Fig 12-2 – The initial selections for our Pivot Table.

2. Your Pivot Table should like this;

	A	B
1	Store	(All) ▼
2		
3	Row Labels ▼	Sum of Amount
4	Bar Stool	198.1
5	Bathroom cabinet	355.34
6	Bean bag	268.13
7	Bed	1153.85
8	Bench	349.32
9	Bookcase	395.96
10	Bunk bed	1466.15
11	Canopy bed	1248.95
12	Chair	205.63
13	Chaise longue	144.78
14	Changing table	676.1
15	Chest	330.62
16	Chest of drawers	356.95
17	Coat rack	332.52
18	Coffee table	662.86

Fig 12-3 – Our initial Pivot Table.

3. Select the items you want to group by holding down the Control key and clicking each item to be grouped in the pivot table.
4. Right click on one of the selected items and select **Group**. In this image, we are grouping the bed products together.

	A	B	C	D
1	Store	(All)		
2				
3	Row Labels	Sum of Amount		
4	Bar Stool			
5	Bathroom cabinet			
6	Bean bag			
7	Bed	1152.85		
8	Bench			
9	Bookcase			
10	Bunk bed			
11	Canopy bed			
12	Chair			
13	Chaise longue			
14	Changing table			
15	Chest			
16	Chest of drawers			
17	Coat rack			
18	Coffee table			
19	Computer desk			
20	Cupboard			
21	Davenport			
22	Davenport desk			
23	Daybed			
24	Desk			
25	Divan	391.73		

Fig 12-4 –Grouping beds together.

When you click **Group** your table will look like this;

	A	B
1	Store	(All) ▾
2		
3	Row Labels ▾	Sum of Amount
4	[-] Bar Stool	
5	Bar Stool	198.1
6	[-] Bathroom cabinet	
7	Bathroom cabinet	355.34
8	[-] Bean bag	
9	Bean bag	268.13
10	[-] Group1	
11	Bed	1153.85
12	Bunk bed	1466.15
13	Canopy bed	1248.95
14	Daybed	871.6
15	Four-poster bed	398.78
16	[-] Bench	
17	Bench	349.32
18	[-] Bookcase	

Fig 12-5 –Our new bed group.

Excel unimaginatively names our Group 1 which is not very user friendly, so we need to change that.

5. Click on the **Group 1** title.
6. Press **F2** and enter the new name as Beds.
7. Click the minus symbol to the left of our new title to collapse the group.

Repeat these steps for each of the groups until you get a pivot table that looks

	A	B
1	Store	(All) ▾
2		
3	Row Labels ▾	Sum of Amount
4	⊕ Single Seat Chair	919.31
5	⊕ Storage	2054.68
6	⊕ Beds	5139.33
7	⊕ Multiple Seat Chairs	1776.63
8	⊕ Tables	3639.03
9	Grand Total	13528.98
10		

like this;

Fig 12-6 –Our grouped Pivot Table.

And that is it. Our items are now grouped up in to handy categories without any categories being included in the data its self.

Grouping Items in Pivot Tables by Dates.

A lot of reports need analysis by dates and date ranges and Pivot Tables offer us some powerful options.

For this tutorial, we will need to create a new Pivot Table using the following settings.

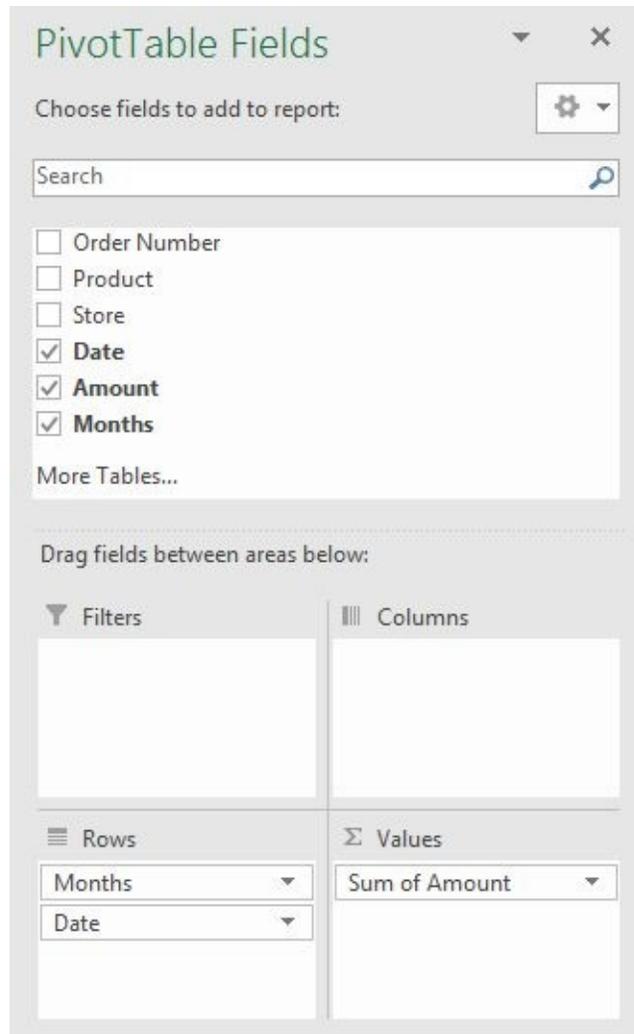


Fig 12-7 –Selections for our fresh Pivot Table.

Note – When you select **Date** and **Amount**, Excel will automatically add the **Months** option.

	A	B
3	Row Labels	Sum of Amount
4	+ Jan	1487.95
5	+ Feb	1281.09
6	+ Mar	1668.93
7	+ Apr	1473.21
8	+ May	108.08
9	+ Jun	968.35
10	+ Jul	466.52
11	+ Aug	1652.97
12	+ Sep	1104.82
13	+ Oct	2322.85
14	+ Nov	700.15
15	+ Dec	294.06
16	Grand Total	13528.98

This will produce a Pivot Table that looks like this;

Fig 12-8 –Excel automatically groups dates by months.

The automatic grouping by months is really handy in a lot of situations, but what if we want to report by week or quarter?

The first step is to get rid of the month groupings that Excel applied. We do this by unticking the **Months** option in the **Pivot Table Fields** area.

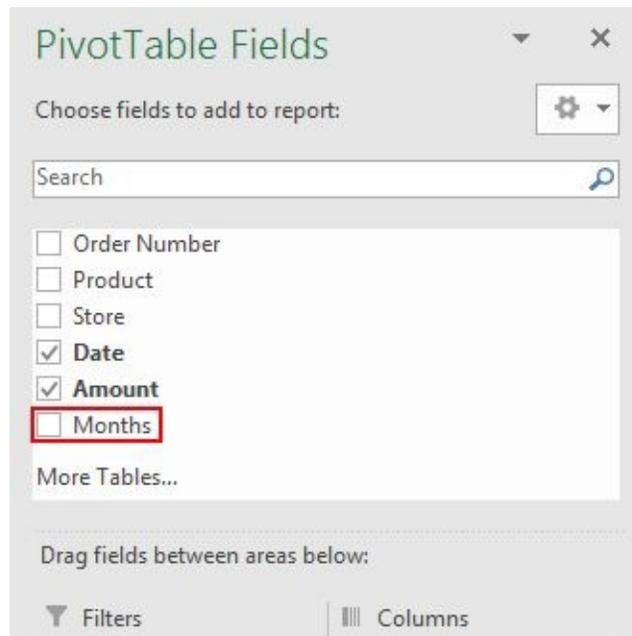


Fig 12-9 –Untick the Months selection.

This will remove the grouping by Month and show data by individual dates like

	A	B
3	Row Labels ▼	Sum of Amount
4	04-Jan	185.94
5	06-Jan	241.43
6	17-Jan	598.31
7	24-Jan	310.59
8	26-Jan	151.68
9	02-Feb	76.85
10	03-Feb	541.36
11	08-Feb	122.63
12	14-Feb	116.86
13	17-Feb	139.3
14	21-Feb	284.09
15	01-Mar	125.22
16	04-Mar	370.81
17	05-Mar	136.82
18	06-Mar	541.32

this;

Fig 12-10 – Date based Pivot Table without grouping by Month.

Right click on one of the dates and select Group.

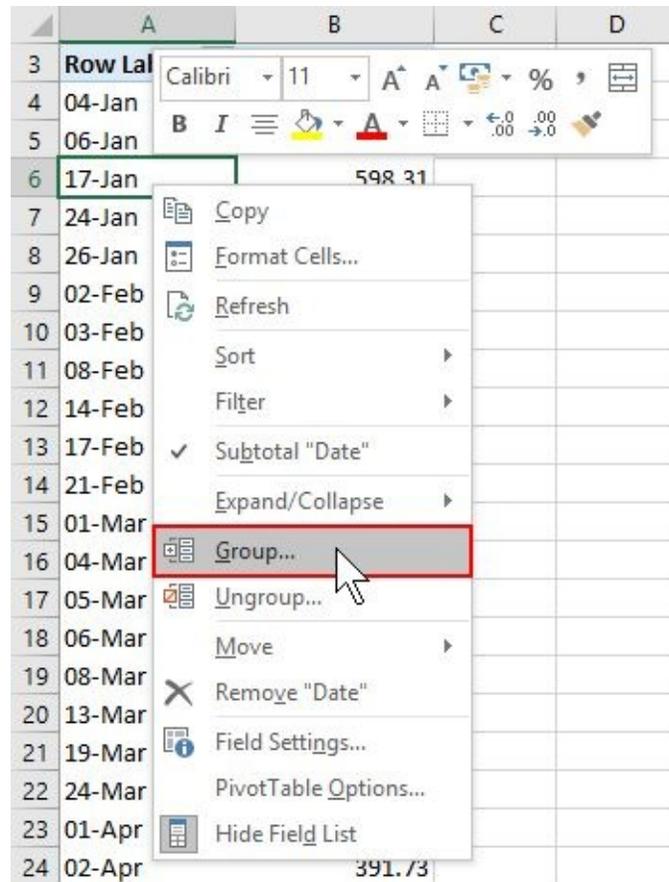


Fig 12-11 – Grouping by dates.

When you click **Group**, Excel will automatically detect you are trying to group by date and display this pop up form.

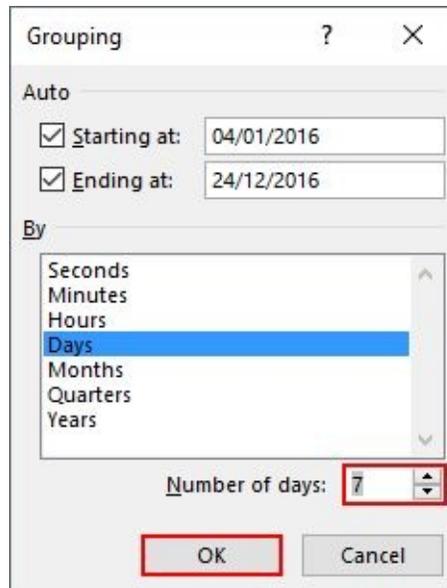


Fig 12-12 – The date picking form.

If we want to see the data broken down by weeks, increase the **Number of days** to 7 and click **OK**. This will change the layout of your Pivot Table to this;

	A	B
3	Row Labels	Sum of Amount
4	04/01/2016 - 10/01/2016	427.37
5	11/01/2016 - 17/01/2016	598.31
6	18/01/2016 - 24/01/2016	310.59
7	25/01/2016 - 31/01/2016	151.68
8	01/02/2016 - 07/02/2016	618.21
9	08/02/2016 - 14/02/2016	239.49
10	15/02/2016 - 21/02/2016	423.39
11	29/02/2016 - 06/03/2016	1174.17
12	07/03/2016 - 13/03/2016	279.06
13	14/03/2016 - 20/03/2016	70.92
14	21/03/2016 - 27/03/2016	144.78
15	28/03/2016 - 03/04/2016	662.79

Fig 12-13 – Pivot Table broken down by week.

If you want to change the first date or last date of the weekly breakdowns, set them in the **Starting at** and **Ending at** fields.

If you right click on one of the dates and select **Group** again we will end up back at the pop up form. This time unselect **Days** and select **Months** and

Quarters.

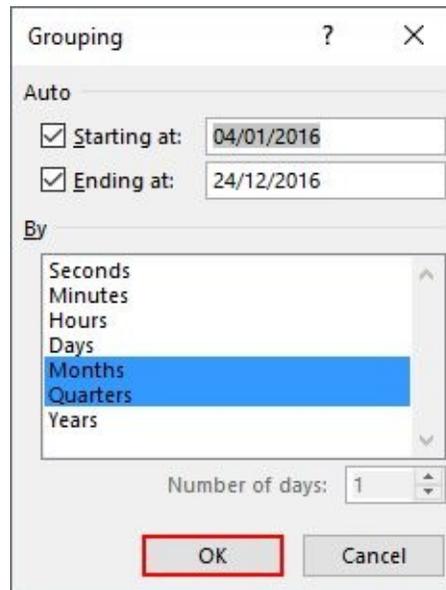


Fig 12-14 – Changing our selections to Months and Quarters.

This will give us a handy by month and quarter breakdown of the figures.

	A	B
3	Row Labels	Sum of Amount
4	⊕ Qtr1	4437.97
5	⊖ Qtr2	
6	Apr	1473.21
7	May	108.08
8	Jun	968.35
9	⊕ Qtr3	3224.31
10	⊕ Qtr4	3317.06
11	Grand Total	13528.98

Fig 12-15 – Pivot table broken down by months and quarters.

Summary.

And there we have it, in a few short steps we have grouped up our results in to more meaningful figures. This ability is really handy when there is no grouping

available in the raw data.

Chapter 13

Same Pivot Table, Different Look.

As you browse the internet looking for help on Pivot Tables, you will find 2 different style Pivot Tables. This can be confusing when looking for help, so we will cover the differences here.

Example Data for Our Pivot Table.

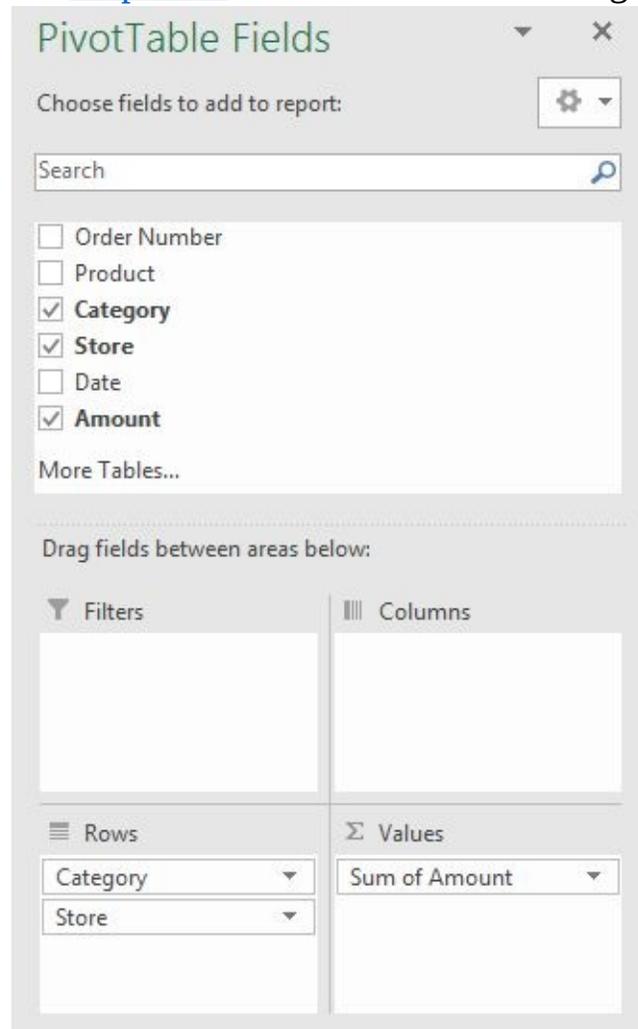
In this tutorial, we will use the same data as in [chapter 11](#). The raw data for this tutorial can be in the **PT 3** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Num	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 16	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 16	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 16	£122.63
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.79
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32

Fig 13-1 – The annual sales data from “Sofa, So Good”.

Setting Up a Pivot Table.

First, create a pivot table as detailed in [chapter 11](#). Now make the following



selections in the Pivot Fields Area;

Fig 13-2 – Our selections for our pivot table.

This will create a pivot table that looks like this;

	A	B
3	Row Labels	Sum of Amount
4	⊖ Beds	5139.33
5	Birmingham	1194.68
6	Bristol	1119.09
7	Cardiff	541.36
8	London	1247.57
9	Manchester	899.94
10	Swindon	136.69
11	⊖ Multiple Seat Chairs	1776.63
12	Bristol	512.8
13	Cardiff	212.19
14	London	310.59
15	Manchester	391.73
16	Swindon	349.32
17	⊖ Single Seat Chairs	919.31
18	Bristol	306.92
19	London	387.57
20	Manchester	90.02
21	Swindon	134.8

Fig 13-3 – Our Pivot Table.

There is no official name for this style of layout, so I will just refer to it as the “modern” style.

Right click any of the cells in the Pivot Table and select **Pivot Table Options...**

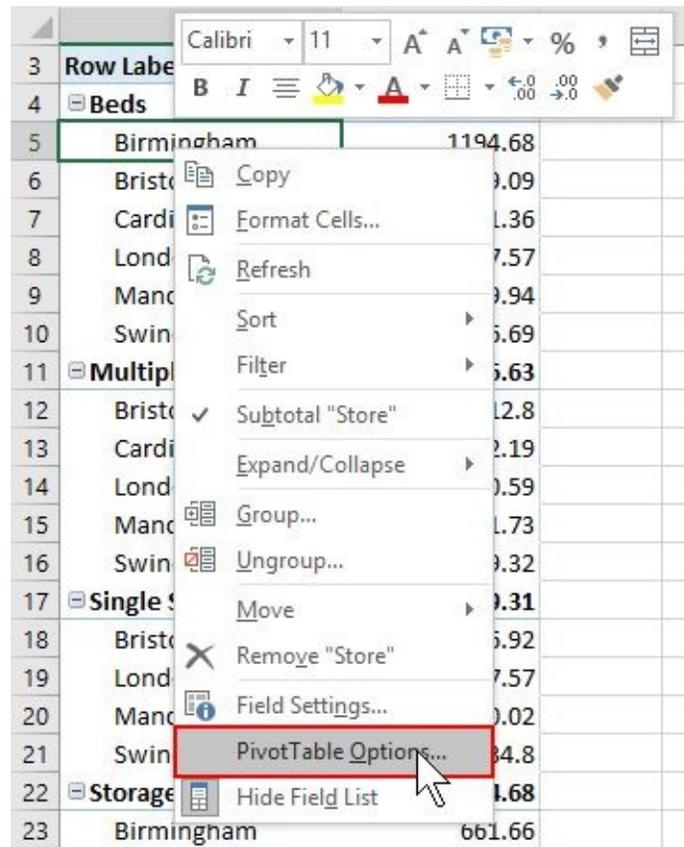


Fig 13-4 – Selecting “PivotTable Options...”.

This will bring up this form.

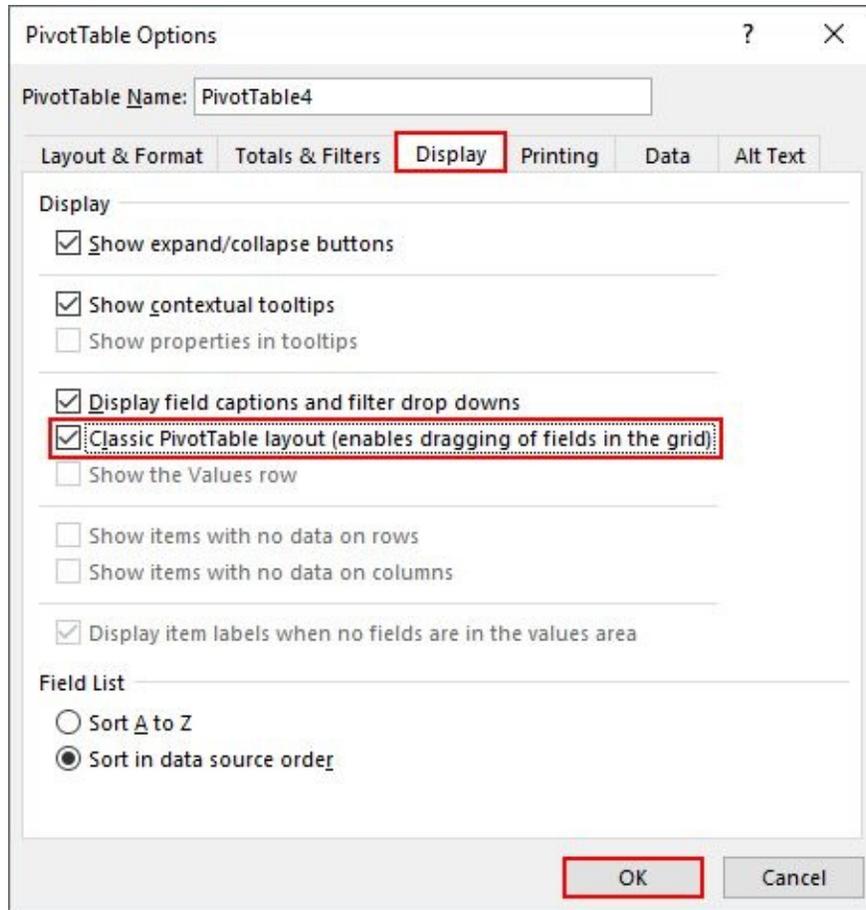


Fig 13-5 – PivotTables Options Form.

When the form opens up, follow these steps;

1. Go to the **Display Tab**.
2. Tick the **Classic Pivot Table layout** option.
3. Click **OK**.

	A	B	C
3	Sum of Amount		
4	Category ▼	Store ▼	Total
5	☐ Beds	Birmingham	1194.68
6		Bristol	1119.09
7		Cardiff	541.36
8		London	1247.57
9		Manchester	899.94
10		Swindon	136.69
11	Beds Total		5139.33
12	☐ Multiple Seat Chairs	Bristol	512.8
13		Cardiff	212.19
14		London	310.59
15		Manchester	391.73
16		Swindon	349.32
17	Multiple Seat Chairs Total		1776.63

Now our Pivot Table looks like this;

Fig 13-6 – A PivotTable in the “Classic” layout.

This is the same PivotTable as in *Fig 13-3*. None of the contents have changed. There are some minor advantages to the “Classic” layout but the choice between “Classic” and “Modern” is mostly an aesthetics choice.

Chapter 14

Multi Level Pivot Tables.

We are now going to the next level with our pivot tables and we will now introduce multiple row fields, multiple value fields and multiple report filter fields.

Example Data to be Multi-Levelled.

In this tutorial, we will use the same data as in [chapter 11](#). The raw data for this tutorial can be in the **PT 4** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Num	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 16	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 16	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 16	£122.03
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32
19	18	Desk	Tables	Cardiff	8 Mar 16	£176.39

Fig 14-1 – The annual sales data from “Sofa, So Good”.

Using Multiple Row Fields.

First, create a pivot table as detailed in [chapter 11](#).

Now make the following selections in the **Pivot Table Fields** Area;

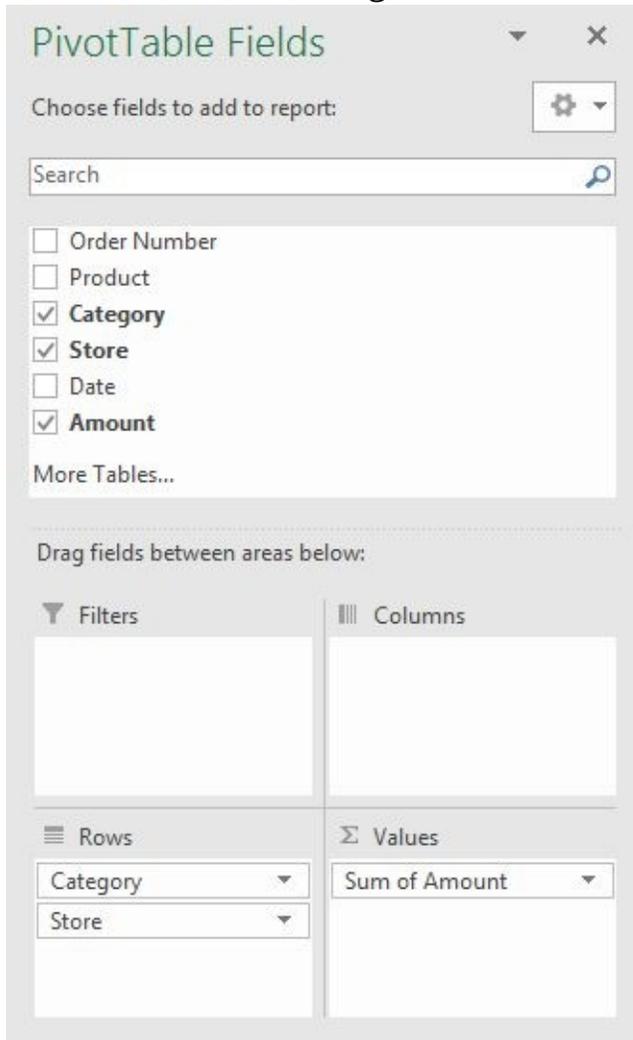


Fig 14-2 – Our selections for our pivot table.

The resulting PivotTable looks like this (note it is in the “Classic” layout – see [chapter 13](#) for more details).

	A	B	C
3	Sum of Amount		
4	Category	Store	Total
5	☒ Beds	Birmingham	1194.68
6		Bristol	1119.09
7		Cardiff	541.36
8		London	1247.57
9		Manchester	899.94
10		Swindon	136.69
11	Beds Total		5139.33
12	☒ Multiple Seat Chairs	Bristol	512.8
13		Cardiff	212.19
14		London	310.59
15		Manchester	391.73
16		Swindon	349.32
17	Multiple Seat Chairs Total		1776.63
18	☒ Single Seat Chairs	Bristol	306.92
19		London	387.57
20		Manchester	90.02
21		Swindon	134.8
22	Single Seat Chairs Total		919.31

Fig 14-3 – The resultant Pivot Table in the “Classic” layout.

Using Multiple Values.

We can expand our pivot table to show multiple values per field type. For example, we can show the total and the percentage of the overall total.

Create a new pivot table (using the same data) and use the following settings;

1. Tick **Store** and ensure it appears under rows.
2. Tick **Amount** and ensure it appears under values.
3. Click on and drag **Amount** down to Values.

In **Values**, you should have **Sum of Amount** and **Sum of Amount2** listed.

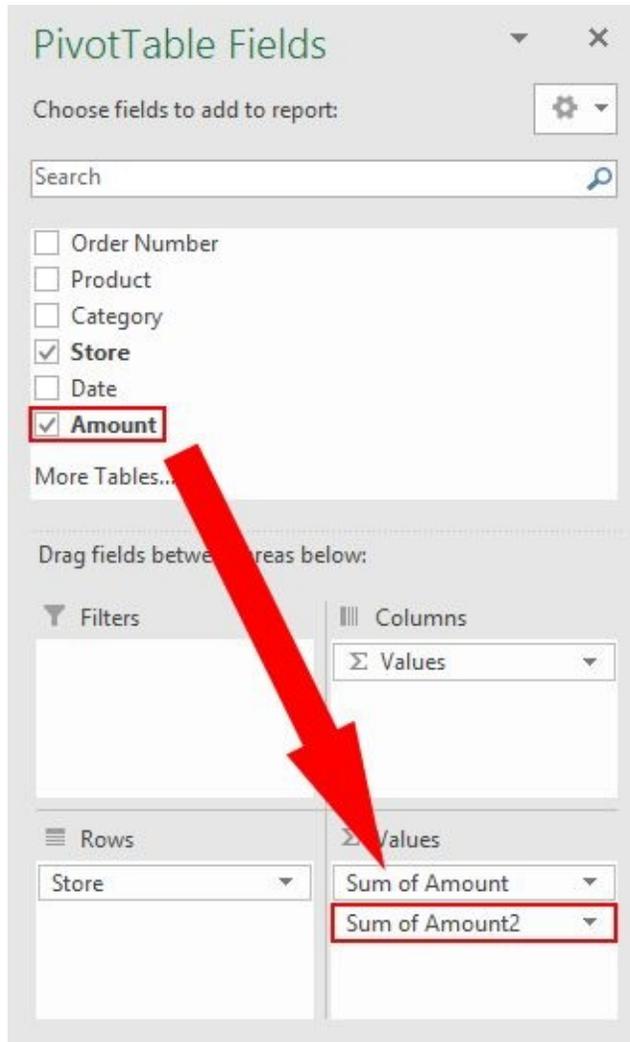


Fig 14-4 – Our selections for our multi-value fields.

Once you have made these selections your pivot table will look like this;

	A	B	C
3	Values		
4	Store ▼	Sum of Amount	Sum of Amount2
5	Birmingham	2192.55	2192.55
6	Bristol	2444.9	2444.9
7	Cardiff	1685.43	1685.43
8	London	3688.02	3688.02
9	Manchester	1731.68	1731.68
10	Swindon	1786.4	1786.4
11	Grand Total	13528.98	13528.98

Fig 14-5 – Our resultant Pivot Table.

Obviously having two sets of totals that are the same is completely useless, so what can we do with this new element. Let's use the new column to show us what percentage of the grand total they represent.

Right click on any cell in the **Sum of Amount2** column and select **Value Field Settings**.

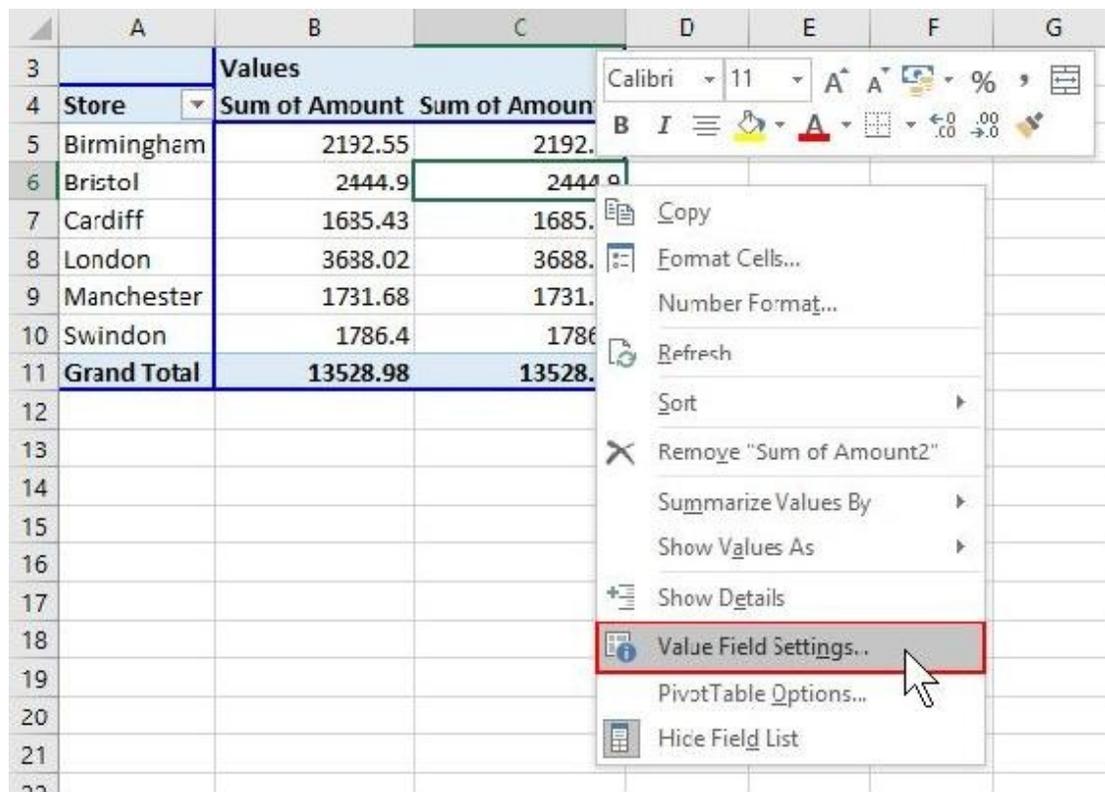


Fig 14-6 – Locating and selecting “Value Field Settings...”.

This will bring up the following form;

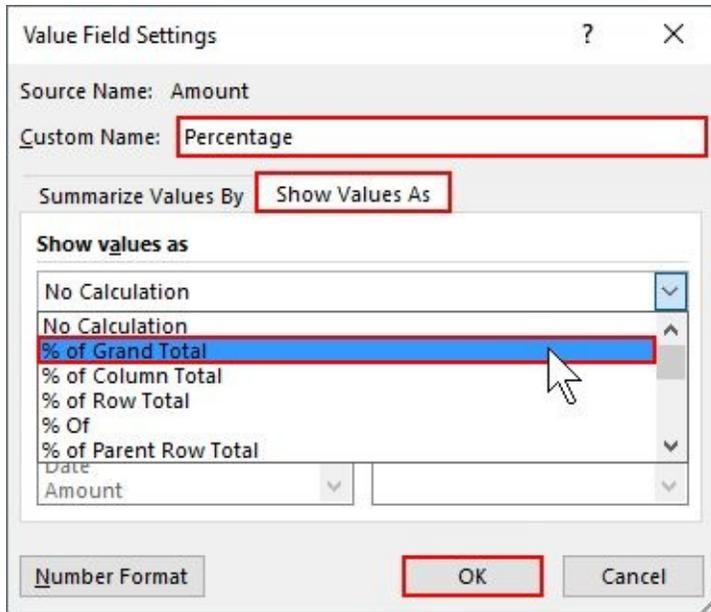


Fig 14-7 – The Value Field Settings form.

Select the following options.

1. Set the Custom Name to **Percentage**.
2. Select the **Show Values As** tab.
3. Select **% of Grand Total** from the **Show values as** dropdown.
4. Click **OK**.

	A	B	C
3	Values		
4	Store	Sum of Amount	Percentage
5	Birmingham	2192.55	16.21%
6	Bristol	2444.9	18.07%
7	Cardiff	1685.43	12.46%
8	London	3688.02	27.26%
9	Manchester	1731.68	12.80%
10	Swindon	1786.4	13.20%
11	Grand Total	13528.98	100.00%

Fig 14-8 – Our new pivot table with percentages.

We can now see what percentage of the sales each store contributes to the

company's overall sales.

Multiple Report Filter Fields.

So, what if we want to search for specific orders that contain specific products sold in specific stores. For example, what if we wanted to find all the orders for coffee tables in the London store.

Create a new pivot table from the same data as before and use these settings.

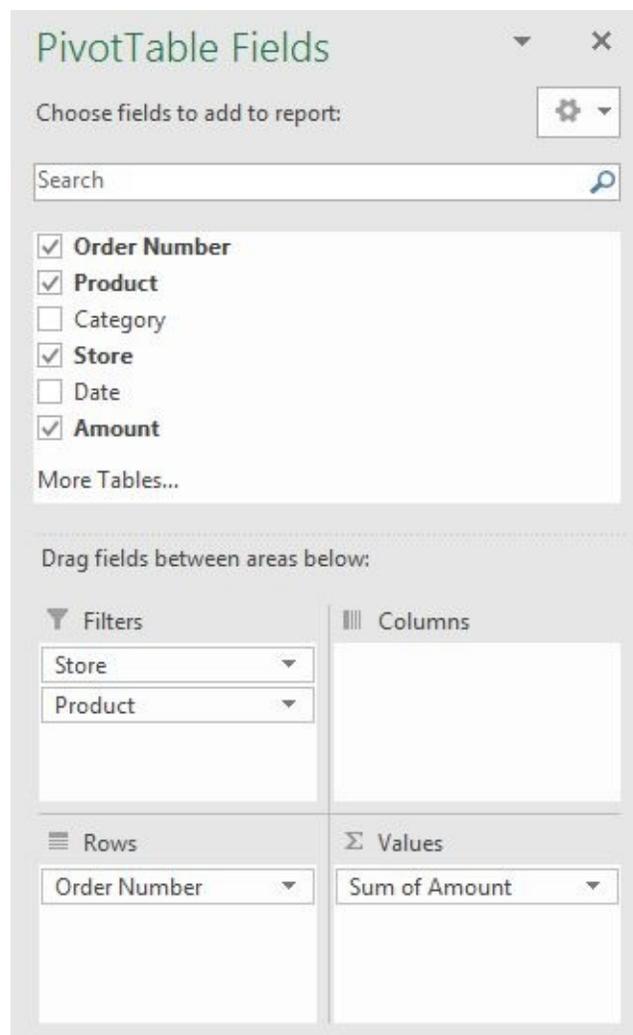


Fig 14-9 – Our selections for a pivot table with multiple report filters.

1. Select **Order Number**, **Product**, **Store** and **Amount**.
2. Ensure **Store** and **Product** is in the **Filters** section.
3. Ensure **Order Number** is in the **Rows** section. **Note** – just selecting **Order Number** will not work, you will need to click on and drag **Order Number** from the top field selection area to the **Rows** section.
4. Ensure **Sum of Amount** is in the **Values** section.

	A	B
1	Store	(All) ▼
2	Product	(All) ▼
3		
4	Row Labels ▼	Sum of Amount
5	1	185.94
6	2	241.43
7	3	598.31
8	4	310.59
9	5	151.68
10	6	76.85
11	7	541.36
12	8	122.63
13	9	116.86
14	10	139.3
15	11	134.8
16	12	149.29

Our pivot table should now look like this;

Fig 14-10 – Our pivot table with multiple report filters.

We can now use the Store and Product filters to select **London** and **Coffee Table**. In our example data that identifies two orders.

	A	B
1	Store	London ▼
2	Product	Coffee table ▼
3		
4	Row Labels ▼	Sum of Amount
5	14	270.78
6	45	163.95
7	Grand Total	434.73
8		

Fig 14-11 – Our pivot table with multiple filters to show sales of Coffee Tables

from the London store.

Experiment with the filters to see what other information you can extract from the data.

Chapter 15

Frequency Distribution in Pivot Tables.

Pivot Tables can also be used to quickly produce frequency distribution figures.

Example Data for a Frequency Distribution Pivot Table.

In this tutorial, we will use the same data as in [chapter 11](#). A copy of this data can be found in the **PT 5** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Num	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 16	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 16	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 16	£122.03
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32
19	18	Desk	Tables	Cardiff	8 Mar 16	£176.39

Fig 15-1 – The annual sales data from “Sofa, So Good”.

Finding Frequency Distribution Using Pivot Tables.

First, create a pivot table as detailed in [chapter 11](#).

Now make the following selections in the **PivotTable Fields** area. Note you will need to tick the **Amount** field and then click on and drag the **Amount** field down to the **Rows** section.

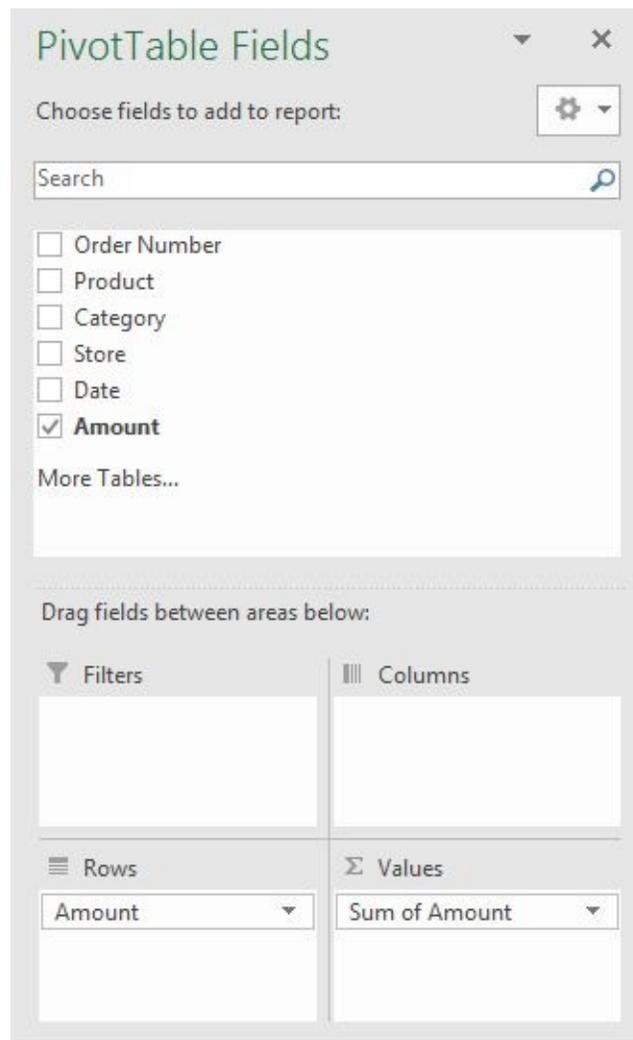


Fig 15-2 – Our selections for our pivot table.

Our resulting Pivot Table looks like this;

	A	B
3	Row Labels ▼	Sum of Amount
4	£61.93	61.93
5	£64.11	64.11
6	£67.35	67.35
7	£70.92	70.92
8	£76.58	76.58
9	£76.85	76.85
10	£77.38	77.38
11	£79.70	79.7
12	£90.02	90.02
13	£94.78	94.78
14	£99.70	99.7
15	£100.03	100.03
16	£102.67	102.67
17	£107.62	107.62
18	£108.08	108.08
19	£108.87	108.87

Fig 15-3 – The resultant Pivot Table.

To group our values right click on any cell in the left column and select **Group...**

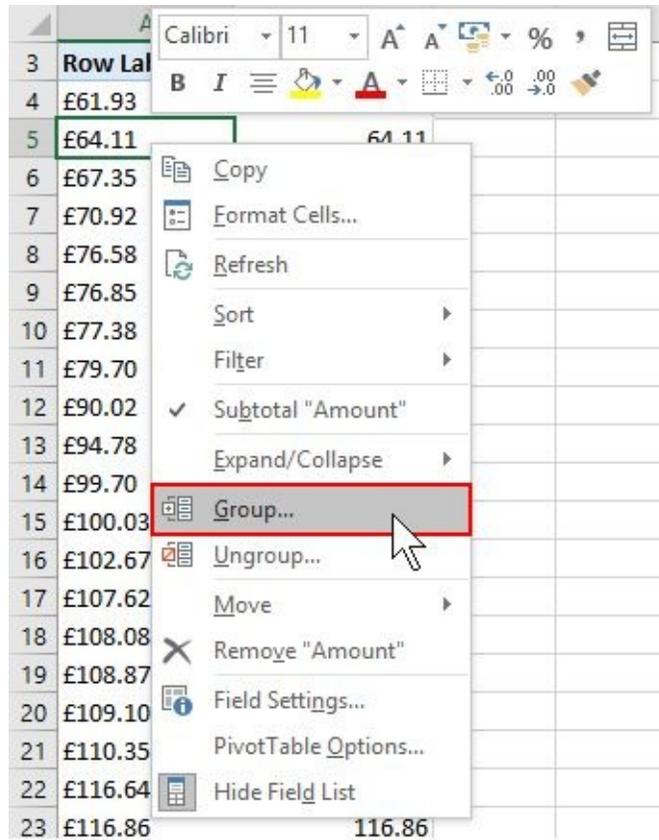


Fig 15-4 – Grouping our results.

This will bring up the following window;

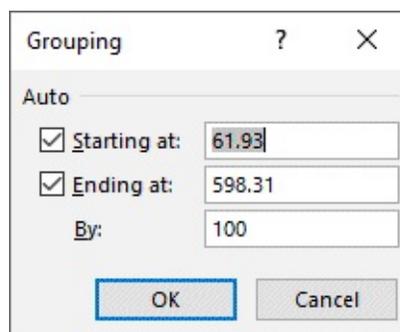


Fig 15-5 – Our grouping options.

These options will result in the invoices being grouped into values of £61.93 to £161.93

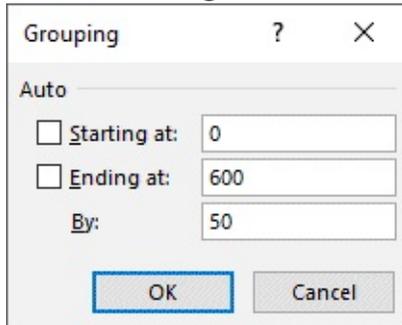
£161.93 to £261.93

...

£461.93 to £561.93

£561.93 to £661.93

Which is not very user friendly or meaningful. To group our invoices in £50 bands starting at £0 and ending at £600, change the settings to;



The screenshot shows a 'Grouping' dialog box with the following settings:

- Auto:
- Starting at: 0
- Ending at: 600
- By: 50

Buttons: OK, Cancel

Fig 15-6 – Our revised grouping options.

The resulting pivot table shows us the total sales in each group.

	A	B
3	Row Labels	Sum of Amount
4	50-100	859.32
5	100-150	3274.62
6	150-200	1359.48
7	200-250	1164.49
8	250-300	1082.3
9	300-350	962.15
10	350-400	775.45
11	400-450	404.01
12	450-500	932.59
13	500-550	2116.26
14	550-600	598.31
15	Grand Total	13528.98

Fig 15-7 – Our grouped sales.

But what if we want to know how many sales were made in each band?

Right click on the right column then select **Summarize Values By** and then select **Count**.

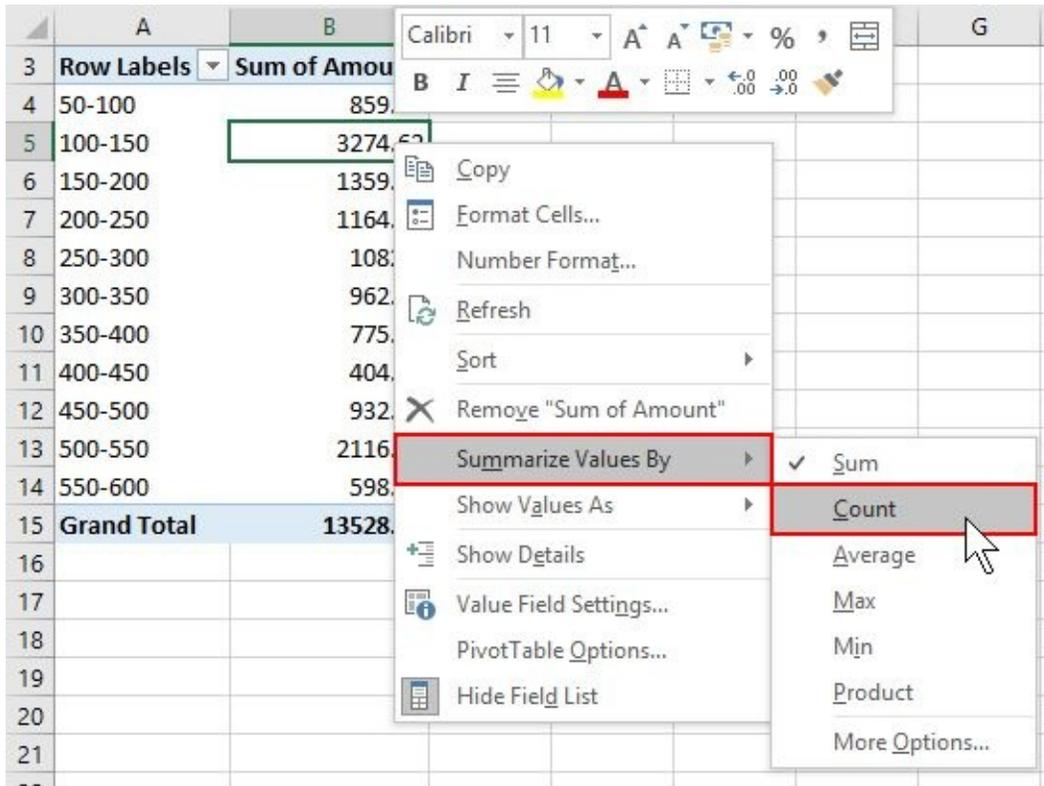


Fig 15-8 – Changing our groups to counts rather than sums.

This updates our table to show invoice counts.

Row Labels	Count of Amount
50-100	11
100-150	26
150-200	8
200-250	5
250-300	4
300-350	3
350-400	2
400-450	1
450-500	2
500-550	4
550-600	1
Grand Total	67

Fig 15-9 – Our groups now show invoice counts.

Chapter 16

Charting with Pivot Charts.

From our pivot tables, we can quickly build dynamic charts and graphs.

Example Data for Our Pivot Chart.

In this tutorial, we will use the same data as in [chapter 11](#). A copy of this data can be found in the **PT 6 – Data** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Numbr	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 15	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 15	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 15	£122.03
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.77
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32
19	18	Desk	Tables	Cardiff	8 Mar 16	£176.39
20	19	Lift chair	Single Seat Chairs	Bristol	13 Mar 16	£102.67

Fig 16-1 – The annual sales data from “Sofa, So Good”.

And from this data we will produce the two-dimensional pivot table found in the **PT 6 – Pivot Table** tab of the [accompanying spreadsheet](#). Refer to [chapter 14](#) of

this tutorial for details on how to build your own two-dimensional pivot table.

Sum of Amount	Column Labels						
Row Labels	Beds	Multiple Seat Chairs	Single Seat Chairs	Storage	Tables	Grand Total	
Birmingham	1194.68			661.66	136.21	2192.35	
Bristol	1119.09	512.8	306.92	61.93	444.16	2444.9	
Cerdiff	541.36	212.19		374.7	337.18	1665.45	
London	1247.57	310.59	387.57	202.6	1535.69	3688.02	
Manchester	899.94	391.73	90.02	349.99		1731.58	
Swindon	136.69	349.32	134.8	403.8	761.79	1786.4	
Grand Total	5139.33	1776.63	919.31	2054.68	3635.03	13528.38	

Fig 16-2 – Our two-dimensional pivot table.

Creating A Pivot Chart.

Follow these steps to produce our pivot chart;

1. Select any cell in the pivot table.
2. From the **Insert** menu select the style of chart you want. In the example below we have selected a 2D Column chart. If you are using an older version of Excel your chart selection process will be slightly different.

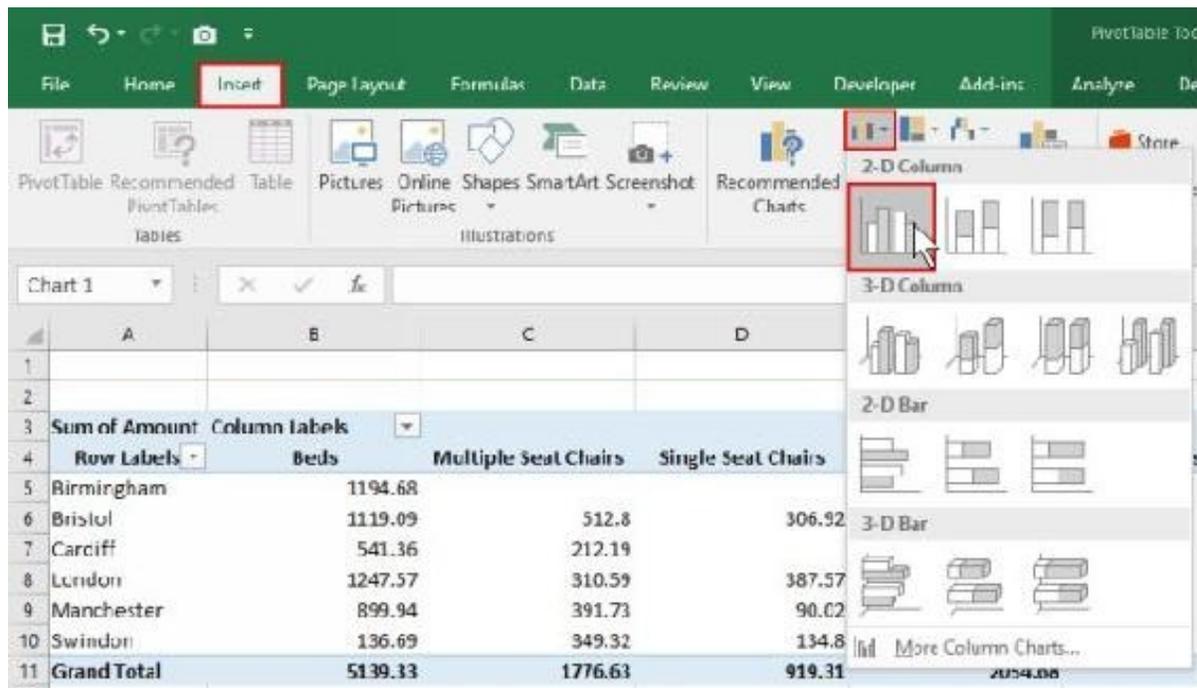


Fig 16-3 – Selecting our style of chart.

This will result in a chart that looks like this;

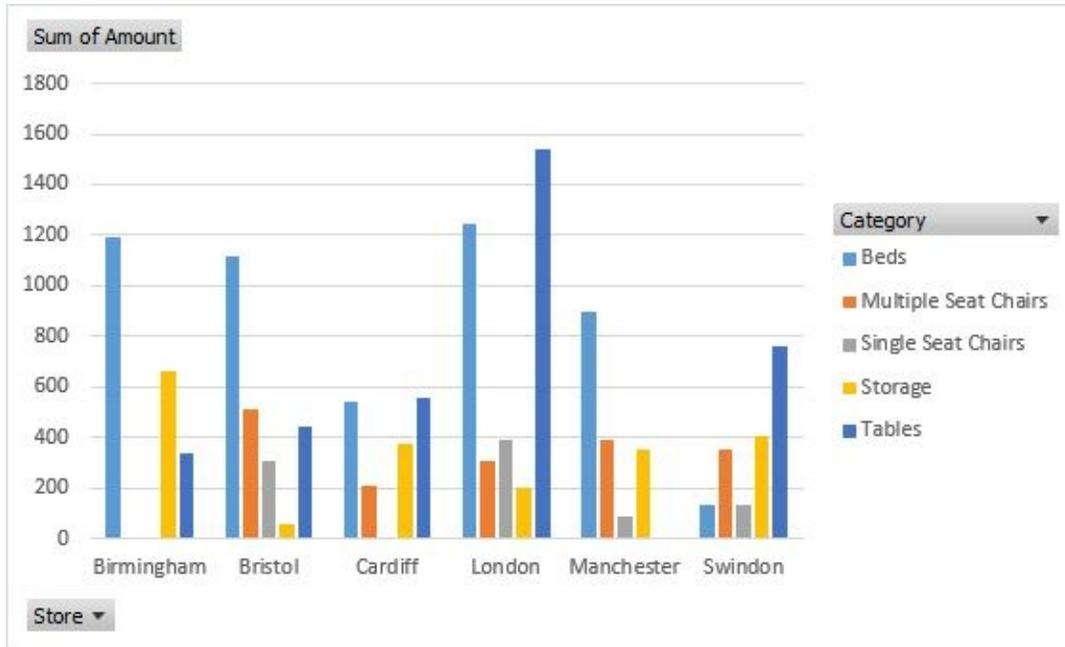


Fig 16-4 – Our pivot chart.

Filtering Our Pivot Chart.

If we want to filter our results to show just the values for Cardiff and London (for example), we can do that directly in the chart.

1. Click on the **Store** filter button (bottom left corner).
2. Select **Cardiff** and **London** from the options available.
3. Click **OK**.

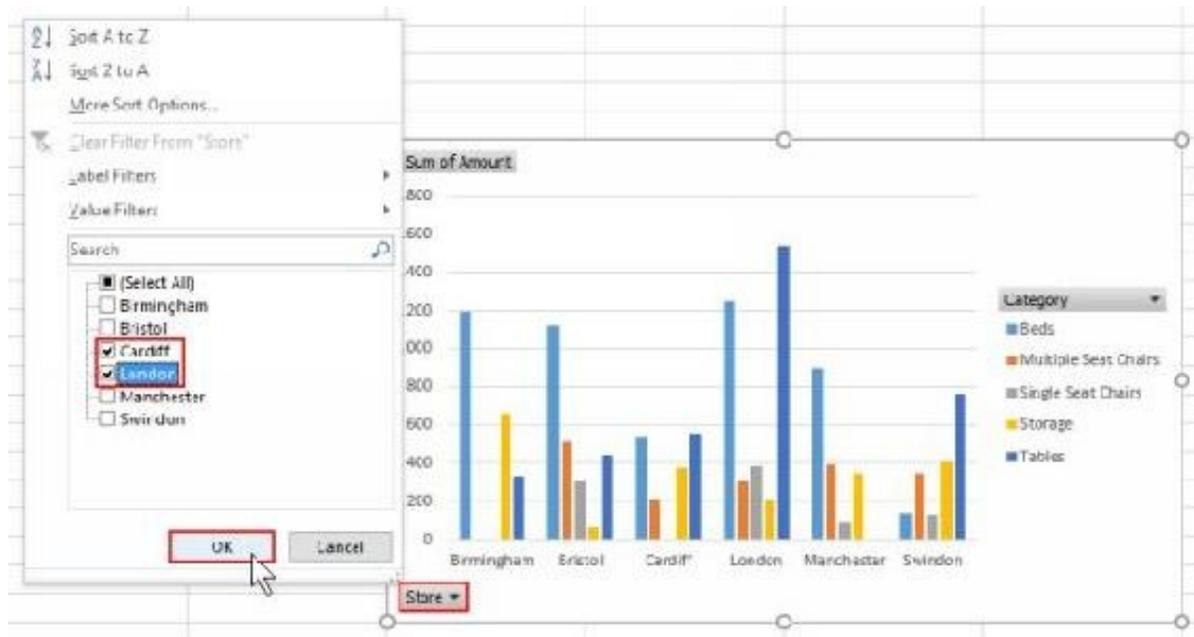


Fig 16-5 – Filtering our pivot chart by store.

This will update our chart to only include Cardiff and London data.

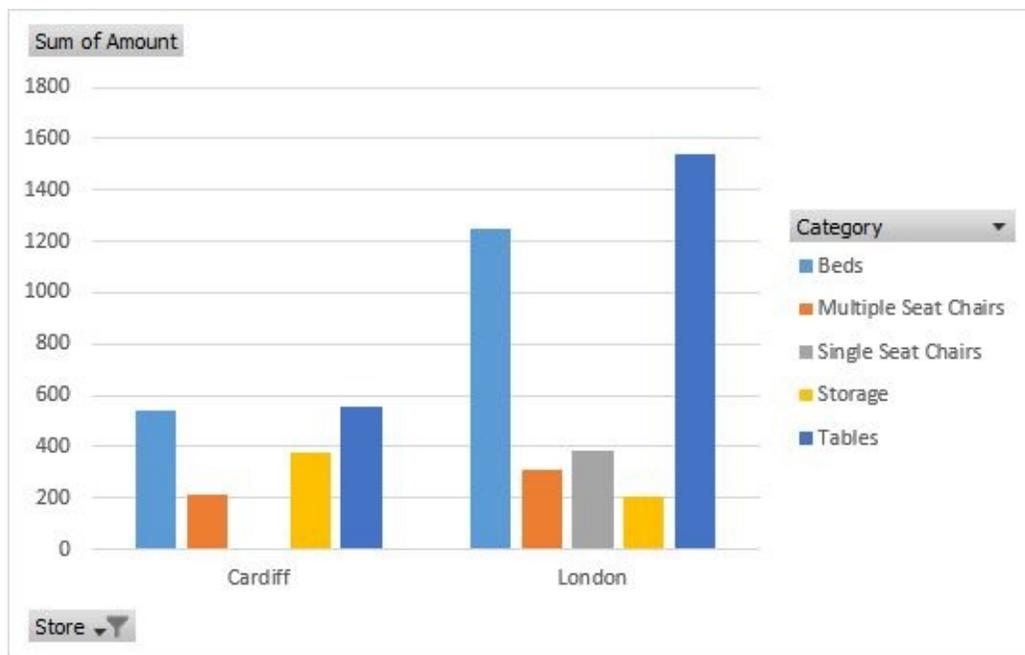


Fig 16-6 – Our pivot chart now only shows data for Cardiff and London.

It is worth noting that our Pivot Table has also been updated;

Sum of Amount	Column Labels						
Row Labels	Beds	Multiple Seat Chairs	Single Seat Chairs	Storage	Tables	Grand Total	
Cardiff	541.36	212.19		374.7	557.18	1685.43	
Londor	1247.57	310.59	387.57	202.6	1509.69	3688.02	
Grand Total	1788.93	522.78	387.57	577.3	2096.87	5373.45	

Fig 16-7 – Our updated pivot table.

We can also filter our data to show selected product categories. In this example, we will select **Multiple Seat Chairs** and **Single Seat Chairs**.

1. Click on the **Category** filter button.
2. Select **Multiple Seat Chairs** and **Single Seat Chairs** from the options available.
3. Click **OK**.

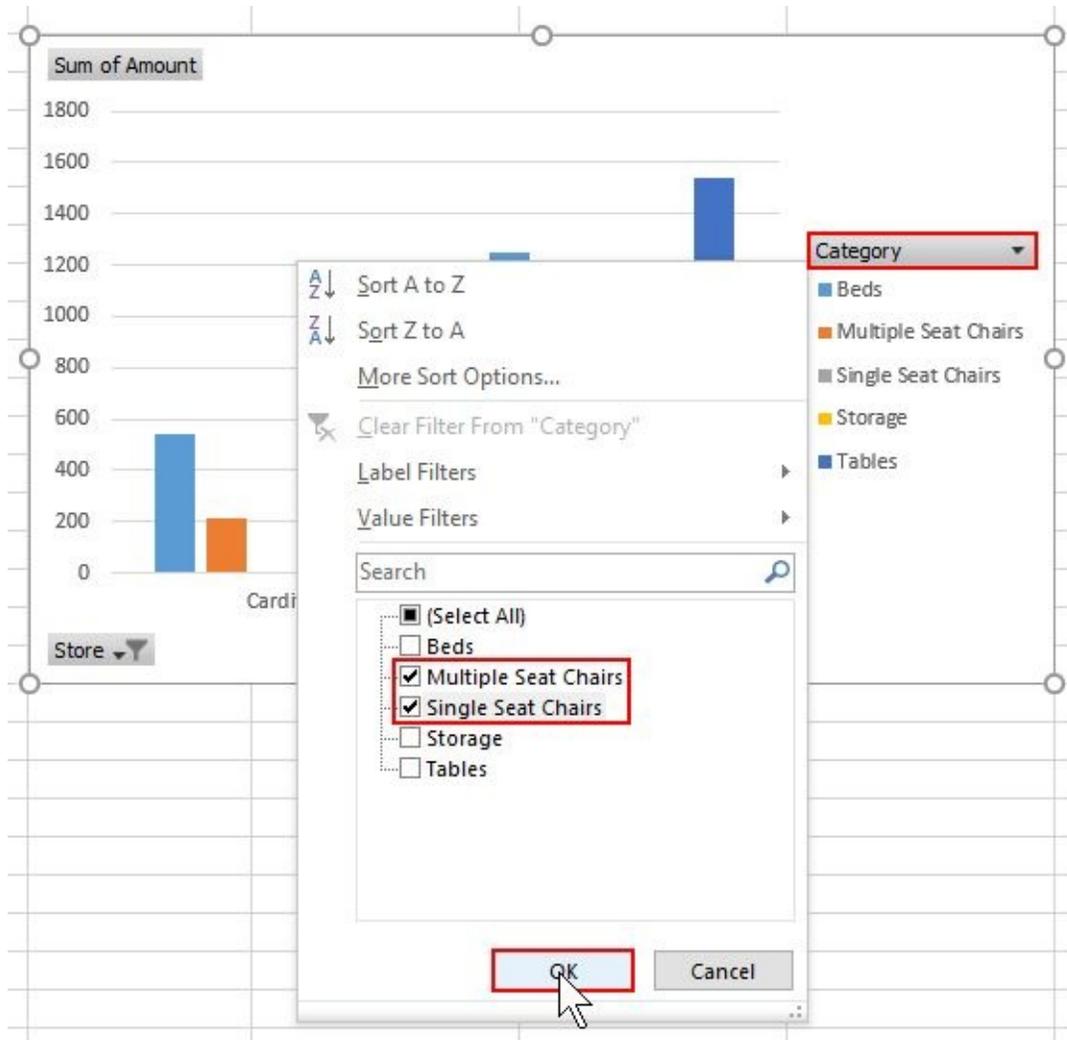


Fig 16-8 – Updated filter selections.

This updates our chart to look like this;

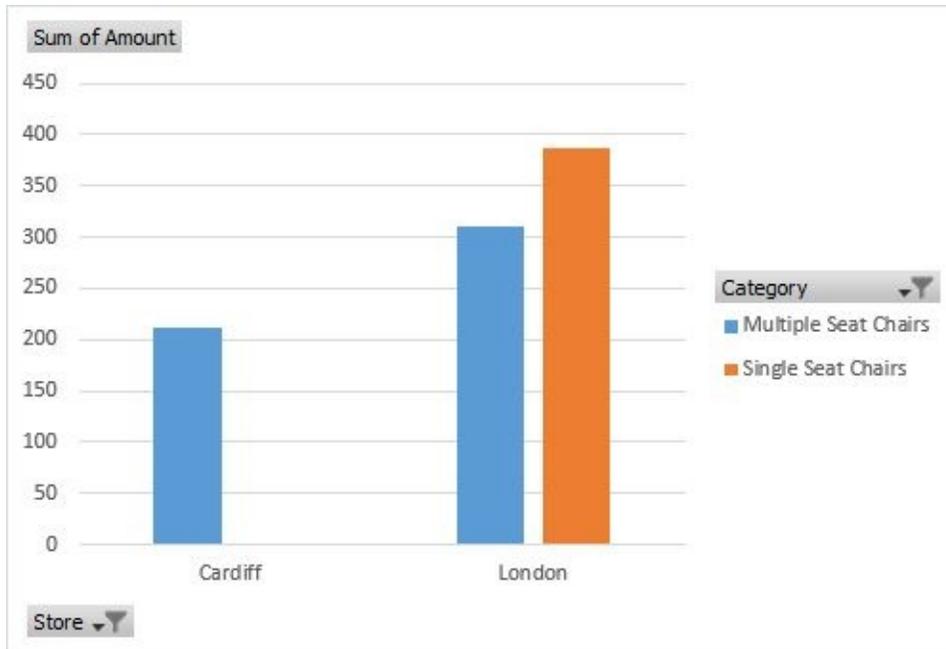


Fig 16-9 – Our pivot chart filtered by store and category.

Of course, this also updates our source pivot table.

Sum of Amount	Column Labels		
Row Labels	Multiple Seat Chairs	Single Seat Chairs	Grand Total
Cardiff	212.19		212.19
London	310.59	387.57	698.16
Grand Total	522.78	387.57	910.35

Fig 16-10 – Our pivot table filtered by store and category.

It is also worth noting that you can filter and unfilter results, using the filters in the pivot table as shown below;

Sum of Amount	Column Labels		
Row Labels	Multiple Seat Chairs	Single Seat Chairs	Grand Total
Cardiff	212.19		212.19
London	310.59	387.57	698.16
Grand Total	522.78	387.57	910.35

Fig 16-11 – Alternative filters.

Chapter 17

Slicing Pivot Tables with Slicers.

Slicers were added to Excel in 2010 and allow for quicker and simpler filtering of pivot tables. They do exactly the same job as the filters we have been using until now, but they are easier to use.

Example Data for Our Pivot Table Slicers.

In this tutorial, we will use the same data as in [chapter 11](#). A copy of this data can be found in the **PT 7 – Data** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Num	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 15	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 15	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 15	£122.03
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32
19	18	Desk	Tables	Cardiff	8 Mar 16	£176.39
20	19	Lift chair	Single Seat Chairs	Bristol	13 Mar 16	£102.67

Fig 17-1 – The annual sales data from “Sofa, So Good”.

And from this data we will produce the two-dimensional pivot table found in the **PT 7 – Pivot Table** tab of the example spreadsheet. Refer to [chapter 14](#) of this tutorial for details on how to build your own two-dimensional pivot table.

Sum of Amount	Column labels						
Row Labels	Beds	Multiple Seat Chairs	Single Seat Chairs	Storage	Tables	Grand Total	
Birmingham	1194.58			661.66	336.21	2192.55	
Bristol	1119.09	512.8	306.92	61.93	444.16	2444.9	
Cerdiff	541.56	212.15		374.7	357.18	1685.43	
London	1247.57	310.58	387.57	202.6	1535.69	3688.32	
Manchester	899.94	391.71	90.02	349.99		1731.58	
Swindon	136.69	349.32	134.8	403.8	761.79	1786.4	
Grand Total	5139.33	1775.63	919.31	2054.68	3635.03	13528.98	

Fig 17-2 – Our two-dimensional pivot table.

Adding A Slicer.

Follow these steps to add a slicer;

1. Click on any cell in the pivot table.
2. This should activate the **PivotTables Tools** section of the Excel ribbon.
3. Click on the **Analyze** sub tab (In older versions of Excel, this sub tab maybe labelled Options).
4. Click on **Insert Slicer**.

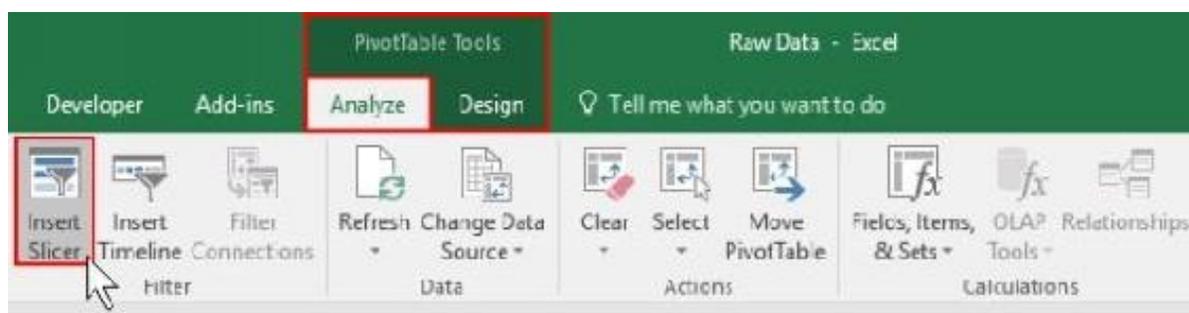


Fig 17-3 – Adding a Pivot Table Slicer.

This will bring up the following **Insert Slicers** form;

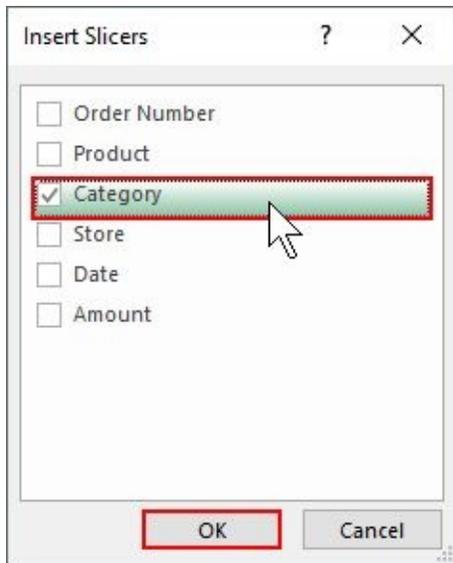


Fig 17-4 – Inserting Slicer.

When the window pops up select **Category** and click **OK**. This will add a slicer filter area to the pivot table sheet.



Fig 17-5 – Slicer filter Area.

If we just want our pivot table to show storage sales, we simply click on the **Storage** button. The Slicer filter area will now look like this;



Fig 17-6 – Filtering by Storage sales.

This in turn will update our pivot to look like this;

Sum of Amount	Column Labels 	
Row Labels 	Storage	Grand Total
Birmingham	661.66	661.66
Bristol	61.93	61.93
Cardiff	374.7	374.7
London	202.6	202.6
Manchester	349.99	349.99
Swindon	403.8	403.8
Grand Total	2054.68	2054.68

Fig 17-7 – Our filtered pivot table.

Note that the filtered symbol appears at the top to show that the table is filtered. Clicking on this shows how the table is filtered.

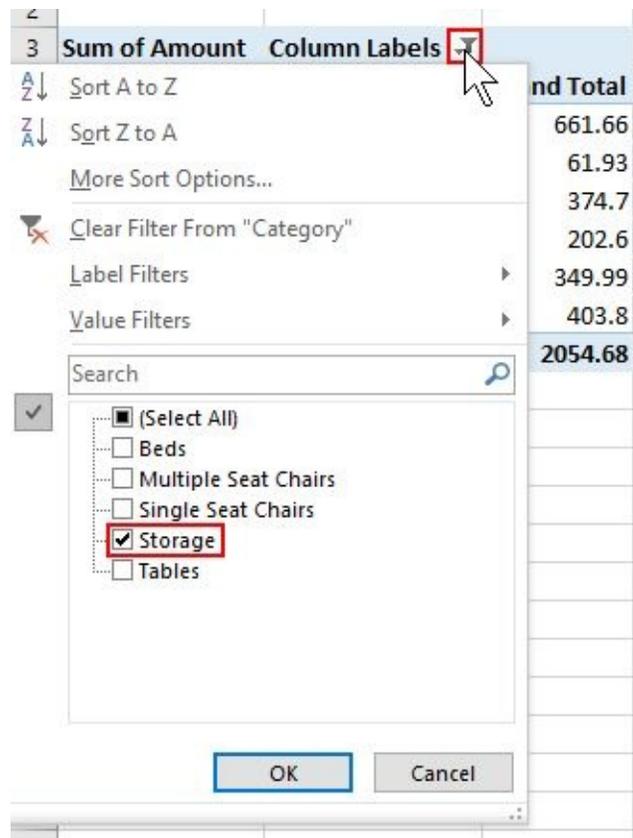


Fig 17-8 – Clicking on the manual filter confirms we are filtered by storage sales.

Making Multiple Selections.

If we want to make multiple selections, there are two ways of doing this. The method you will use will depend on the selection toggle at the top of the slicer window.



Fig 17-9 – Making our multiple selections.

When the selection toggle looks like this; 

Fig 17-10 –Multi-select mode.

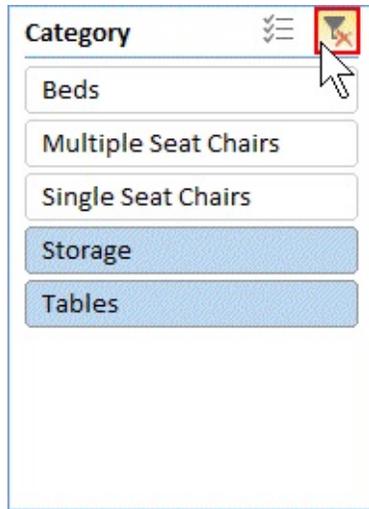
You can select multiple categories simply by clicking on them. Clicking on each category acts as a toggle and you simply toggle each category on and off. This is probably the easiest mode to make multiple selections in.

When the selection toggle looks like this; 

Fig 17-11 –Single-select mode.

Clearing Your Selections.

If we want to clear our selections, we simply click on the **Clear Filter** button as



shown;

Fig 17-12 This will return our pivot table back to an unfiltered table.

Chapter 18

Updating Pivot Tables.

When you change/update your data it does not automatically update your pivot table. This is probably the biggest downfall of pivot tables. So, when we update our data we have to refresh our Pivot Tables. Luckily this is a very simple process.

How to Refresh Your Pivot Table.

You simply right click on any cell in your pivot table and select **Refresh**.

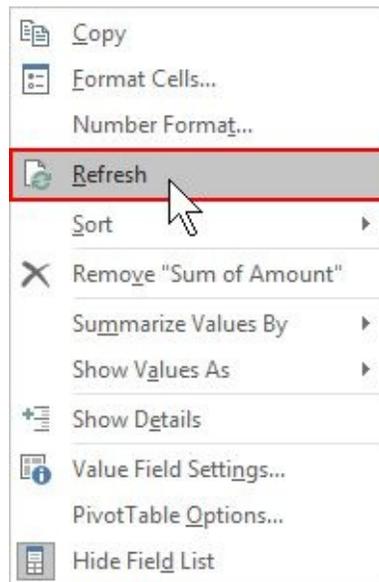


Fig 18-1 – Refreshing our Pivot Table.

How to Handle Large Changes to Your Data.

If you make large changes to your data (e.g. by adding rows or columns) or if you want your pivot table to work on a different set of data, you can redefine your data source.

1. Click on any cell inside your pivot table.
2. Under the **PivotTable Tools** menu select **Analyze** (this will be **Options** in older versions of Excel).
3. Click on **Change Data Source**.
4. Select **Change Data Source**.

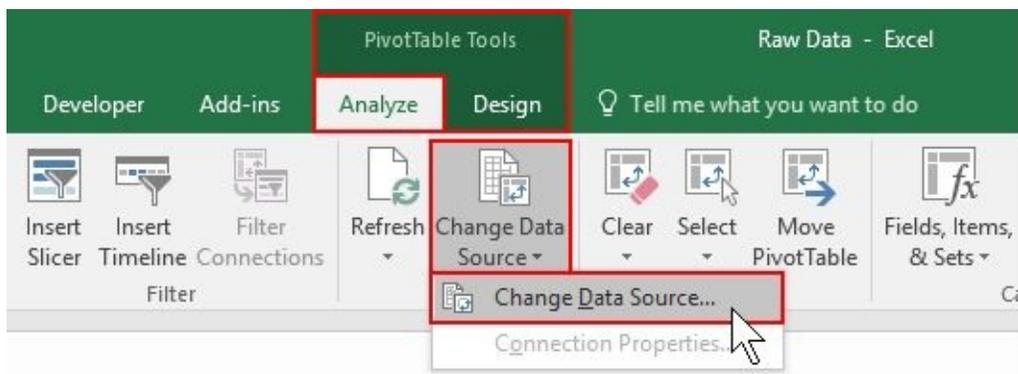


Fig 18-2 – Changing our data source.

This will take you back to the pivot tables source data (if it is on another sheet) and allow you to select the new data set with this form.

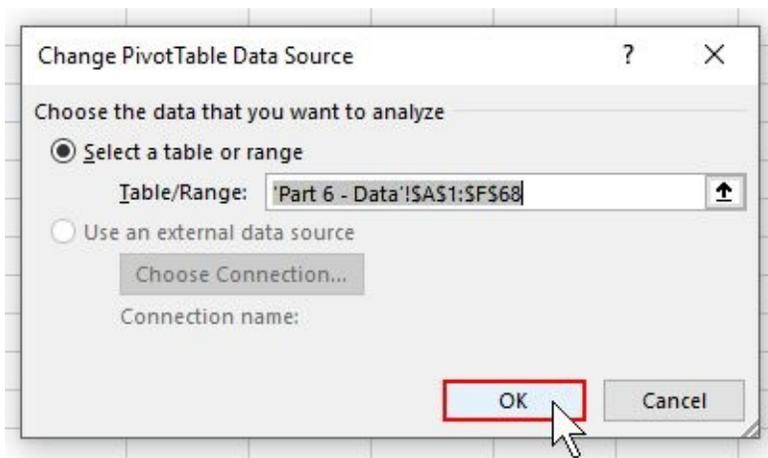


Fig 18-3 – Selecting our new data source.

Once you have selected your new data source click on **OK**.

Chapter 19

Calculated Fields and Items.

Sometimes we need to use calculations when generating our results. For example, we may need to add VAT (Value Added Tax) or Sales tax.

Example Data for Calculated Fields and Items.

In this tutorial, we will use the same data as in [chapter 11](#). A copy of this data can be found in the **PT 9 – Data** tab of the [accompanying spreadsheet](#). This is what our data looks like;

	A	E	C	D	E	F
1	Order Num	Product	Category	Store	Date	Amount
2	1	Canopy bed	Beds	Manchester	4 Jan 16	£185.91
3	2	Changing table	Tables	Birmingham	6 Jan 16	£241.43
4	3	Canopy bed	Beds	Bristol	17 Jan 16	£598.31
5	4	Davenport	Multiple Seat Chairs	London	24 Jan 16	£310.59
6	5	Changing table	Tables	London	26 Jan 16	£151.68
7	6	Bathroom cabinet	Storage	Manchester	2 Feb 15	£76.85
8	7	Bunk bed	Beds	Cardiff	3 Feb 15	£541.36
9	8	Chest of drawers	Storage	Birmingham	8 Feb 15	£122.03
10	9	Bathroom cabinet	Storage	Manchester	14 Feb 16	£116.86
11	10	Coat rack	Storage	Swindon	17 Feb 16	£139.30
12	12	Daybed	Beds	Manchester	21 Feb 16	£149.29
13	11	Bean bag	Single Seat Chairs	Swindon	21 Feb 16	£134.80
14	13	Chest of drawers	Storage	London	1 Mar 16	£125.22
15	15	Chest	Storage	Cardiff	4 Mar 16	£100.03
16	14	Coffee table	Tables	London	4 Mar 16	£270.78
17	16	Changing table	Tables	Swindon	5 Mar 16	£136.82
18	17	Daybed	Beds	London	6 Mar 16	£541.32
19	18	Desk	Tables	Cardiff	8 Mar 16	£176.39

Fig 19-1 – The annual sales data from “Sofa, So Good”.

And from this data we will produce the pivot table found in the **PT 9 – Pivot Table** tab of the [accompanying spreadsheet](#). This pivot table breaks the sales figures down by product type.

Row Labels	Sum of Amount
Beds	5139.33
Multiple Seat Chairs	1776.63
Single Seat Chairs	919.31
Storage	2054.68
Tables	3639.03
Grand Total	13528.98

Fig 19-2 – Our sales pivot table breaking sales down by product type.

Adding A Calculated Field.

A calculated field is one that applies a calculation to a field to produce a new field. For example, a calculated field to include sales tax would use the sales field as the basis for the calculation. To add a calculated field, follow these steps;

1. Click on any cell in the Pivot Table to activate the **Pivot Table Tools** section of the main Excel ribbon menu.
2. Select the **Analyze (Options in older versions of Excel)** sub menu.
3. Click **Fields, Items & Sets**.
4. Click **Calculated Fields...**

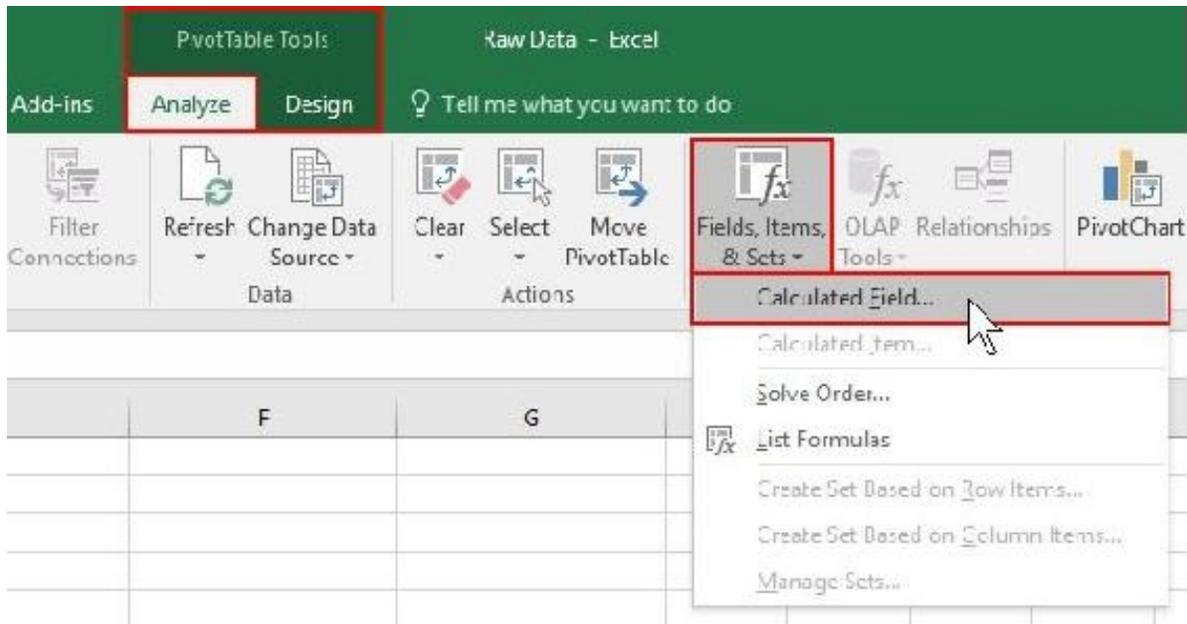


Fig 19-3 – Selecting Calculated Fields.

This will bring up the **Insert Calculated Field** window;

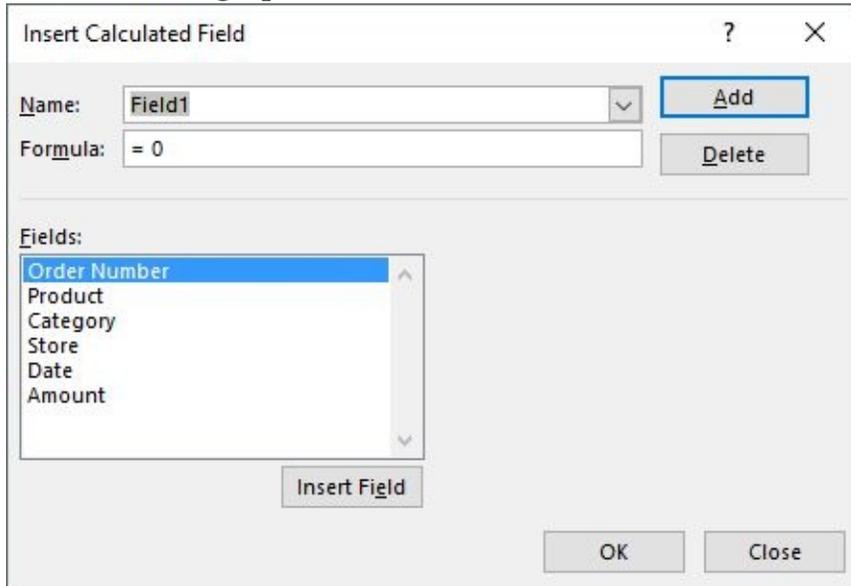


Fig 19-4 – The Insert Calculated Field window.

In this exercise, we are going to add VAT (the UK version of Sales Tax) to our figures. At the time of putting this tutorial together VAT stands at 20%. We achieve this by setting the following settings;

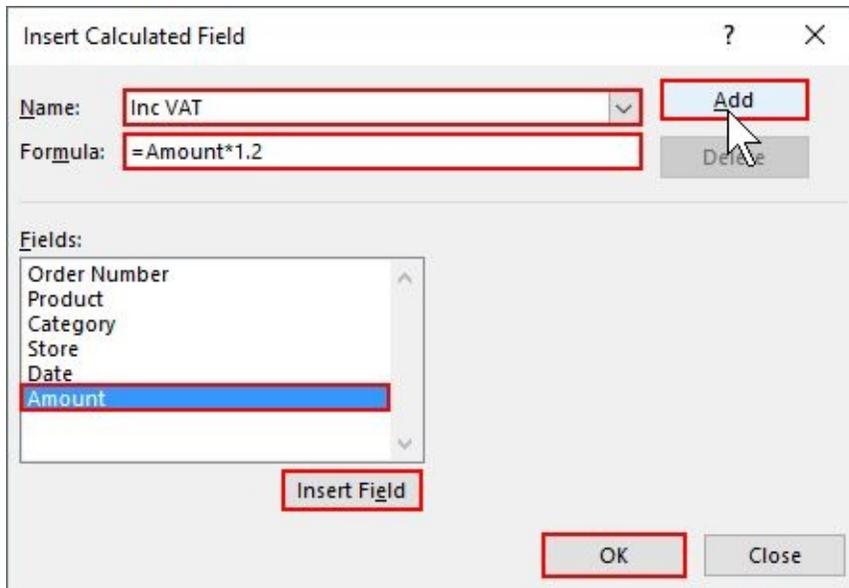


Fig 19-5 – The settings for our calculated field.

1. In the **Name:** field enter the name for your new field – in our example we are calling it “Inc VAT”.
2. In the **Fields:** area click on **Amount**.
3. Click on the **Insert Field** button.
4. The **Formula:** field should now read

=Amount
5. Add ***1.2** to the **Formula:** field so it reads

=Amount*1.2
6. Click the **Add** button.
7. Click the **OK** button.

This will add a new column to our pivot table to make it look like this;

Row Labels	Sum of Amount	Sum of Inc VAT
Beds	5139.33	£6,167.20
Multiple Seat Chairs	1776.63	£2,131.96
Single Seat Chairs	919.31	£1,103.17
Storage	2054.68	£2,465.62
Tables	3639.03	£4,366.84
Grand Total	13528.98	£16,234.78

Fig 19-6 – The calculated field added to our Pivot Table.

Adding A Calculated Item.

Adding a calculated item calculates a single item/result from other single items. In this example, we are going to calculate the sales of chairs (multiple seat and single seat combined) including VAT (sales tax).

Row Labels	Sum of Amount
Beds	5139.33
Multiple Seat Chairs	1776.63
Single Seat Chairs	919.31
Storage	2054.68
Tables	3639.03
Grand Total	13528.98

Follow these steps to achieve this;

Fig 19-7 – Important – Select one of these cells only.

1. Select one of the category names in the pivot table. If you select the amounts or the headings this process will not work.
2. Select the **Analyze (Options** in older versions of Excel) sub menu.
3. Click **Fields, Items & Sets**.
4. Click **Calculated Item...** (If you clicked on anything other than a product type in step 1, this option will be greyed out).

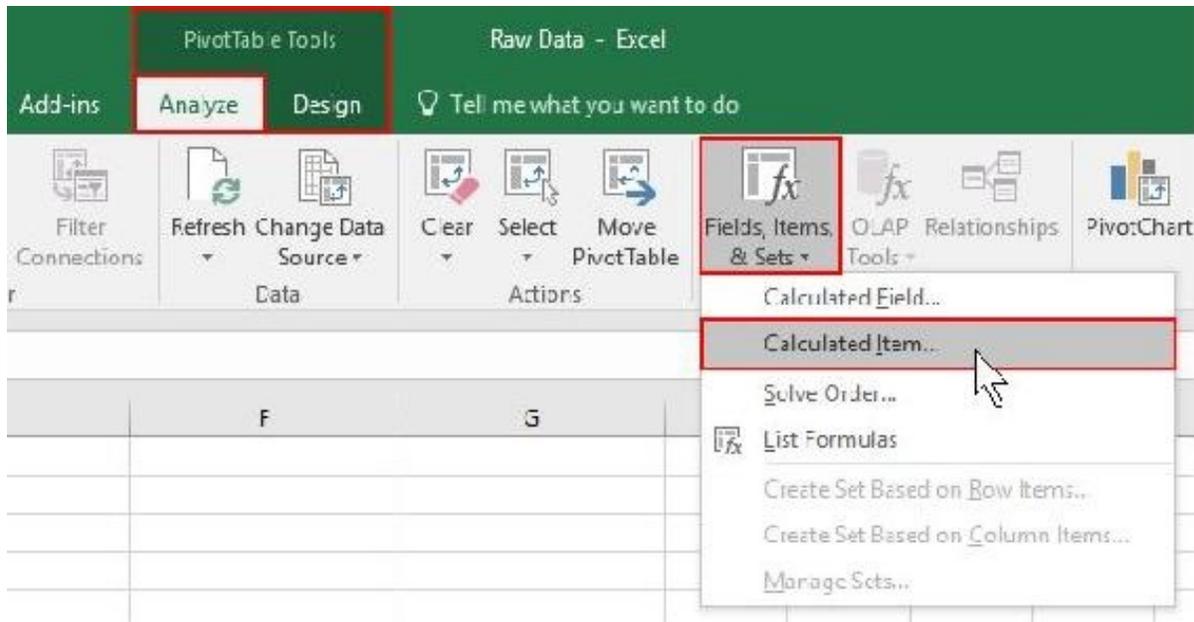


Fig 19-8 – Selecting Calculated Item.

This will bring up the Insert Calculated Item window;

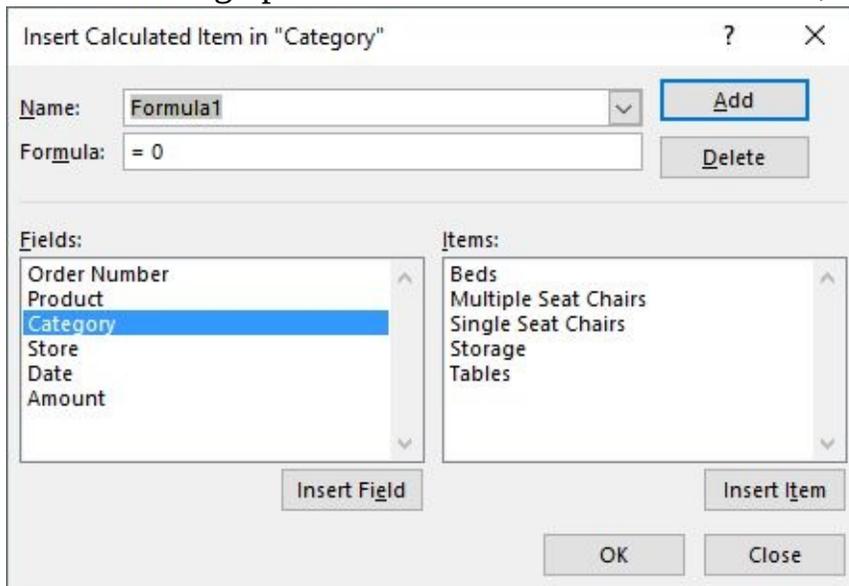


Fig 19-9 – Insert Calculated Item window.

To combine the **Multiple Seat Chairs** and **Single Seat Chairs** with VAT (Sales Tax) we enter the following settings;

1. In the **Name:** field enter the name of the desired item. In our example,

we will call it “Chair Sales Inc VAT”.

2. Enter =(in the Formula: field.
3. In the **Items:** field click on **Multiple Seat Chairs** and then the **Insert Item** button.
4. The **Formula:** field should now read;
=('Multiple Seat Chairs'
5. Add a + to the end of the formula so it reads;
=('Multiple Seat Chairs'+
6. In the **Items:** field click on **Single Seat Chairs** and then the Insert Item button.
7. The **Formula:** field should now read;
=('Multiple Seat Chairs'+ 'Single Seat Chairs'
8. Add a) to the end of the formula so it reads
=('Multiple Seat Chairs'+ Single Seat Chairs')
9. Click **OK**.

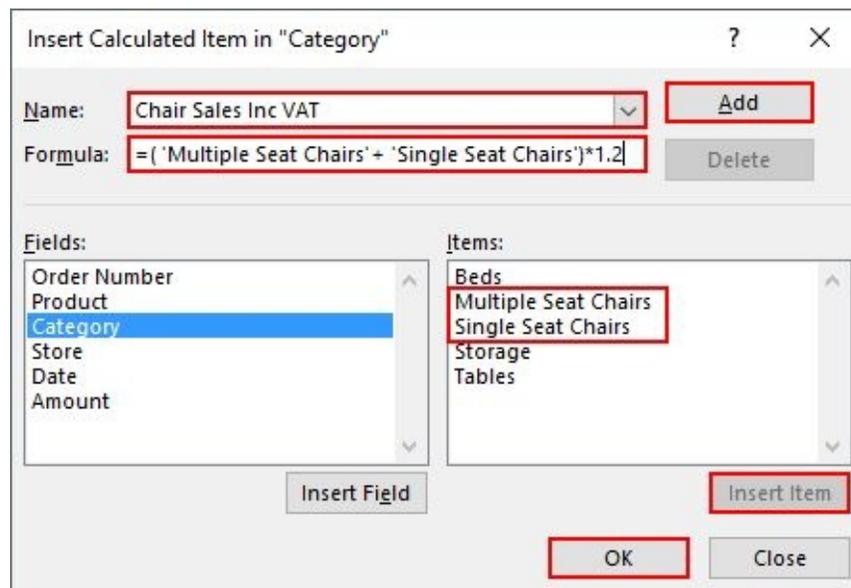


Fig 19-10 – The settings for our calculated item.

Our pivot table will now include a **Chair Sales Inc VAT** field.

Row Labels	Sum of Amount
Beds	5139.33
Multiple Seat Chairs	1776.63
Single Seat Chairs	919.31
Storage	2054.68
Tables	3639.03
Chair Sales Inc VAT	3235.128
Grand Total	16764.108

Fig 19-11 – Our calculated item added to our pivot table.