

# **Exercise Manual for Course CB08**

## **Organize and Analyze Data With Tables and Pivot Tables**

CB08/MA/A.1/002/—

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## Legend for Course Icons

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Standard icons are used in the hands-on exercises to illustrate various phases of each exercise.



**Major step**



**Warning**



**1. Action**



**Hint**



**Checkpoint**



**Stop**



**Question**



**Congratulations**



**Information**



**Bonus**



**Solution/Answer**



## Overview

By the end of this exercise, you will be able to

- Create a PivotTable
- Group dates in the PivotTable

## Want a dynamic report?

The board has requested information regarding product sales. In the past, the board has also asked several questions about the information produced, which have been difficult to answer from the report. In preparation, your team has been asked to generate a PivotTable from the sales data.



*This exercise has been written for users of Excel 2007 and later versions.*



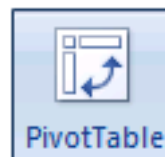
**In a new workbook, you will create a PivotTable from an unopened workbook called `Sales.xls` to report on the revenue generated by the products, with the option of a country and channel Report Filter.**

1. ☐ Create a new workbook.



*You should be in a blank new workbook.*

2. ☐ From the Ribbon, select **Insert | PivotTable**.

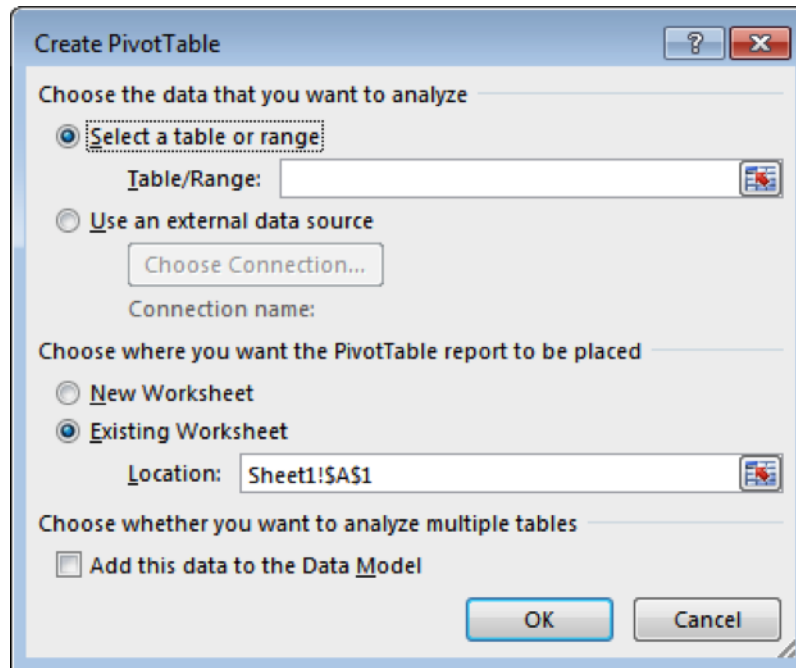


## Exercise 1.1 : Reporting Data in a PivotTable (continued)

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*The Create PivotTable dialog box will appear:*



**Excel 2007/2010: You will not have the option of analyzing multiple tables.**

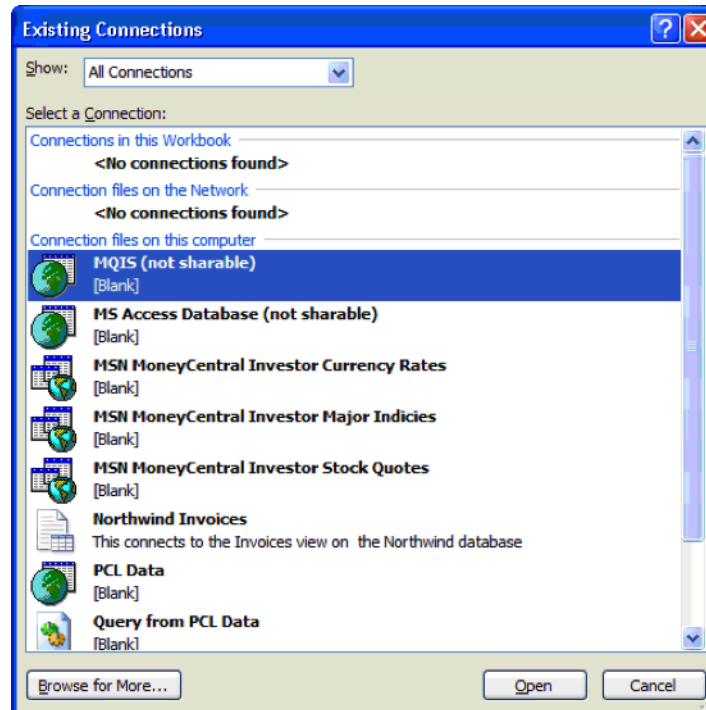
3. ☐ Select the second option, **Use an external data source**, then click the **Choose Connection** button.



## Exercise 1.1 : Reporting Data in a PivotTable (continued)



You should see a dialog box similar to the following:



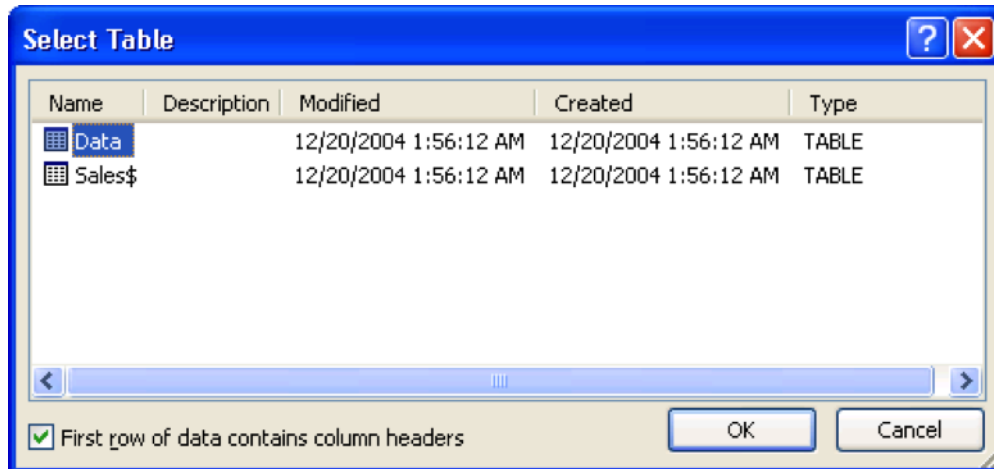
4. ☐ Click **Browse for More**.
5. ☐ Navigate to the folder C:\CB08\and select the file Sales.xls.



## Exercise 1.1 : Reporting Data in a PivotTable (continued)



*When you click Open, you will be prompted for the range you want to select.*

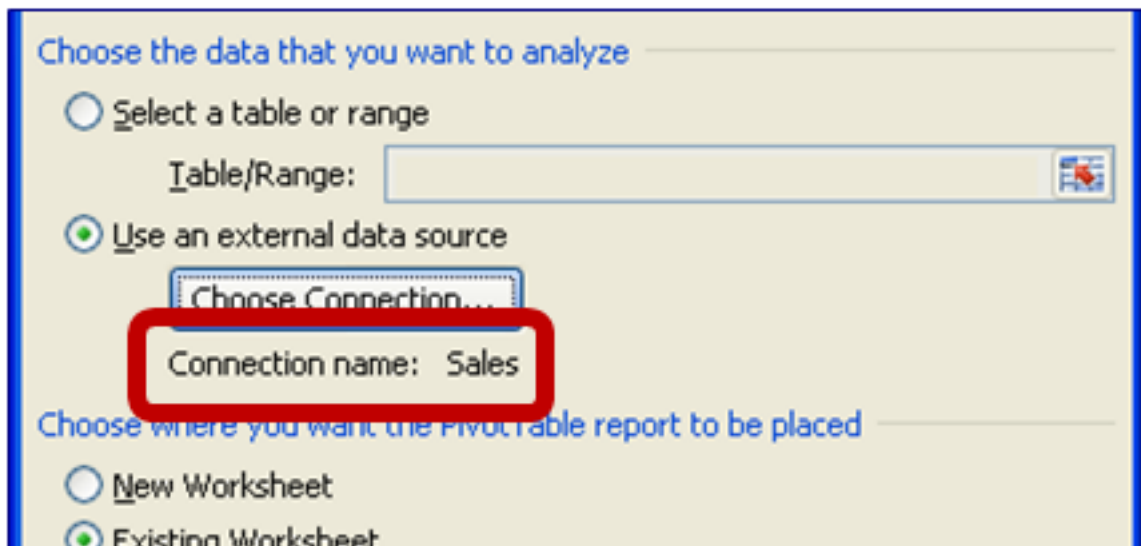


*The name **Data** is a name defined on the worksheet. The name **Sales\$** is the name of the worksheet.*

6. ☐ Select **Data**, then click **OK**.



*You will be returned to the first dialog box that will indicate a connection to the Sales data (see circled area in the screenshot below):*



7. ☐ Click **OK**.

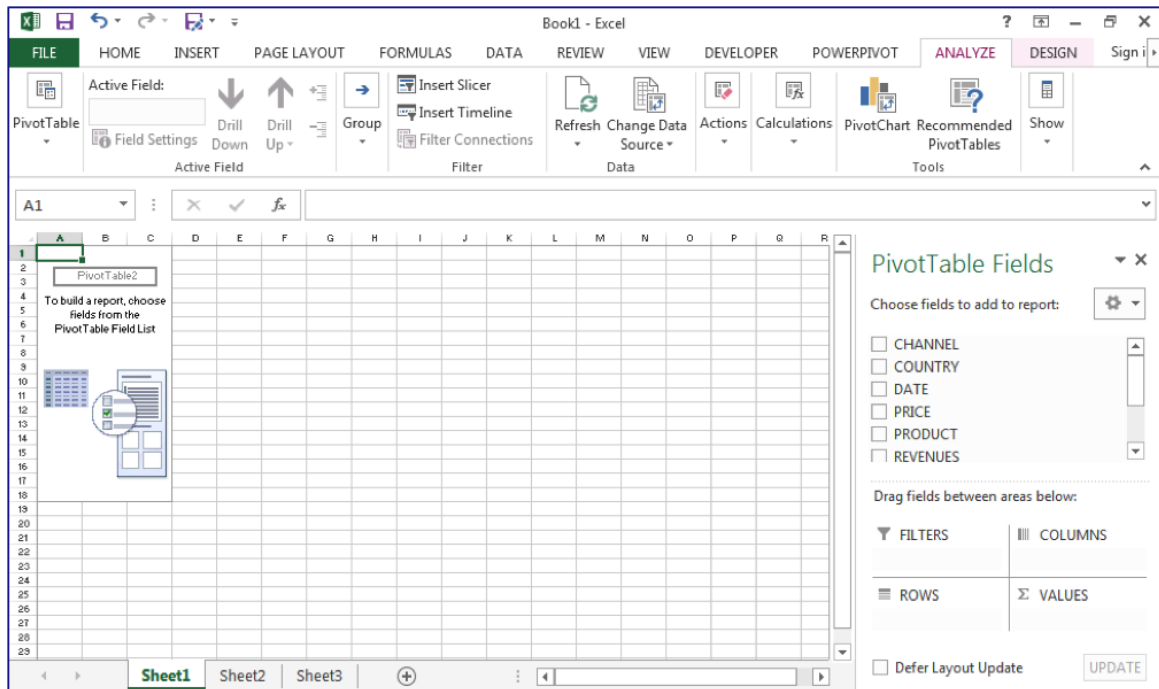




## Exercise 1.1 : Reporting Data in a PivotTable (continued)



You will be returned to the worksheet, with the base PivotTable ready for you. A PivotTable Tools group will be displayed with Options and Design tabs, similar to below:



**Excel 2007/2010: Select Options instead of Analyze. In previous versions to 2013, the Analyze tab is the Options tab!**

8. □ Drag and drop the fields from the PivotTable Field List into the required positions; i.e.:
- COUNTRY in the Report Filter area
  - CHANNEL in the Report Filter area
  - DATE in the Column Labels area
  - PRODUCT in the Row Labels area
  - REVENUES in the Value area



## Exercise 1.1 : Reporting Data in a PivotTable (continued)



The PivotTable will be created as seen in the screenshot below:

	A	B	C	D	E
1	CHANNEL	(All)			
2	COUNTRY	(All)			
3					
4	Sum of REVENUES	Column Labels			
5	Row Labels	1/1/2005	1/2/2005	1/4/2005	1/5/2005
6	Aqua Aroma	2275	2000	1625	2275
7	Cleanit				
8	Proven				
9	Sanitize	3594			
10	Sparkle				
11	Grand Total	5869	2000	1625	2275
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

### PivotTable Fields

Choose fields to add to report:

- ☒ CHANNEL
- ☒ COUNTRY
- ☒ DATE
- ☐ PRICE
- ☒ PRODUCT
- ☒ REVENUES
- ☐ SALES PERSON
- ☐ UNITS

Drag fields between areas below:

**FILTERS**

CHANNEL

COUNTRY

**COLUMNS**

DATE

**ROWS**

PRODUCT

**VALUES**

Sum of REVENUES

9. ☐ Save the workbook as **salespvt.xlsx** in the C:\CB08 folder.



**Congratulations! You can create a PivotTable.**



The PivotTable currently gives us too much information. We will summarize the data further by grouping the dates into quarters.


10. ☐ Select a label in the Column Labels area, such as cell **B5**.
11. ☐ From the PivotTable Tools group, select **Analyze | Group | Group Field**.

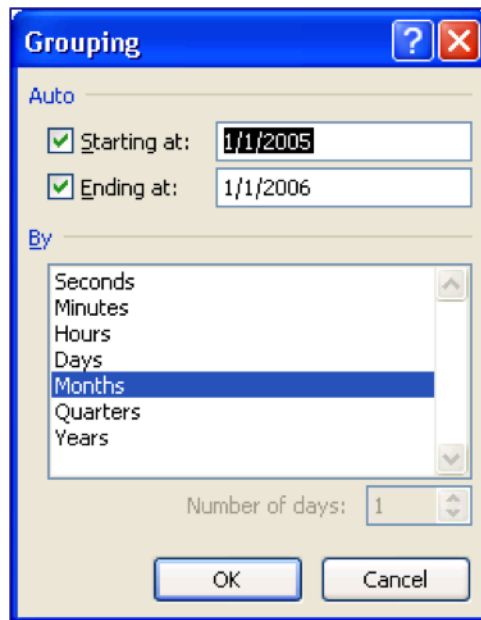
**Excel 2007/2010: See Options | Show/Hide | Field List**

Group Field



**Excel 2007/2010:** In versions previous to 2013, in your PivotTable Ribbon, the Analyze tab is known as the Option tab. You are expected to remember this from this point onward.

 This displays the Grouping dialog:



12. ☐ In the By list box, click to select **Quarters** and click **Months** to deselect it.
13. ☐ Click **OK** to return to the worksheet.



**Exercise 1.1 :**  
**Reporting Data in a PivotTable**  
**(continued)**

---



*The Date headings will appear as Qtr1, Qtr2, etc.*

COUNTRY	(All)					
CHANNEL	(All)					
Sum of REVENUES Column Labels						
Row Labels		Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
Aqua Aroma		49391	60445	57757	45206	212799
CleanIt		14145	1950	13530	29745	59370
Proven		36715	21797	31867	28622	119001
Sanitize		57135	69538	72162	47936	246771
Sparkle		17775	14400	16875	9900	58950
Grand Total		175161	168130	192191	161409	696891



**Congratulations! You know how to group dates in a PivotTable.**



**Format the PivotTable so that the numbers appear in dollars (\$).**



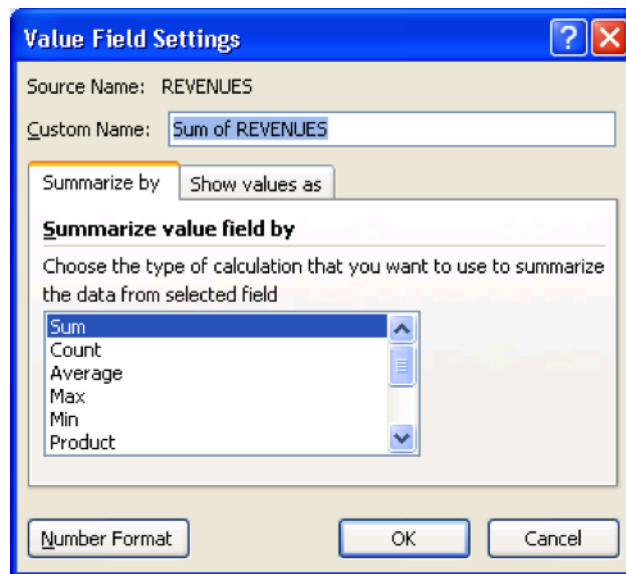
**Warning! Formatting the numbers with the Ribbon will format only the currently selected range. If another data field is added, it can cause the numbers to appear with the same format. It is faster to format the numbers with the Field Settings command.**

14. ☐ Click a data cell inside your PivotTable; e.g., cell D7.
15. ☐ From the PivotTable Tools group, select **Analyze | Active Field | Field Settings**.





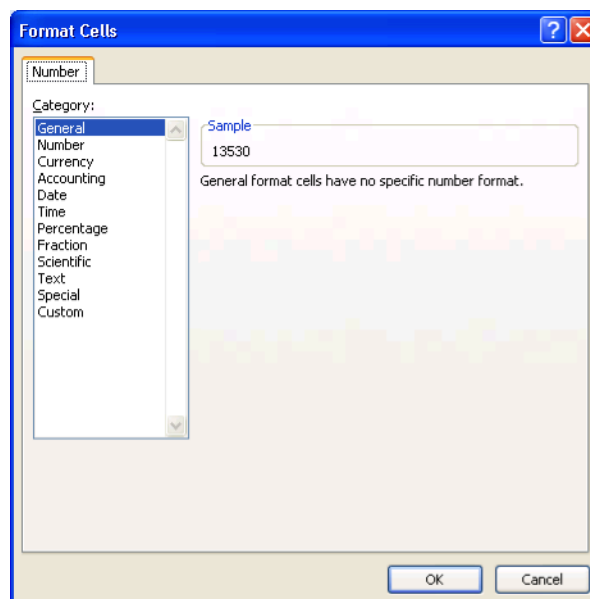
The PivotTable Field dialog box will appear:



16. ☐ Click the **Number Format** button.



The Format Cells dialog box will appear:



17. ☐ Select the **Currency** category and the appropriate currency format.



## Exercise 1.1 : Reporting Data in a PivotTable (continued)

18. ☐ Click the **OK** buttons for all of the dialog boxes until you return to the worksheet.



*All of the numbers in the PivotTable should be formatted with the currency you have specified.*

19. ☐ This is the end of the main exercise. If your instructor has called the end of the exercise, save and close the workbook; otherwise, keep it open and continue with the Bonus section.



**Congratulations! You can change the number format for a PivotTable.**



**Warning! This section contains additional exercises for those who have completed the main exercise. Please note that your instructor might stop you in the middle of a bonus exercise to continue with the course.**



**Change data in the underlying source data file (Sales.xls) and make it update the PivotTable data.**

20. ☐ We want to examine the quantity of products ordered in each quarter. To do this, add the **Units** field to the PivotTable's Values area.

COUNTRY	(All)							
CHANNEL	(All)							
	Column Labels							
	Qtr1		Qtr2		Qtr3		Qtr4	
Row Labels	Sum of REVENUES	Sum of UNITS	Sum of REVENUES	Sum of UNITS	Sum of REVENUES	Sum of UNITS	Sum of REVENUES	Sum of UNITS
Aqua Aroma	\$49,391.00	142	\$60,445.00	185	\$57,757.00	168	\$45,123.00	135
CleanIt	\$14,145.00	47	\$1,950.00	13	\$13,530.00	30	\$29,875.00	92
Proven	\$36,715.00	97	\$21,797.00	82	\$31,867.00	107	\$28,456.00	78
Sanitize	\$57,135.00	127	\$69,538.00	154	\$72,162.00	172	\$47,890.00	118
Sparkle	\$17,775.00	79	\$14,400.00	64	\$16,875.00	75	\$9,876.00	54
Grand Total	\$175,161.00	492	\$168,130.00	498	\$192,191.00	552	\$161,230.00	477



*How many units were purchased for Aqua Aroma in the first quarter?*

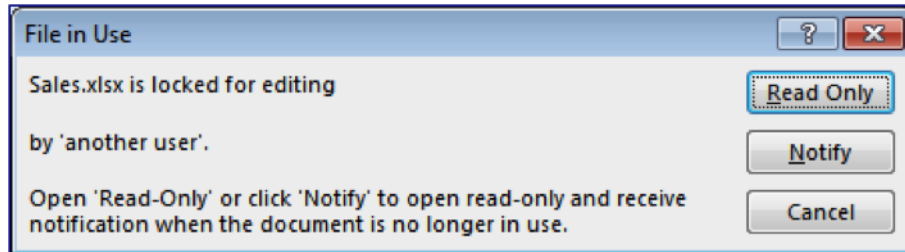
21. ☐ Save and close the workbook with the PivotTable.



**Exercise 1.1 :**  
**Reporting Data in a PivotTable**  
**(continued)**



**Warning! PivotTables hold a reference to the underlying data source. If you keep the PivotTable file open and then try to open the data source at the same time, you will see the following dialog box:**



**We want to modify the source data; thus, the file containing the PivotTable needs to be closed.**

22. ☐ Open the data source file called c:\CB08\Sales.xls.



*The workbook should contain a dataset of values and appear similar in format to the following screenshot:*

	A	B	C	D	E	F	G
4	DATE	COUNTRY	CHANNEL	SALES PERSON	PRODUCT	UNITS	PRICE
5	1/1/2005	Japan	Retail	Megan Strutt	Sanitize	6	599
6	1/1/2005	Australia	Wholesale	Dan Clifford	Aqua Aroma	7	325
7	1/1/2005	India	Wholesale	Jonathan M...	Aqua Aroma	5	400

23. ☐ Change the number of units in cell **F6** to 1000.
24. ☐ Save and close the source data workbook.
25. ☐ Reopen file c:\CB08\Salespvt.xlsx
26. ☐ Check to see if Aqua Aroma's data in the PivotTable has changed to reflect the data modification.



**Exercise 1.1 :**  
**Reporting Data in a PivotTable**  
**(continued)**

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Click the Refresh button in **Pivot Table Tools | Analyze | Data | Refresh**

27. ☐ Click **OK**.



**Congratulations! You can create refresh the pivot table!**



**In a new workbook, use the PivotTable wizard to create a PivotTable from the Access database called `Northwind.mdb`. The database file can be found in the folder `C:\CB08`**

28. ☐ Report on the products bought by each company per quarter per year.
29. ☐ Use the `Invoices` query to return the fields `CompanyName`, `OrderDate`, `ProductName`, `Quantity`, and `ExtendedPrice`.



**Congratulations! You can create a PivotTable from an Access database.**



***This is the end of the exercise.***





## Overview

By the end of this exercise, you will be able to

- Manipulate the PivotTable
- Format the PivotTable

## Want some fast answers?

The board wants to know how the products are performing and wants to know who the top salesperson is. In recognition, the top sales personnel stand to be rewarded with a handsome bonus. The sales director also needs to present a plan for areas to focus on.

You prepared a PivotTable in the previous exercise that is now ready to provide answers for any questions the board asks.

**Note:** This exercise uses a PivotTable created in Excel 2003. This is deliberate to show how previous versions of PivotTables can still work as they used to, even after they are brought into later versions of Excel.



**Filtering a PivotTable:** We want to find out the quarter during which Singapore's retail channel performed best. To perform this task, we will look at applying a filter on the revenue summary in the PivotTable you created in the previous exercise.

1. ☐ Open the workbook `c:\CB08\06_AnswerQuestionsPivotTable.xlsx`
2. ☐ From the COUNTRY Report Filter, select **Singapore** and click **OK**.
3. ☐ From the CHANNEL Report Filter, select **Retail** and click **OK**.



## Exercise 1.2 : Analyzing Data With PivotTables (continued)



The summary data now shows only the revenue for Singapore's retail channel.

COUNTRY	Singapore					
CHANNEL	Retail					
Sum of REVENUES	DATE					
PRODUCT	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total	
Aqua Aroma	6575	1794	4037	4000	16406	
CleanIt	1650				1650	
Proven	5577	1796		2100	9473	
Sanitize		5100		1200	6300	
Sparkle	225	900		450	1575	
Grand Total	14027	9590	4037	7750	35404	



In which quarter did Singapore's retail channel perform best?

Which product was most sought after in Singapore?



Hint...

Remember to use the Sort tool to organize the values from largest to smallest. The tool can be used to do both horizontal and vertical sorts. This will help identify relevant pieces of data that you require.

4. ☐ Save the workbook.



**Congratulations! You know how to filter a PivotTable.**



**Showing details and pivoting a field: We want to compare and display the details for Aqua Aroma's retail and wholesale channels.**

5. ☐ From the COUNTRY Report Filter, select **(All)** and click OK. From the CHANNEL Report filter, select **(All)** and Click OK

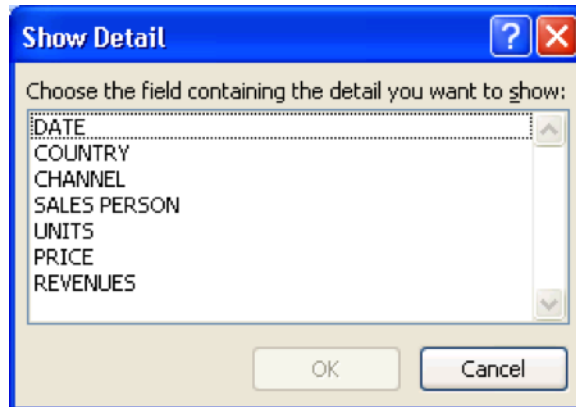


**Exercise 1.2 :  
Analyzing Data With PivotTables  
(continued)**

6. ☐ Double-click the row heading **Aqua Aroma** in cell A6.



*This displays the Show Detail dialog box:*



7. ☐ Select **CHANNEL** from the list and click **OK**.



*The CHANNEL Report Filter will be moved to row 5 as a row heading, as seen in the screenshot below:*

	A	B	C	D	E	F	G	H
1								
2	COUNTRY	(All)						
3								
4	Sum of REVENUES		DATE					
5	PRODUCT	CHANNEL	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total	
6	[-] Aqua Aroma	Retail	30181	18746	35029	20995	104951	
7		Wholesale	19210	41699	22728	24211	107848	
8	Aqua Aroma Total		49391	60445	57757	45206	212799	
9	[+] CleanIt		14145	1950	13530	29745	59370	
10	[+] Proven		36715	21797	31867	28622	119001	
11	[+] Sanitize		57135	69538	72162	47936	246771	
12	[+] Sparkle		17775	14400	16875	9900	58950	
13	Grand Total		175161	168130	192191	161409	696891	
14								



*If you examine the Grand Total for Aqua Aroma, you will see that the Wholesale channel performed marginally better than the Retail channel. Which quarters in Wholesale helped to boost the overall total?*



## Exercise 1.2 : Analyzing Data With PivotTables (continued)



Outline level symbols have appeared next to each product, as each product has a sublevel called Channel. You can click the outline level symbols to collapse and expand the outline. Alternatively, you can double-click the row headings in column A to hide or display further information for each product's channel.



**Congratulations! You know one way to pivot a field, and how to display and hide details for the PivotTable fields on the PivotTable.**



**Drilling down to display supporting data:** We want to display the supporting data for the fourth quarter for Aqua Aroma's retail channel on a new worksheet. To perform this task, you will "drill down" into the data.

8. ☐ You should be able to see Aqua Aroma's channels—i.e., Retail and Wholesale—as in the previous screenshot. If you cannot, double-click the **Aqua Aroma** row heading in cell **A6**.
9. ☐ Double-click cell **F6**, which refers to the revenue for the fourth quarter's Retail channel.



*This will create a new worksheet with the details that make up the fourth quarter's Retail figure, as seen below:*

DATE	COUNTRY	CHANNEL	SALES PERSON	PRODUCT	UNITS	PRICE	REVENUES
12/10/2005	Canada	Retail	Dan Clifford	Aqua Aroma	6	325	1950
12/6/2005	USA	Retail	Karen Lee	Aqua Aroma	3	299	897
11/29/2005	Australia	Retail	Dan Clifford	Aqua Aroma	8	400	3200
11/20/2005	Japan	Retail	Megan Strutt	Aqua Aroma	3	325	975
11/20/2005	Australia	Retail	Dan Clifford	Aqua Aroma	3	450	1350
11/10/2005	UK	Retail	Karen Lee	Aqua Aroma	2	325	650
11/8/2005	Pakistan	Retail	Wayne Sarten	Aqua Aroma	1	400	400
10/31/2005	Pakistan	Retail	Wayne Sarten	Aqua Aroma	8	325	2600
10/25/2005	USA	Retail	Karen Lee	Aqua Aroma	1	450	450
10/22/2005	Pakistan	Retail	Wayne Sarten	Aqua Aroma	1	325	325
10/21/2005	Singapore	Retail	Karen Lee	Aqua Aroma	10	400	4000
10/12/2005	Canada	Retail	Dan Clifford	Aqua Aroma	2	299	598
10/7/2005	UK	Retail	Karen Lee	Aqua Aroma	8	450	3600



*This is useful to gain a detailed inspection of the information that is making up a total, and thus can be used in any further list analysis.*





**Congratulations! You know how to "drill down" into a PivotTable to see the data that makes up a value in a PivotTable.**



**Adding fields to the PivotTable: We want to find out which salesperson has brought in the most revenue for Aqua Aroma's Retail channel.**

10. ☐ Return to the Product Revenue worksheet.
11. ☐ Drag the **SALES PERSON** field from the PivotTable Field List and drop it as a row label after Channel.



*Hint...*

If you cannot see the PivotTable Field List, select **ANALYZE | Show | Field List** from the PivotTable Tools group.

**Excel 2007/2010: Select Options | Show/Hide | Field List**



## Exercise 1.2 : Analyzing Data With PivotTables (continued)



Your screen should look similar to the screenshot below:

COUNTRY	(All)						
Sum of REVENUES			DATE				
PRODUCT	CHANNEL	SALES PERSON	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
Aqua Aroma	Retail	Dan Clifford	7308	2697	7150	7098	24253
		Jonathan Mark	2650	3050	1794		7494
		Karen Lee	12773	9424	16078	9597	47872
		Megan Strutt	4000	650	6094	975	11719
		Wayne Sarten	3450	2925	3913	3325	13613
	Retail Total		30181	18746	35029	20995	104951
	Wholesale	Dan Clifford	10570	13729	3874	7133	35306
		Jonathan Mark	3600	1300	3488	2252	10640
		Karen Lee	2050	12161	12216	14228	40655
		Megan Strutt	2990	6384			9374
		Wayne Sarten		8125	3150	598	11873
	Wholesale Total		19210	41699	22728	24211	107848
Aqua Aroma Total			49391	60445	57757	45206	212799
CleanIt			14145	1950	13530	29745	59370
Proven			36715	21797	31867	28622	119001
Sanitize			57135	69538	72162	47936	246771
Sparkle			17775	14400	16875	9900	58950
Grand Total			175161	168130	192191	161409	696891



Which salesperson brought in the most revenue for Aqua Aroma's Retail channel?



Hint...

To quickly identify the salesperson, select a cell in the Grand Total for a salesperson's retail, such as cell **H6**, then click the **Sort Descending** icon in **Home | Sort & Filter | Sort**. The grand totals for each grouping of salespeople should be sorted from largest to smallest.



**Exercise 1.2 :**  
**Analyzing Data With PivotTables**  
**(continued)**



**Pivoting a field:** We want to find out the total revenue that the top Aqua Aroma salesperson (Karen Lee) brought into the company and compare her total to the other salespeople's total.

12. ☐ Pivot the **PRODUCT** field to a top-level (Report) filter.
- Click **A5** (this contains the PRODUCT field button).
  - Drag and drop the **PRODUCT** button in the area above the COUNTRY report field.



*Your PivotTable should appear similar to the one below.*

	A	B	C	D	E	F	G
1	PRODUCT	(All)					
2	COUNTRY	(All)					
3							
4	Sum of REVENUES		DATE				
5	CHANNEL	SALES PERSON	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
6	Retail	Karen Lee	33278	33576	32174	28871	127899
7		Dan Clifford	28826	17940	25854	17710	90330
8		Wayne Sarten	11103	9966	16602	13175	50846
9		Megan Strutt	11793	6646	10594	10225	39258
10		Jonathan Mark	7710	6458	12959	9176	36303
11	Retail Total		92710	74586	98183	79157	344636
12	Wholesale	Karen Lee	30964	31839	56879	42471	162153
13		Dan Clifford	27215	26919	14978	15893	85005
14		Megan Strutt	14840	13677	10224	1598	40339
15		Jonathan Mark	5932	10484	8678	14231	39325
16		Wayne Sarten	3500	10625	3249	8059	25433
17	Wholesale Total		82451	93544	94008	82252	352255
18	Grand Total		175161	168130	192191	161409	696891



*Hint...*

Use the Conditional Formatting feature to display data bars to get a visual cue as to how the data is changing.





## Exercise 1.2 : Analyzing Data With PivotTables (continued)

13. ☐ Change the **SALES PERSON** row field so that it appears in front of the **CHANNEL** field. Your screen should be similar to the screenshot below.

PRODUCT	(All)					
COUNTRY	(All)					
Sum of REVENUES		DATE				
SALES PERSON	CHANNEL	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
Karen Lee	Retail	33278	33576	32174	28871	127899
	Wholesale	30964	31839	56879	42471	162153
Karen Lee Total		64242	65415	89053	71342	290052
Dan Clifford	Retail	28826	17940	25854	17710	90330
	Wholesale	27215	26919	14978	15893	85005
Dan Clifford Total		56041	44859	40832	33603	175335
Megan Strutt	Retail	11793	6646	10594	10225	39258
	Wholesale	14840	13677	10224	1598	40339
Megan Strutt Total		26633	20323	20818	11823	79597
Wayne Sarten	Retail	11103	9966	16602	13175	50846
	Wholesale	3500	10625	3249	8059	25433
Wayne Sarten Total		14603	20591	19851	21234	76279
Jonathan Mark	Retail	7710	6458	12959	9176	36303
	Wholesale	5932	10484	8678	14231	39325
Jonathan Mark Total		13642	16942	21637	23407	75628
Grand Total		175161	168130	192191	161409	696891



*What is the total revenue that Karen Lee brought into the company?*

*In which channel does she perform best?*

*Which salesperson brought in the next-highest revenue?*

14. ☐ This is the end of the main exercise. If your instructor has called the end of the exercise, save and close the workbook; otherwise, keep it open and continue with the Bonus section.



**Congratulations! You are familiar with working with a PivotTable to provide answers to your questions.**



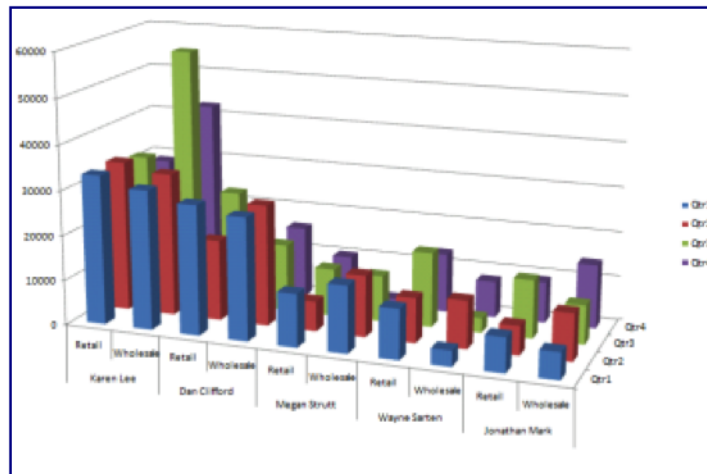


## Exercise 1.2 : Analyzing Data With PivotTables (continued)

15. ☐ Create a Pivot Chart. Click inside the pivot table and then click on Pivot Table Tools | Analyze | Tools | Pivot Chart



*A PivotChart can be manipulated like a PivotTable.*



16. ☐ Save and close the workbook.



**Congratulations! You know how to create and manipulate a PivotChart.**



***This is the end of the exercise.***



