# Excel Pivot Tables

## Overview

| Total Sales | (All) | | | | |
|---|---|---|---|---|---|
| | | | | | |
| Sum of # Or | Column | | | | |
| Row Lab | East | North | South | West | Grand Total |
| Bill | | | | 217 | 217 |
| Frank | | | | 268 | 268 |
| Harry | | 224 | | | 224 |
| Janet | | 286 | | | 286 |
| Joe | | | 226 | | 226 |
| Martha | 228 | | | | 228 |
| Mary | | | | 234 | 234 |
| Ralph | 267 | | | | 267 |
| Sam | 279 | | | | 279 |
| Tom | | | 261 | | 261 |
| Grand Tota | 774 | 510 | 487 | 719 | 2490 |

Pivot tables in Excel are a versatile reporting tool that makes it easy to extract information from large tables of data without the use of formulas.

Pivot tables are extremely user friendly in that by moving, or **pivoting**, fields of data from one location to another using **drag and drop** we can look at the same data in a number of different ways.

This tutorial covers creating and using a pivot table to extract different information from one data sample.

## Section 1. Enter the Pivot Table Data

1. The first step in creating a pivot table is to enter the data into a worksheet.

   When doing so, keep the following points in mind:

   - At least three columns of data are needed to create a pivot table.
   - it is important to enter data correctly. Errors, caused by incorrect data entry, are the source of many problems related to data management.
   - Leave no blank rows or columns when entering the data. This includes **NOT** leaving a blank row between the column headings and the first row of data.

| SalesRep | Region | # Orders | Total Sales |
|---|---|---|---|
| Bill | West | 217 | $41,107 |
| Frank | West | 268 | $72,707 |
| Harry | North | 224 | $41,676 |
| Janet | North | 286 | $87,858 |
| Joe | South | 226 | $45,606 |
| Martha | East | 228 | $49,017 |
| Mary | West | 234 | $57,967 |
| Ralph | East | 267 | $70,702 |
| Sam | East | 279 | $77,738 |
| Tom | South | 261 | $69,496 |

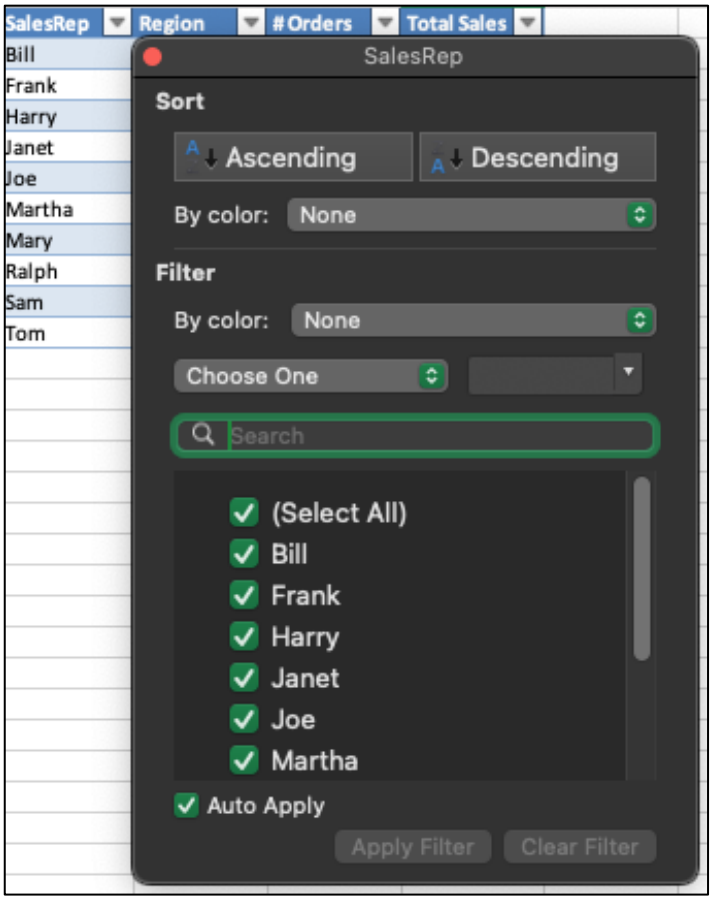
2. Next you are going to want to turn your data into a **Table**. To do this click on the top left most cell in your data and drag down to select it all. Go to the **insert tab** and click on Table.

   Converting your data into a table gives benefits that will save you time in the future when dealing with large amounts of data.

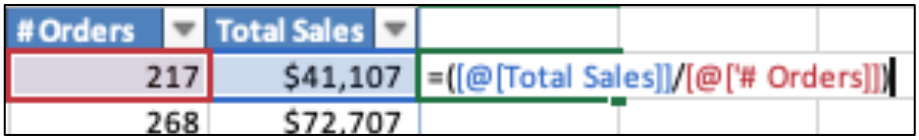
- **Better formatting**: The rows are banded with alternating colors making it easier for the eye to track along each line.

| SalesRep | Region | # Orders | Total Sales |
|---|---|---|---|
| Bill | West | 217 | $41,107 |
| Frank | West | 268 | $72,707 |
| Harry | North | 224 | $41,676 |

- **Filter drop-down menus**: When you create a table, each column automatically gets filter drop-down menus. This allows you to quickly filter and sort your data.




- **Automatic formulas**: If you add a formula to the right of the table, Excel will automatically extend the table to the right to include it. In addition, it will copy that formula all the way down the new column, applying the formula to the other rows in the table.

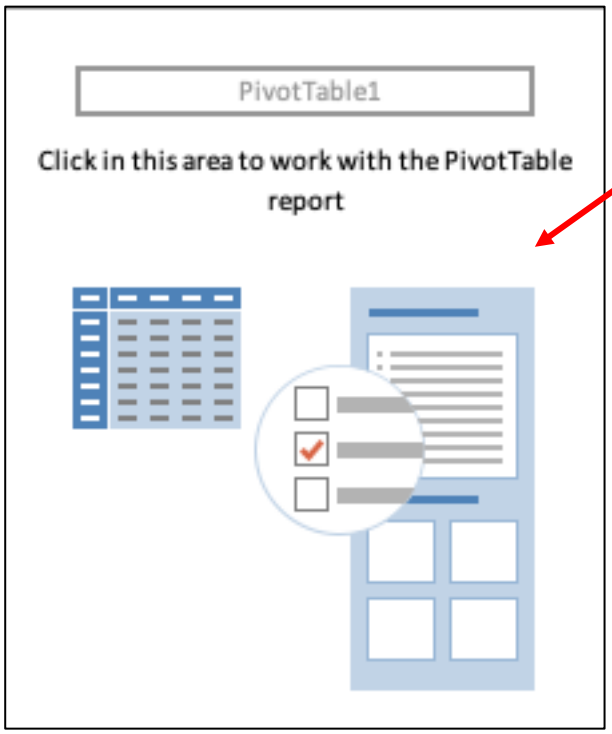



- **Table Automatically Extends**: If you add data the bottom of the table, Excel will automatically extend the table to include the new row.

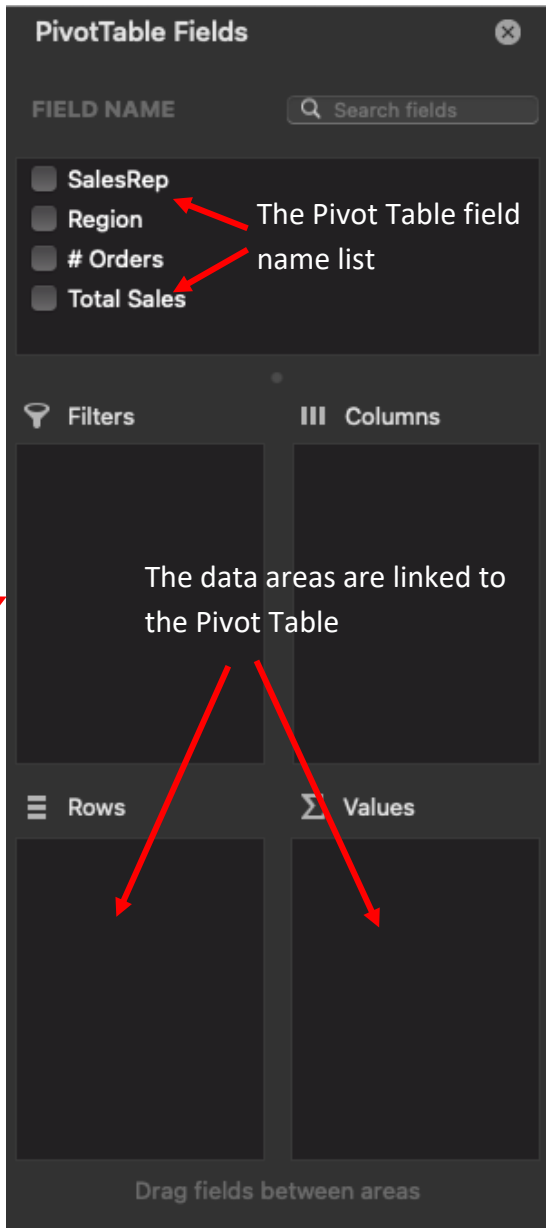
## Section 2. Create the Pivot Table

Drag select cells to highlight them.

1. Click on the **Insert tab** of the Tool Bar.
2. Click on **Pivot Table** to open the **Create Pivot Table** dialog box.
3. By pre-selecting the data range, the Table/Range line in the dialog box should be filled in for us.
4. Choose **New Worksheet** for the location of the pivot table.




A blank pivot table should appear on the worksheet with the top left corner of the pivot table in the cell you selected.




The **Pivot Table Field List** panel should open on the right-hand side of the Excel window.

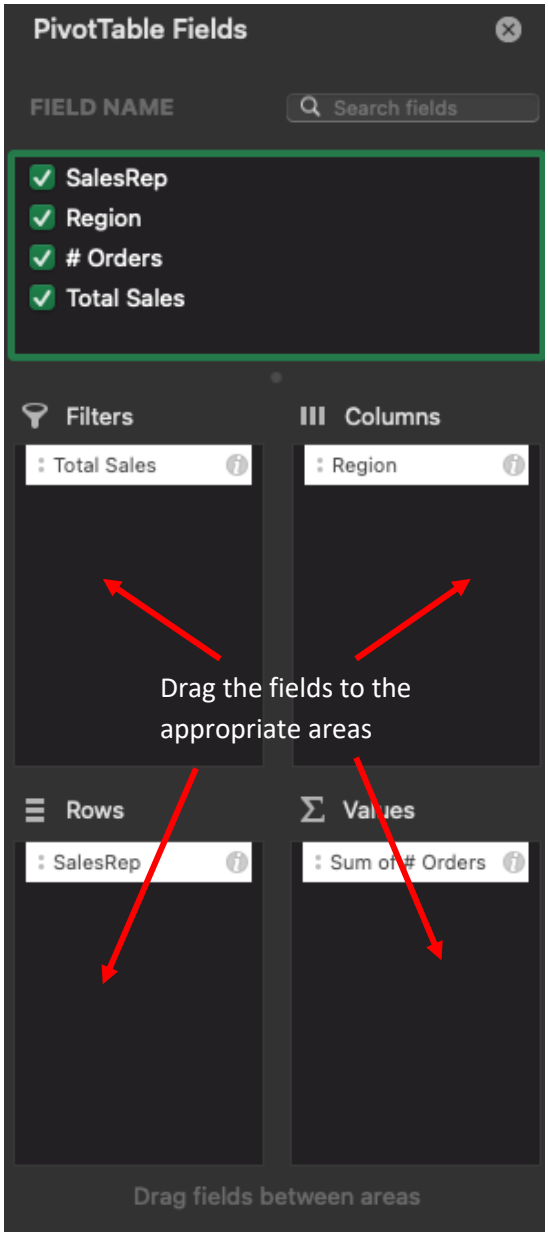
At the top of the **Pivot Table Field List** panel are the field names (column headings) from our data table. The data areas at the bottom of the panel are linked to the pivot table.

## Section 3. Add Data to the Pivot Table

To populate the Pivot Table, you need to drag the field names to the bottom of the **Pivot Table Field List** panel and drop them in the data areas.

The data areas in the **Pivot Table Field List** panel are linked to corresponding areas of the pivot table. As you add the field names to the data areas, your data is added to the pivot table.

Depending on which fields are placed in which data area, different results can be obtained.




**Exercise:**

1. Drag the field names to these data areas:
   - **Total Sales** to the **Report Filter** area
   - **Region** to the **Column Labels** area
   - **Sales Rep** to the **Row Labels** area
   - **Orders** to the **Values** area

The **Rows** are arranged by **Sales Rep**

| Total Sales | (All) | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Sum of # Orders** | **Column Labels** | | | | |
| **Row Labels** | **East** | **North** | **South** | **West** | **Grand Total** |
| Bill | | | | 217 | 217 |
| Frank | | | | 268 | 268 |
| Harry | | 224 | | | 224 |
| Janet | | 286 | | | 286 |
| Joe | | | 226 | | 226 |
| Martha | 228 | | | | 228 |
| Mary | | | | 234 | 234 |
| Ralph | 267 | | | | 267 |
| Sam | 279 | | | | 279 |
| Tom | | | 261 | | 261 |
| **Grand Total** | **774** | **510** | **487** | **719** | **2490** |

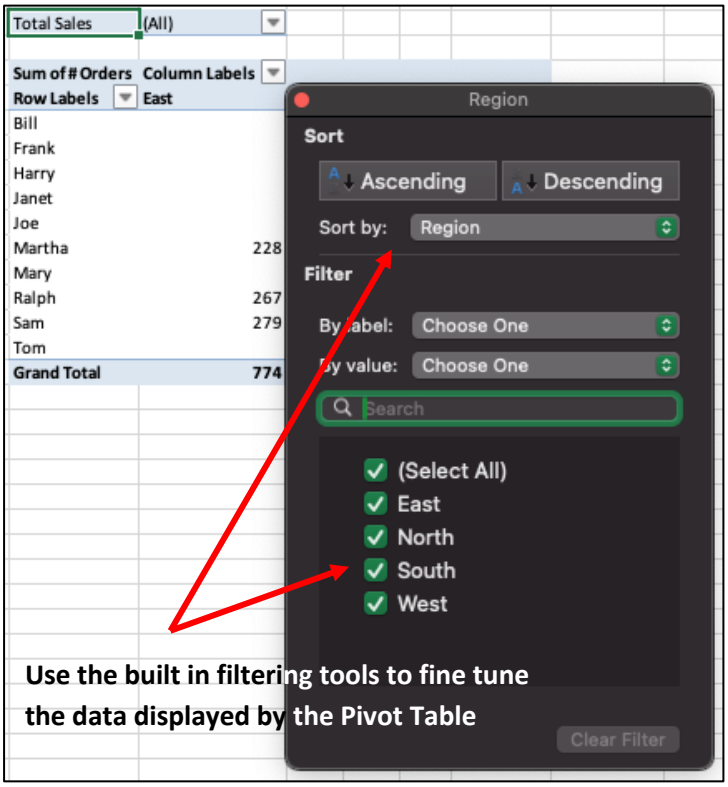
The different **Regions** are how the columns are arranged

The **Values** within the table are the **Sum of the # of Orders** with totals at the bottom and right

## Section 4. Filter the Pivot Table Data

The Pivot Table has built in filtering tools that can be used to fine tune the results shown by the Pivot Table.

Filtering data involves using specific criteria to limit what data is displayed by the Pivot Table.



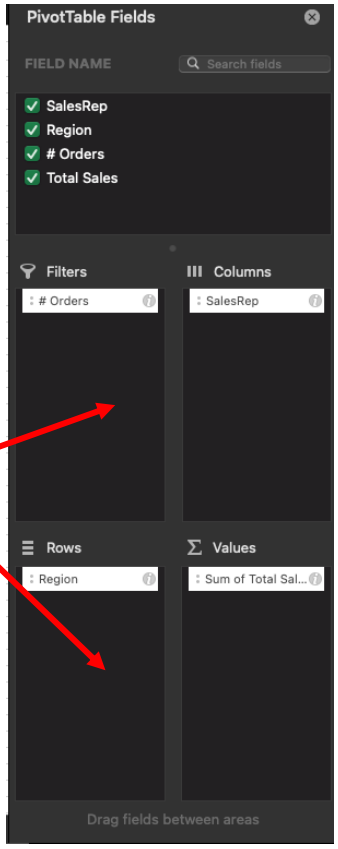

**Exercise:**

1. Click on the down arrow next to the **Column Labels** heading in the Pivot Table to open the filter's drop-down list.
2. Click on the check box next to the **Select All** option to remove the check mark from all the boxes in this list.
3. Click on the check boxes next to the **East** and **North** options to add check marks to these boxes.
4. The Pivot Table should now show only the order totals for the sales reps that work in the East and North regions.

## Section 5. Change the Pivot Table Data

To change the results shown by the Pivot Table:

1. Rearrange the pivot table by dragging the data fields from one data area to another in the Pivot Table Field List panel.
2. Apply filtering to get the desired results.




**Exercise:**

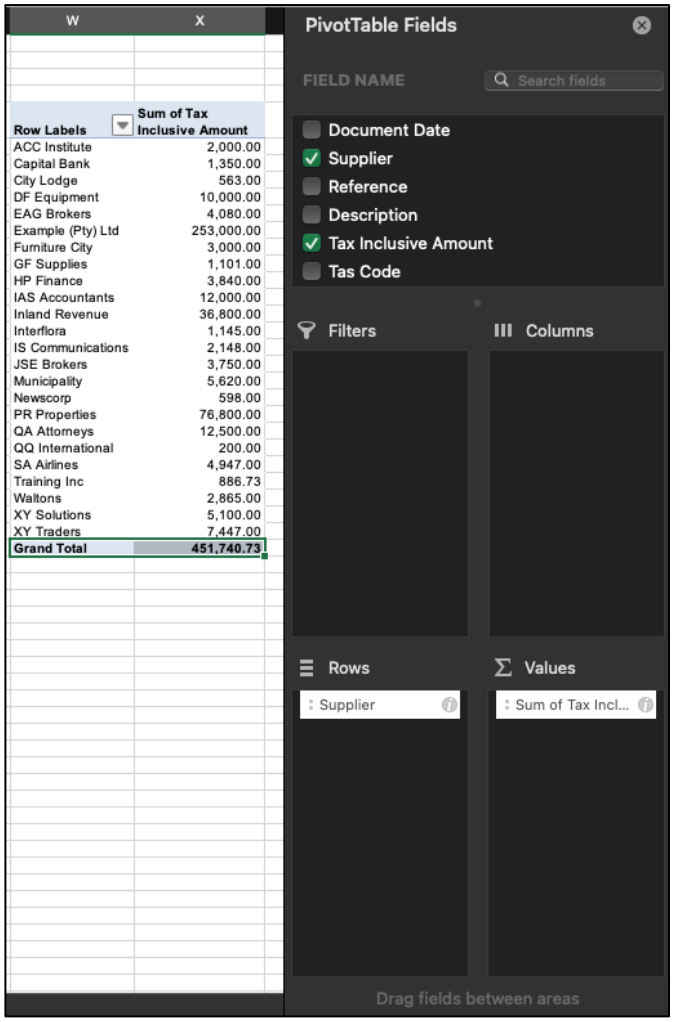
1. Drag the field names to these data areas:
   - **Orders** to the **Report Filter** area
   - **Sales Rep** to the **Column Labels** area
   - **Region** to the **Row Labels** area
   - **Total Sales** to the **Values** area
2. Click on the down arrow next to the **Row Labels** heading in the Pivot Table to open the filter's drop down list.
3. Click on the check box next to the **Select All** option to remove the check marks from all the boxes in this list.
4. Click on the check box next to the **West** option to add a check mark to this box.

5. The Pivot Table should now show the total sales for only those sales reps that work in the West region.

| # Orders | (All) | | | |
|---|---|---|---|---|
| | | | | |
| Sum of Total Sales | Column Labels | | | |
| Row Labels | Bill | Frank | Mary | Grand Total |
| West | 41107 | 72707 | 57967 | 171781 |
| Grand Total | 41107 | 72707 | 57967 | 171781 |

## Section 6. Advanced Pivot Table Exercise

1. Create a pivot table **on a new worksheet** which is based on all the cells in Excel table.
   a. Use the pivot table to display the total **Tax Inclusive Amount** for each **Supplier**. The way to do that is to put the Supplier Field in the Row area, and put the Tax Inclusive Amount in the Values Area.
2. Rename the new sheet as: **Suppliers**
3. Change the number formatting in the amount section of the pivot table so that it displays as currency. Use the pivot table feature for this purpose so that the new number formatting is retained after the pivot table is refreshed. (**Right Click the Field->Field Settings->Number…->Currency**)
4. Change the column width of **column B** to **16**. (**Right Click the Column Header->Column Width**)
5. **Wrap** the column heading in **column B** so that it is displayed in two lines and **center** the text. (**Select the Header Cell->Wrap Text in Toolbar)**



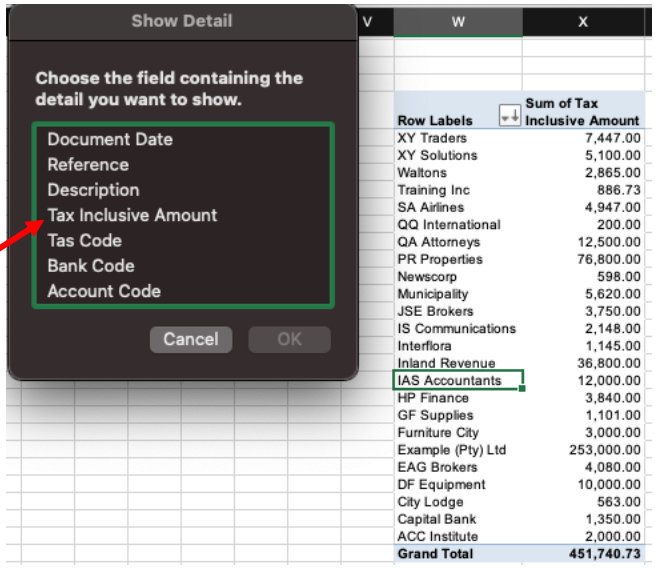
6. Open the **Expenses sheet** and change the amount in **row 16** from **13,000 to 33,000**.
7. Open the **Suppliers sheet** and note the grand total at the bottom of the pivot table. The total did not change. This is because the data needs to be refreshed. **Refresh** the pivot table and note the change in the grand total. **(Right Click Pivot Table->Refresh)**
8. Change the order of the supplier names in **column A** so that the suppliers are sorted in a **descending** order (from Z to A). **(Row Labels Dropdown->Sort Descending)**

| Row Labels | Sum of Tax Inclusive Amount |
|---|---|
| ACC Institute | 2,000.00 |
| Capital Bank | 1,350.00 |
| City Lodge | 563.00 |
| DF Equipment | 10,000.00 |
| EAG Brokers | 4,080.00 |
| Example (Pty) Ltd | 253,000.00 |
| Furniture City | 3,000.00 |
| GF Supplies | 1,101.00 |
| HP Finance | 3,840.00 |
| IAS Accountants | 12,000.00 |
| Inland Revenue | 36,800.00 |
| Interflora | 1,145.00 |
| IS Communications | 2,148.00 |
| JSE Brokers | 3,750.00 |
| Municipality | 5,620.00 |
| Newscorp | 598.00 |
| PR Properties | 76,800.00 |
| QA Attorneys | 12,500.00 |
| QQ International | 200.00 |
| SA Airlines | 4,947.00 |
| Training Inc | 886.73 |
| Waltons | 2,865.00 |
| XY Solutions | 5,100.00 |
| XY Traders | 7,447.00 |
| **Grand Total** | **451,740.73** |

9. We will now **Drill down** to the source data that makes up the supplier total for the **IAS Accountants** supplier.
   a. Double click the Sum of Tax **Inclusive Amount** for **IAS Accountants.** This will open up a new sheet with the data for just **IAS Accountants.**
   b. Rename the new sheet: IAS

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Document Date | Supplier | Reference | Description | Tax Inclusive Amount | Tas Code | Bank Code | Account Code | Payment Date |
| 2 | 2/15/12 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | |
| 3 | 1/15/12 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 2/2/12 |
| 4 | 12/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 1/2/12 |
| 5 | 11/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 12/3/11 |
| 6 | 10/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 11/2/11 |
| 7 | 9/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 10/3/11 |
| 8 | 3/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 4/2/11 |
| 9 | 8/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 9/2/11 |
| 10 | 7/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 8/2/11 |
| 11 | 6/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 7/3/11 |
| 12 | 5/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 6/2/11 |
| 13 | 4/15/11 | IAS Accounta | Invoice | Bookkeeping | 1000 | A | B1 | IS-305 | 5/3/11 |

10. To see the details for a value on the Pivot table,
double click it and select the field of detail to show
    a. Double click the **IAS Accountants**
    b. Select **Tax Inclusive Amount** and click **OK**




| Row Labels | Sum of Tax Inclusive Amount |
|---|---|
| XY Traders | 7,447.00 |
| XY Solutions | 5,100.00 |
| Waltons | 2,865.00 |
| Training Inc | 886.73 |
| SA Airlines | 4,947.00 |
| QQ International | 200.00 |
| QA Attorneys | 12,500.00 |
| PR Properties | 76,800.00 |
| Newscorp | 598.00 |
| Municipality | 5,620.00 |
| JSE Brokers | 3,750.00 |
| IS Communications | 2,148.00 |
| Interflora | 1,145.00 |
| Inland Revenue | 36,800.00 |
| IAS Accountants | 12,000.00 |
| HP Finance | 3,840.00 |
| GF Supplies | 1,101.00 |
| Furniture City | 3,000.00 |
| Example (Pty) Ltd | 253,000.00 |
| EAG Brokers | 4,080.00 |
| DF Equipment | 10,000.00 |
| City Lodge | 563.00 |
| Capital Bank | 1,350.00 |
| ACC Institute | 2,000.00 |
| Grand Total | 451,740.73 |

    c. Select the new amount (**1,000.00**) that is displayed and double click it
    d. Select **Payment Date** and click **OK**

**You will see all the dates that 1000 was paid to IAS Accountable**

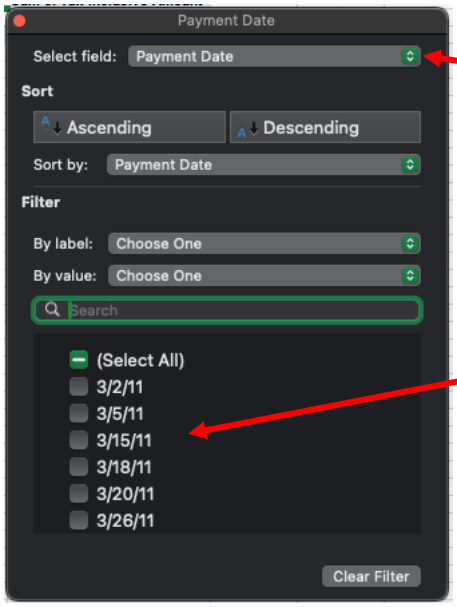
| Row Labels | Sum of Tax Inclusive Amount |
|---|---|
| XY Traders | 7,447.00 |
| XY Solutions | 5,100.00 |
| Waltons | 2,865.00 |
| Training Inc | 886.73 |
| SA Airlines | 4,947.00 |
| QQ International | 200.00 |
| QA Attorneys | 12,500.00 |
| PR Properties | 76,800.00 |
| Newscorp | 598.00 |
| Municipality | 5,620.00 |
| JSE Brokers | 3,750.00 |
| IS Communications | 2,148.00 |
| Interflora | 1,145.00 |
| Inland Revenue | 36,800.00 |
| IAS Accountants | 12,000.00 |
| 1,000.00 | 12,000.00 |
| 4/2/11 | 1,000.00 |
| 5/3/11 | 1,000.00 |
| 6/2/11 | 1,000.00 |
| 7/3/11 | 1,000.00 |
| 8/2/11 | 1,000.00 |
| 9/2/11 | 1,000.00 |
| 10/3/11 | 1,000.00 |
| 11/2/11 | 1,000.00 |
| 12/3/11 | 1,000.00 |
| 1/2/12 | 1,000.00 |
| 2/2/12 | 1,000.00 |
| (blank) | 1,000.00 |
| HP Finance | 3,840.00 |
| GF Supplies | 1,101.00 |
| Furniture City | 3,000.00 |
| Example (Pty) Ltd | 253,000.00 |
| EAG Brokers | 4,080.00 |
| DF Equipment | 10,000.00 |
| City Lodge | 563.00 |
| Capital Bank | 1,350.00 |
| ACC Institute | 2,000.00 |
| Grand Total | 451,740.73 |

11. Open the **Expenses** worksheet and create another pivot table that shows an expense total (**Tax Inclusive Amount**) for each of the payment dates that are included in column I.

| | A | B |
|---|---|---|
| 1 | Row Labels | Sum of Tax Inclusive Amount |
| 2 | <3/2/11 | 11468 |
| 3 | 2011 | 375307.48 |
| 4 | 2012 | 64965.25 |
| 5 | Grand Total | 451740.73 |

**12.** Rename the new sheet as: **Payments**

**13.** Filter the pivot table so that only payment dates on or after 1 January 2012 are displayed.




Click on the drop down to select **Payment Date**

From here you can select what dates you want to include in your **Pivot Table**

**14.** Drag **Bank Codes** to the **Columns** section of your Pivot Table to include them in separate columns.

**15.** Adjust the column widths of all the columns that are included in the pivot table to **16**.

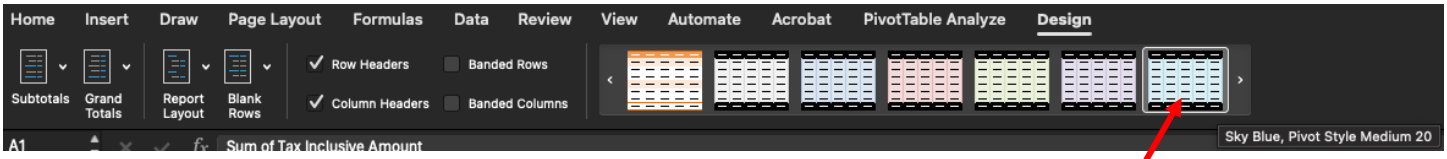
| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Sum of Tax Inclusiv | Column Labels | | | |
| 2 | Row Labels | B1 | B2 | PC | Grand Total |
| 3 | 2012 | 64894.25 | 70 | 1 | 64965.25 |
| 4 | Grand Total | 64894.25 | 70 | 1 | 64965.25 |

Reminder: Right click on the column header and select **Column Width…**

**16.** Click on the + to expand the data shown in the Pivot Table

| Sum of Tax Inclusive Amount | Column Labels | | | |
|---|---|---|---|---|
| Row Labels | B1 | B2 | PC | Grand Total |
| 2012 | 64,894.25 | 70.00 | 1.00 | 64,965.25 |
| Qtr1 | 64,894.25 | 70.00 | 1.00 | 64,965.25 |
| Jan | 30,270.25 | 35.00 | -4.00 | 30,301.25 |
| 1/2/12 | 1,000.00 | | | 1,000.00 |
| 1/5/12 | 340.00 | | | 340.00 |
| 1/15/12 | 80.00 | 35.00 | | 115.00 |
| 1/16/12 | 1,392.00 | | 105.00 | 1,497.00 |
| 1/20/12 | 20,000.00 | -20,000.00 | | 0.00 |
| 1/21/12 | | | 61.00 | 61.00 |
| 1/26/12 | 6,720.00 | 20,000.00 | | 26,720.00 |
| 1/31/12 | 738.25 | | -170.00 | 568.25 |
| Feb | 34,624.00 | 35.00 | 5.00 | 34,664.00 |
| 2/2/12 | 1,000.00 | | | 1,000.00 |
| 2/5/12 | 340.00 | | | 340.00 |
| 2/15/12 | 80.00 | 35.00 | | 115.00 |
| 2/20/12 | 20,000.00 | -20,000.00 | | 0.00 |
| 2/25/12 | 2,200.00 | | 75.00 | 2,275.00 |
| 2/26/12 | 6,720.00 | 20,000.00 | | 26,720.00 |
| 2/27/12 | 514.00 | | | 514.00 |
| 2/29/12 | 3,770.00 | | -70.00 | 3,700.00 |
| Grand Total | 64,894.25 | 70.00 | 1.00 | 64,965.25 |

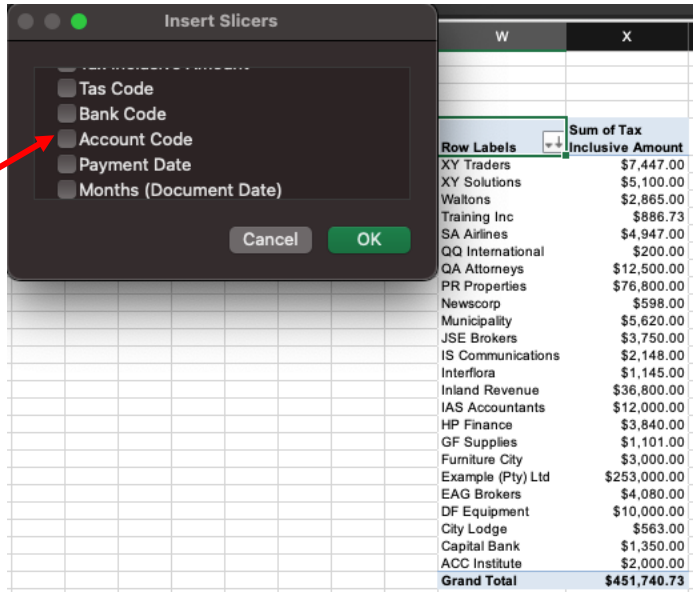
17. Go to the **Design** tab change the formatting style of the pivot table to **Pivot Style Medium 20**.




Hover your mouse over the appropriate image in the Pivot Table Styles section of the **Design** tab in order to display a description for each of the pivot table styles

18. Open the Suppliers sheet and insert a pivot table slicer based on the **Account Code** field. To do this select the Pivot Table and click on the tab **PivotTable Analyze**. In there click on **Insert Slicer**

19. In the popup select **Account Code** and click OK

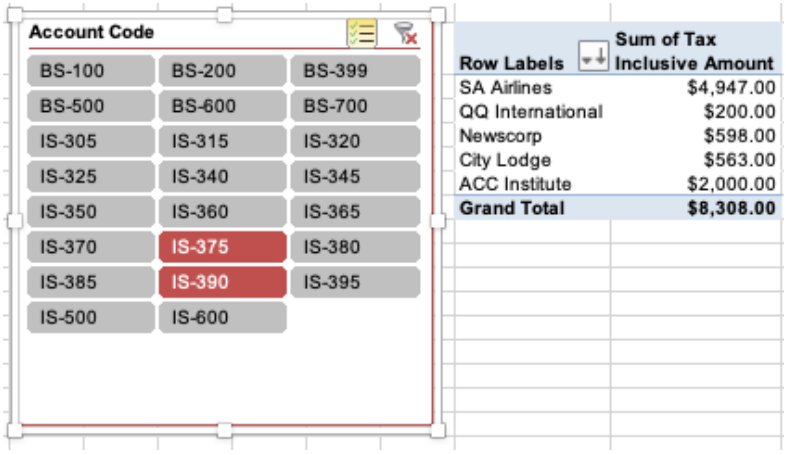



20. Selecting the slicer will automatically select the **Slicer Tab** in the toolbar. Change the layout of the slicer so that it includes three columns of filter buttons.


21. Increase the width of the slicer so that all the filter buttons are displayed properly.

22. Change the formatting style of the slicer to **Slicer Style Dark 2**. It's the same as when you changed the style of the Pivot table, but now the styles are in the **Slicer** tab.

23. Filter the pivot table data with the slicer so that the supplier totals for only expenses that have been allocated to account **IS-375** or account **IS-390** are displayed in the pivot table.

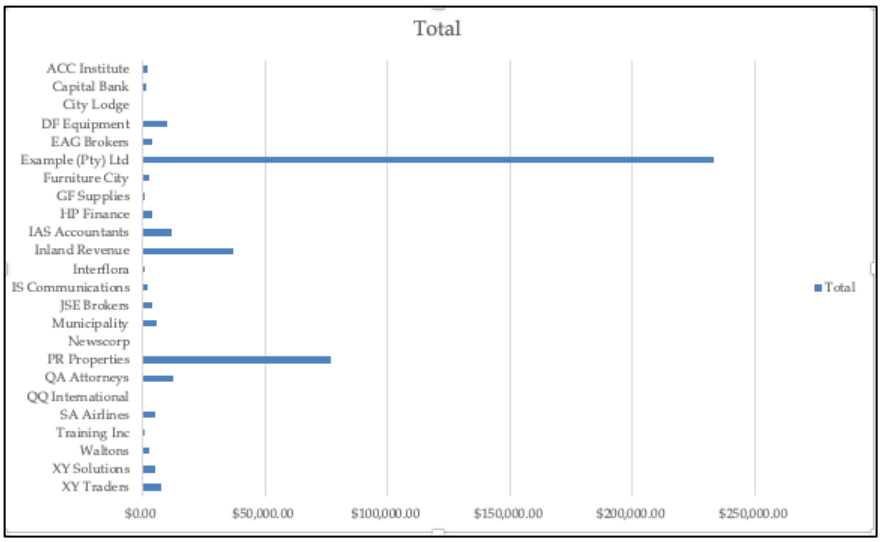



| Row Labels | Sum of Tax Inclusive Amount |
|---|---|
| SA Airlines | $4,947.00 |
| QQ International | $200.00 |
| Newscorp | $598.00 |
| City Lodge | $563.00 |
| ACC Institute | $2,000.00 |
| **Grand Total** | **$8,308.00** |

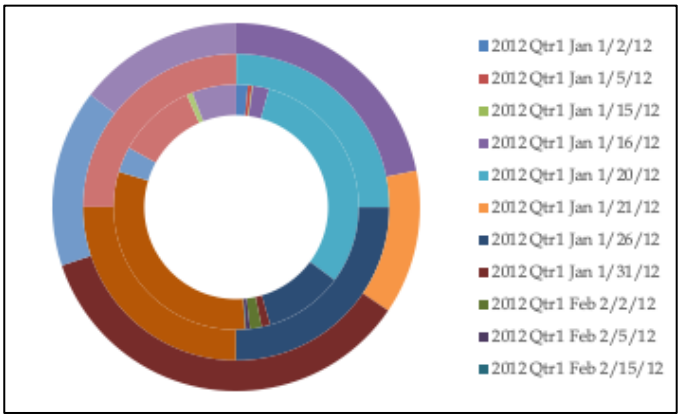
24. Open up a new sheet and name it **Dashboard**. We are going to create an interactive dashboard to visually display our data.

25. In the **Suppliers** sheet right click on the slicer and select cut. Paste the slicer in the upper left hand corner of the **Dashboard** sheet.

26. Go back to the **Suppliers** sheet and select the pivot table. In the Insert tab pick the horizontal bar chart. Right click on the bar chart and paste it anywhere in the **Dashboard** sheet.



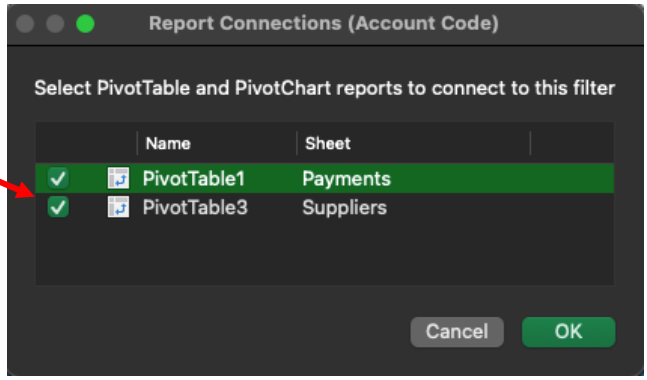

27. Repeat the steps to create a chart for the Pivot Table in the **Payments** sheet. This time select a doughnut chart.



28. When you select the different options in the slicer you may notice that changes are only reflected in your bar chart and not in the doughnut chart. This is because the data for both charts are not connected to the slicer. To do this select the slicer and go to the **Slicer** tab. On the toolbar click **Report Connection**.

29. In the popup check all boxes to make the connection and click OK.

30. Now both charts will change depending on what you select in the slicer.




***Congratulations! You have just completed Microsoft Excel 2016: Basic Excel Skills. To learn more advanced Excel skills, please try ouran educational databases offered by the Library.***

***Step 1: Go to the West Chicago Public Library's website: wcpld.info.***

***Step 2: Move your mouse over the heading "Digital Library" and click on "Research Databases and Resources".***

***Step 3: Scroll down the alphabetical list of databases and explore what we have to offer!***

***Step 4: Sign in with your library card number and PIN.***