

# **Crystal Reports 2016 Designer 2 Workshop Student Guide**

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# Introduction

## Introduction

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### Introduction Objectives

This manual is written to give you a step-by-step guide for your classroom training and a handy reference for your daily work. In this Introduction, you will learn how to use this training guide effectively. This section covers the following topics:

- ❖ An introduction to the Crystal Reports application
- ❖ Pre-Qualification Exercise
- ❖ Class objectives
- ❖ Help with using this training guide
- ❖ Information on how to start the program

### About Crystal Reports

In today's information intensive environment, every business has a database of some sort. After all, business today is all about information and databases give you a handle on the massive amounts of information you must deal with. Therefore, your business has a database and from that database, you need reports. The problem is, most reporting capabilities that come with database programs are limited. They only report on data from that program. Many users need to report on data from multiple sources, even databases such as Oracle, Microsoft SQL Server, DB2 or Sybase.

Crystal Reports is one of the most powerful reporting programs available with the ability to pull data from all types of data sources. You can use Crystal Reports to generate reports from any of the standard PC database programs; Access, Paradox, or FoxPro, as well as from a mainframe or server database. Crystal also has a powerful web-reporting server that allows you to distribute your reports over the web.

Crystal Reports is bundled with more than 160 other programs including Visual Basic, some medical applications, many accounting packages and several ERP solutions. It makes report generation easy without requiring you to be a programmer or a database expert. If you know how to work in a Windows environment and are familiar with the data you want to use, you can create a Crystal Report that looks professional and makes sense.

### Training Philosophy

Studies show that people retain 10% of information they see, 20% of information they hear, 50% of what they see and hear, and 80% of what they see, hear and do. In line with this concept, the class utilizes a hands-on method of training. You will see the effects of new procedures on the screen, hear the instructor explain how and why to use features, and perform the actions yourself as you learn.

In addition, this class focuses on your ability to perform tasks using the most productive techniques. The manual may contain several methods of accomplishing a certain task. However, class time does not allow for practice of all methods for each task. Your instructor will guide you in the most effective method of performing a task, but inform you of other methods that are available.

Questions are encouraged. While we give our best effort to explain new concepts in understandable terms, you may need to hear the concept again or have it explained more thoroughly. Please let the instructor know when you need more information!

## Introduction

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### Pre-Qualification Exercise for the Designer 2 Workshop

#### Why Should You Pre-qualify Yourself for the Designer 2 Workshop?

The Crystal Reports 2016 Designer 2 Workshop is designed for the experienced Crystal Reports user. It covers the more complex and powerful features of the program. The class discusses very technical issues and includes several fast-paced, comprehensive exercises. Our instructors have years of experience helping students to get the most out of their training. However, it is not always possible in a high level workshop to assist students with basic tasks.

In order to maximize the benefit you receive from the Crystal Reports 2016 Designer 2 Workshop, you should come into the training with a certain skill level. We assume all students who sign up for this workshop have a comfortable level of understanding in regards to relational databases. Students should also be able to perform the following tasks in Crystal Reports:

- ❖ Create a new report, insert fields, save the report and refresh the data.
- ❖ Add multiple tables to the report using the Data Explorer.
- ❖ Use the select expert to pull only the data needed from the database.
- ❖ Insert groups and summarize fields within the group.
- ❖ Perform formatting tasks.
- ❖ Create, save and use formulas in the report.

If you would like to evaluate for yourself whether this is the correct level course, take our self-evaluation exercise. The exercise consists of writing a report in Crystal Reports. When you are finished, compare your report to the one our experts have done to see how well you understand the basic features of Crystal Reports. You can obtain the exercise and the results report from the Designer 1 Workshop class files.

If you have trouble creating the report or getting the correct results, or if you cannot perform some of the above-mentioned tasks, then we strongly recommend that you take the Crystal Reports 2013 Designer 1 Workshop before attending the Designer 2 Workshop. By assuring you are well prepared for the Designer 2 Workshop, you maximize the benefits you receive from this in-depth look at advanced report writing.

## Introduction

### Pre-qualification Exercise

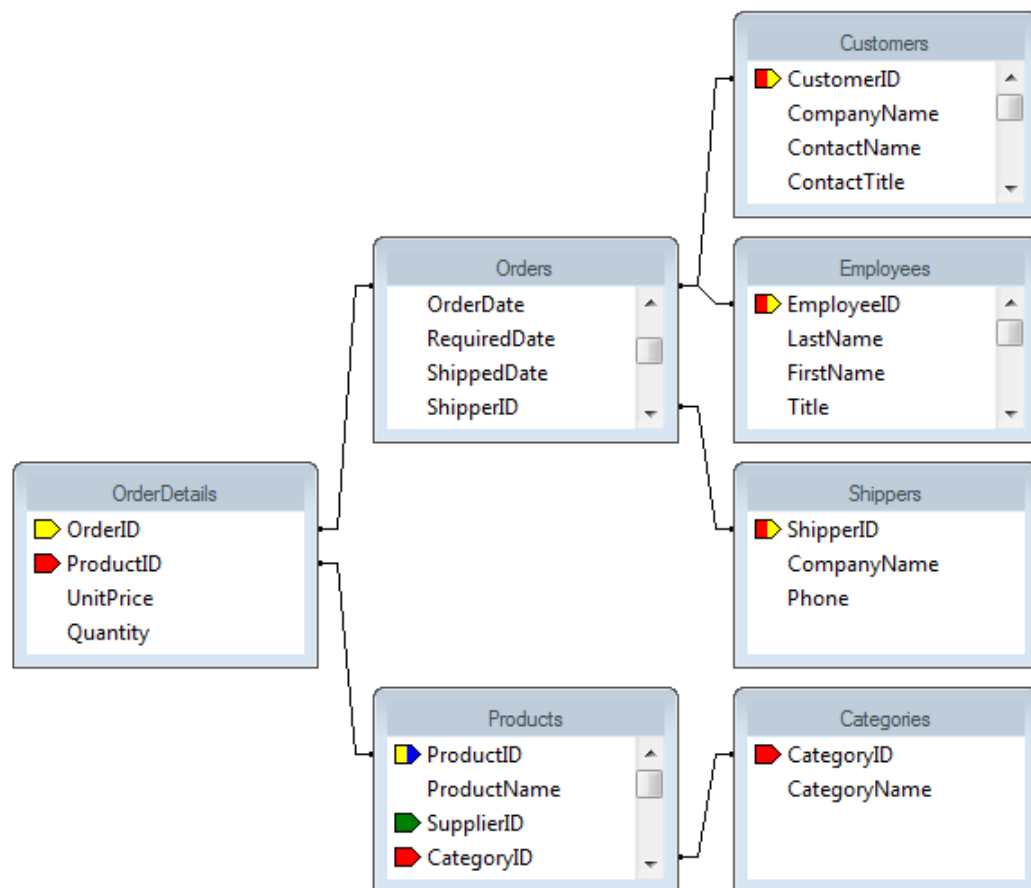
Using the Northwind 2008 database available included with the class files, create a report invoicing customers for each order. The report needs to show the customer billing address, the Invoice#, the sales person, the order date, the requested date, the ship date and the company shipping the order. The Details section should list the product ID, the product name, product category, the unit price, the quantity, and the line item total.

Select only those orders with a ship date between January 1, 2008 and March 31, 2008. Group on the CustomerID, then on the OrderID. Display each order on its own page. Sum the line item total amount for each OrderID. Calculate the sales tax for the order at 6% and total the subtotal and sales tax.

You will need to pull data from the following tables:

<b>Customers</b>	<b>Products</b>
<b>Orders</b>	<b>OrderDetails</b>
<b>Employees</b>	<b>Categories</b>
<b>Shippers</b>	

The tables joins should look like the example below, but Smart Linking might link incorrectly, so double check.



## Introduction

You will need to create the following formulas:

- ❖ Line Item Total that multiplies the unit price times the quantity for each product ordered
- ❖ Sales Tax that multiplies the sum of each line item total times 6%
- ❖ Order Total that adds the sum of each line item total and the sales tax
- ❖ You will need to create the following text boxes:
  - An address box with the text **To:** then the company name, the address, the city, region, postal code and country
  - An employee box with the employee first name, a space, then the last name
  - An invoice box with invoice date
  - An order information box containing the order date, required date, shipped date and shipped via fields

Format the report to look like the following:

### Invoice

Date: February 2, 2008  
Invoice Number: 10864



**NORTHWIND  
TRADERS**

Sales person: Margaret Peacock

To: Around the Horn  
120 Hanover Sq.  
London, WA1 1DP  
UK

Order Date: 02 February 2008  
Required Date: 02 March 2008  
Shipped Date: 09 February 2008  
Shipped Via: United Package

ProductID	ProductName	CategoryName	UnitPrice	Quantity	Line Total
67	Laughing Lumberjack Lager	Beverages	\$14.00	15	\$210.00
35	Steeleye Stout	Beverages	\$15.84	4	\$63.36
					<b>Subtotal: \$273.36</b>
					<b>Sales Tax: \$16.40</b>
					<b>Total: \$289.76</b>

## Introduction

The Design view should look similar to the following example:

Design Preview


RH

PH

GH1

**Invoice**

Date: {OrderDate}  
Invoice Number: {OrderID}



Sales person: {FirstName} {LastName}

To: {Group #1 Name}  
{Address1}  
{Address2}  
{City}, {Region} {PostalCode}  
{Country}

Order Date: {OrderDate}  
Required Date: {RequiredDate}  
Shipped Date: {ShippedDate}  
Shipped Via: {CompanyName}

GH2

ProductID	ProductName	CategoryName	UnitPrice	Quantity	Line Total
{ProductID}	{ProductName}	{CategoryName}	{UnitPrice}	{Quantity}	@Line Total

D

GF2

Subtotal:	@Line Total
Sales Tax:	@Sales Tax
Total:	@Total

GF1

RF

## Introduction

---

### Class Objectives

This class is a performance based instructional system. It is geared to provide you with the tools you need to build and distribute reports the quickest, most efficient way. After completing this course, you will be able to perform the following tasks:



- ❖ Review Designer 1 with the Refresher Exercise
- ❖ Use multiple sections in reports for advanced formatting techniques
- ❖ Underlay graphics and charts to print beside data
- ❖ Calculate running totals in reports
- ❖ Develop parameter fields to prompt users for information
- ❖ Limit user entry into parameter fields
- ❖ Understand Crystal Reports data handling and Evaluation Time functions
- ❖ Comfortably make use of variables in formulas
- ❖ Work with arrays and control structures in formulas for more flexible decision making
- ❖ Use additional reports within a main report as subreports
- ❖ Create linked subreports to tie data from another report to the current report
- ❖ Format subreports to display on demand only
- ❖ Customize groups in the report with formulas and custom names and create hierarchical groups
- ❖ Perform group selection based on summary field values
- ❖ Create and format Cross-Tab reports and create charts from Cross-Tabs
- ❖ Work with Report Alerts
- ❖ Create and use Report Templates
- ❖ Solve table linking problems with advanced linking techniques

## Introduction

### About This Manual

Each section of this manual contains objectives to provide you with the overall goals for the lesson. Lessons have descriptions of features and concepts followed by systematic directions for completing a specific task. Each section ends with a challenge exercise to help you practice the skills you learned in the lesson. Challenge exercises provide you with tasks to accomplish. Try to complete these exercises on your own.

As you work in this Training Guide, certain conventions are used to identify specific procedures. Use the following table as a guide:

Training Guide Conventions	
Item	Illustrated As
Menu Commands	Underlined letters for accessing menu commands are shown:  Example: <u>F</u> ile/ <u>O</u> pen
Command Buttons	Command Buttons in dialog boxes are shown as buttons:  Example: 
Categories, Radio Buttons, Text Boxes, Check Boxes	All options within dialog boxes are listed in italicized text:  Example: the <i>Keep Group Together</i> check box the <i>Other</i> radio button
Keystrokes	Keyboard keys are indicated by uppercase text:  Example: press ENTER  Keyboard combinations are shown in uppercase text with a plus sign (+) between the keys that need to be pressed simultaneously.  Example: press CTRL + S to save
Toolbar Buttons	Toolbar buttons are indicated by the button name and a graphic image of the button:  Example: click the Print Preview  button
Typing or File Selections	Text to be typed or file names to be selected are printed in bold letters:  Example: type <b>Henry</b> select <b>grouping.rpt</b>
Exercises	Step-by-Step exercises in the text are indicated by bold text and the ❖ symbol.  For example:  ❖ <b>Exercise - Format Objects</b>



## Introduction

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### Tips, Notes, and Warnings

Tips, notes and warnings display with the following icons. Text for these additional comments display in bold and italics as shown below:



**This icon indicates a tip or shortcut.**



**This icon points out a note of additional information.**



**This icon calls attention to a warning or very important note**

# NOTES



**Lesson 1: Refresher Exercise**

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# **Lesson 1**

## **Refresher Exercise**

**Lesson 1: Refresher Exercise**

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**Lesson Objectives**

After completing this lesson, you will be able to:

- ❖ **Plan and Create a report from a set of business requirements**  
*Review the techniques needed to plan and create a report*
- ❖ **Add multiple groups to reports**  
*Create groups within groups to subdivide your reports how you want*
- ❖ **Summarize different group levels**  
*You can effectively summarize information at any group level or all group levels*
- ❖ **Insert simple lines and boxes for formatting**  
*Make reports professional and attractive with graphical features*
- ❖ **Utilize the Repeated Group Header feature**  
*Add a "Continued..." message when a group prints across pages*

**Lesson 1: Refresher Exercise**

---

**Review of Planning a Report**

To make the report creation process efficient, you must plan the report. A little work up front before you ever open Crystal Reports can save a lot of time putting the report together. It can also save problems caused by adding incorrect tables to the report, which can affect the accuracy of the records displayed.

You must look at the business requirements for the report and decide what fields you need and the tables in which they are located. It is also helpful to look at things such as groupings, whether you need Cross-Tabs, fields needed for formulas and selection criteria.

Suppose someone asks you to create a report based on the Northwind 2008 database. Below are the business requirements for the report:

The person requesting the report needs to see by Supplier and Category Name the monthly sales totals. They want the Order ID, the Product Name, the line item Unit Price and Quantity and a total for each line item.

- ❖ They want the sales amounts summarized for each supplier, category name and month.
- ❖ They only need to see sales for 2007.
- ❖ Some of the groups are large enough to display on more than one page. They want the Supplier Name and Category Name repeated at the top of each page. If the Category Name group continues from the previous page, they want the word "Continued..." to print.
- ❖ The person requesting the report has supplied you with a printout of what the report should look like. See the sample on the next page.

**Lesson 1: Refresher Exercise**

## Monthly Sales by Supplier and Category


**NORTHWIND  
TRADERS**
**Supplier Name:** Aux joyeux ecclésiastiques (First Occurance)

**Category:** Beverages (First Occurance)

**January 2007**

OrderID	ProductName	UnitPrice	Quantity	Line Total
10,417	Côte de Blaye	\$231.88	50	\$11,594.00
10,424	Côte de Blaye	\$223.98	49	\$10,974.78
				<u>\$22,568.78</u>

**February 2007**

OrderID	ProductName	UnitPrice	Quantity	Line Total
10,455	Chartreuse verte	\$16.20	20	\$324.00
10,445	Chartreuse verte	\$15.84	6	\$95.04
				<u>\$419.04</u>

**March 2007**

OrderID	ProductName	UnitPrice	Quantity	Line Total
10,479	Côte de Blaye	\$263.50	30	\$7,905.00
10,477	Chartreuse verte	\$15.30	20	\$306.00
				<u>\$8,211.00</u>

To create this report, first determine which fields you need.

- ❖ For the Detail section, you need the OrderID field, ProductName field, the UnitPrice field and the Quantity field
- ❖ For the Line Total formula, you need to multiply the UnitPrice field and the Quantity field
- ❖ For grouping, you need the SupplierName, the CategoryName, and the OrderDate fields
- ❖ Finally, you need to select orders from 2007 based on the OrderDate field

Next, decide which tables you need to add to get the required fields.

- ❖ The SupplierName field is in the Suppliers table
- ❖ The ProductName field is in the Products table
- ❖ The OrderID and OrderDate fields are in Orders table
- ❖ The UnitPrice and Quantity fields are in OrderDetails table
- ❖ The CategoryName field is in the Categories table

## Lesson 1: Refresher Exercise

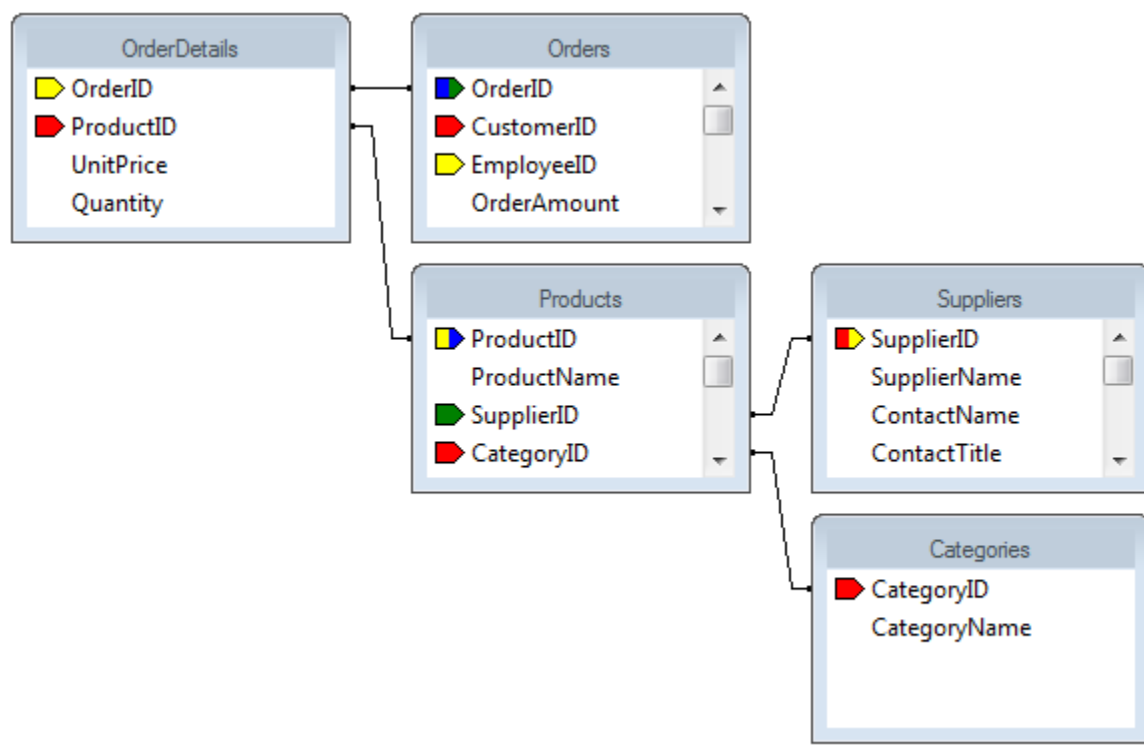
The order in which the tables are linked is usually very important from a performance viewpoint. When using the Smart Linking feature provided by Crystal Reports, the tables will be linked automatically in the most logical performance-driven fashion, but this is only true in Crystal Reports 2016.

Crystal Reports 2016 attempts to link tables together where the “To” table contains a primary key (indexed, no duplicates). The reason is to improve database performance and in most instances is the best choice to reduce database querying time. In some cases this is not the best choice and it is fairly easy to override the automatic links and create your own.

This means you can simply add the tables in any order and let the Smart Linking feature do the rest of the work.

## Creating the Report

Since you have given this some thought and determined the required tables, it is time to create the report. Once the tables are added, Smart Linking will create the links (joins) similar to the following example:



**Remember you can add multiple tables to a report from the Database Expert. You work with links using the Links tab on the Database Expert. The Database Expert is accessed under the Database menu or by selecting the Database Expert button on the Experts toolbar.**

**Lesson 1: Refresher Exercise**

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**Placing Fields on the Report**

Remember you have three ways of placing fields on a report. Select the field in the Field Explorer, then:

- ❖ Click the Insert button, and then click in the report
- ❖ Drag the field to the report
- ❖ Right mouse click, choose Insert to Report from the short cut menu, and then click in the report

When you place a field in the Details section, Crystal Reports adds a detail field title in the Page Header section and aligns the field and field title with a guideline. You can drag the guideline marker in the ruler to move the field and its title together.

Now that you have planned the report, you are ready to use Crystal Reports to create the report.

**❖ Exercise 1.0 - Begin the Monthly Sales by Supplier and Category Report and Link the Tables Needed**

1. Start a new report as a blank report. Open the **Create New Connection** folder then open the **Access/Excel (DAO)** folder. The Access/Excel (DAO) dialog opens. Make sure the *Database Type:* is set to **Access** and the *Database Name:* text box points to the **Northwind 2008.mdb** database found in the **CR2016 Class Resources\Databases\Northwind 2008.mdb** from Class Resource Files provided with this workshop
2. Add the tables indicated by the business requirements.  
(*Categories, OrderDetails, Orders, Products and Suppliers*)
3. The Auto-Link feature should link the tables automatically. Clear the links and do them yourself, but create the links to match the example on the previous page.
4. Add the appropriate fields to the **Details** section  
(*Orders.OrderID, Products.ProductName, OrderDetails.UnitPrice, OrderDetails.Quantity*)
5. Resize the **ProductName** field to be approx. 2.5 inches in width
6. Change the Printer Setup to a **Portrait** page layout, if necessary. Change the margins to be **.5"** on all four sides



## Lesson 1: Refresher Exercise

### Creating the Formulas


You are also going to need two formulas for this report. It can be helpful to write out the formulas during the planning stage to be sure you have accounted for all necessary fields. The formulas you need for this report are as follows:

#### Formula: Line Total


{OrderDetails.Quantity} \* {OrderDetails.UnitPrice}

#### Formula: Occurance

If InRepeatedGroupHeader then "(Repeated Occurance)"  
Else "(First Occurance)"

Remember formulas are created from the Field Explorer dialog box. Select Formula Fields, and then click the New  button. After naming the formula, the Formula Editor dialog box opens, providing you with three lists to select fields, functions and operators.

### ❖ Exercise 1.1 – Create the Formulas and add to the Report



1. Select *Formula Fields*: in the Field Explorer dialog box, then click the  button
2. Name the formula **Line Total** and select **OK**
3. Create the formula shown above
4. Add the formula to the report **Details** section after the **Quantity** field
5. Create the **Occurance** formula, but do not add it to the report yet  
*You will add this formula later to display a "Continued" message in the group header.*

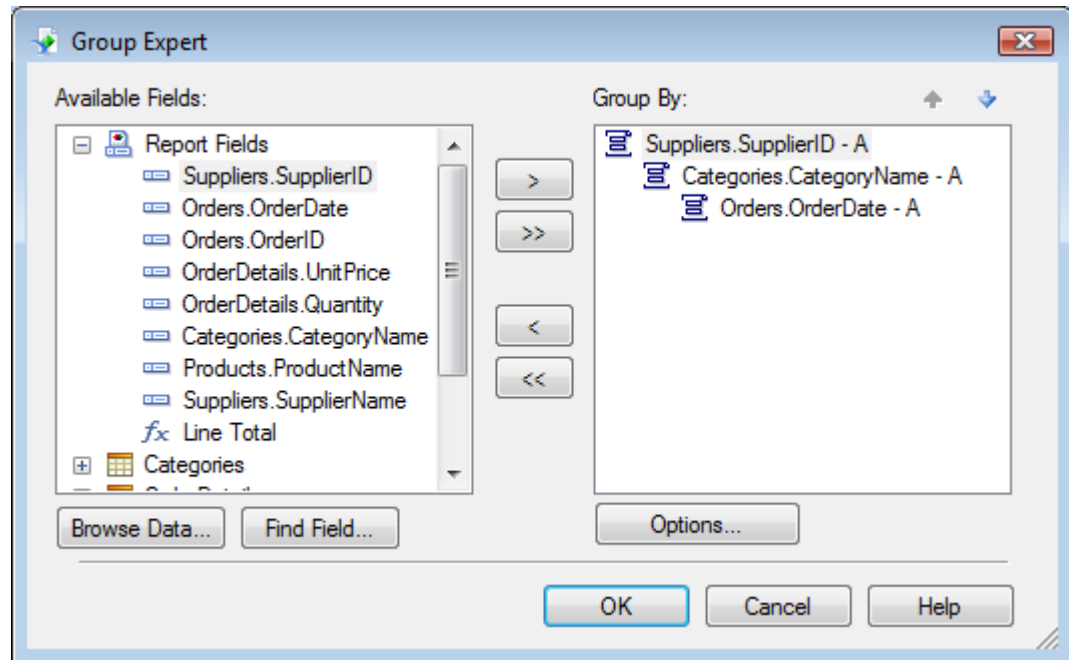


**NOTE:** The *InRepeatedGroupHeader* function is a function in the *Print State* category. Click the + sign to the left of *Print State* in the middle list in the Formula Editor, and then scroll to find the function. Double click the function to add it to the formula.

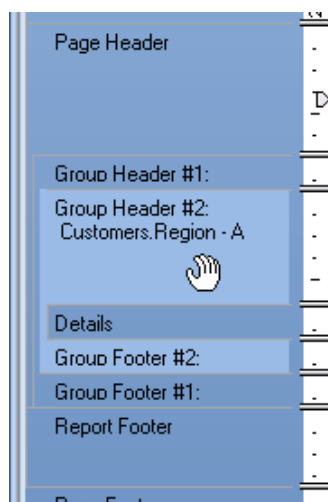
## Lesson 1: Refresher Exercise

### Advanced Grouping

You can group data by using the Insert/Group... command or by clicking the Insert Group  button on the Insert toolbar or the Group Expert  button on the Experts toolbar. This report requires an OrderDate group nested inside a CategoryName group, nested inside a SupplierName group as shown in the Group Expert illustration below:

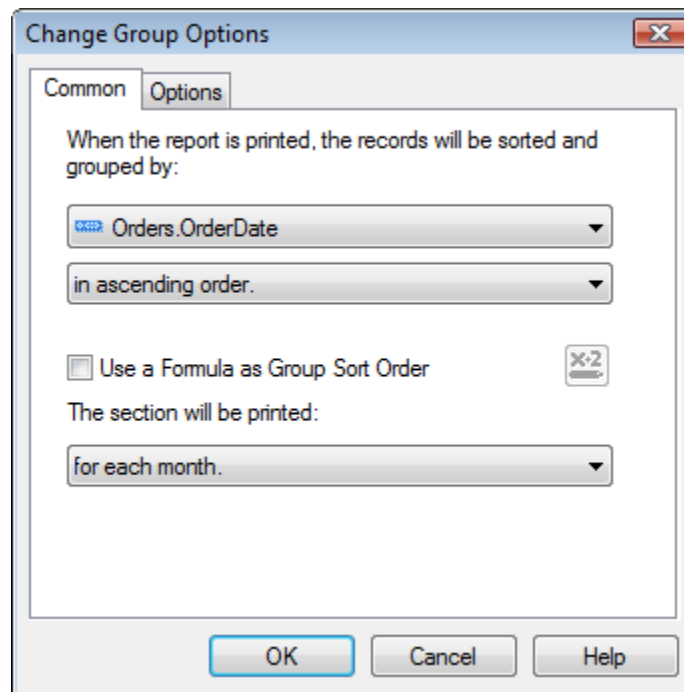


As you create groups, Crystal Reports nests each group inside the previous one you created. However, you can reorder groups in any order you want. To reorder groups, left-click the Group Header section name at the left of the Design screen for the group you want to move. The group header and footer sections are highlighted. Drag the group to the new location. The mouse pointer changes to a grabbing hand as you drag. In the Group Expert shown above you simply move the group headers using the arrows in the top right of the window



**Lesson 1: Refresher Exercise**

**TIP:** When you group on a date field, Crystal Reports allows you to define the period for which the date is broken down; i.e. monthly, yearly, quarterly, etc. A third drop-down list appears automatically in the Insert Group options dialog box allowing you to specify when the group is printed.



Remember you can summarize any field by RIGHT clicking it, then choosing Insert Summary... You must specify the type of calculation you want Crystal Reports to perform and the group at which you want the summary to appear.

❖ **Exercise 1.2 – Create groups and summarize the Line Total field**

1. Open the **Group Expert** window using the Group Expert button. Create a group on the **CategoryName** field. Turn on the *Repeat Group Header On Each Page* feature by selecting the **Options** Tab
2. Create a second group on the **SupplierName** field. Also, turn on the Repeat Group Header On Each Page feature
3. The report requirements call for the report to display information by **SupplierName** and then **Category**, so you need to change the order of the groups. Click the Group Expert button. Select the **CategoryName** field in the *Group By:* list and then click the Down Arrow to reorder the groups  
*The SupplierName should be the first group in the Group Expert with the CategoryName nested underneath.*
4. Create a third group on the **OrderDate** field. Choose to print the section for each **Month**. Using the **Options** tab check on the Keep Group Together item


**Lesson 1: Refresher Exercise**

5. Create a summary for the **Line Total** column. Do this by checking on the *Add to all group levels* option and then choose OK from the Insert Summary dialog  
*All the summary fields should automatically line up on the guideline to which the field is attached.*

**Selecting Certain Records**

Remember Crystal Reports pulls all records from the database unless you filter the records based on some criteria. The business requirements for this report requests only records from the year 2007. To specify this, use the between operator and specify all records with an order date range beginning 01/01/07 and ending 12/31/07.

**❖ Exercise 1.3 – Select records with an Order Date in 2007**

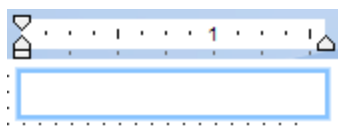
1. Make sure there are no fields selected on the report, and then click the Select Expert  button on the Experts toolbar.
2. Choose the **OrderDate** field.
3. Choose the *is between* operator.
4. In the first drop-down list, select 1/1/2007 12:00:00AM.
5. In the second drop-down list select 12/31/2007 12:00:00AM. Click **OK** when finished.
6. At this point save and preview the report. Name the report:  
**Monthly Sales by Supplier and Category.rpt**

**Lesson 1: Refresher Exercise****Helpful Hints for Formatting the Report****Adding and Working with Text Objects**

Once you have created a group, you can delete the group name field from the group header without affecting the grouping. You can delete the SupplierName and CategoryName fields from Group Headers #1 and #2, and then create a text object in each group header containing typed text and Group Name fields.

Remember text objects can contain text you type and fields from the report. You can add a field to a text object by dragging the field from the Field Explorer dialog box into the text object.

Once you have a field selected, the mouse pointer changes to an arrow with an object image attached. As you move the mouse pointer onto the text object, the text object will open to accept a new object. You can see when the text object is ready to accept a field (object) when the flashing insertion bar appears in the text object and the mouse no longer has an object image attached to it.



Also remember you can format all or part of a text object:

- ❖ To format the entire text object, select the object (there are handles around the object) then apply the formatting
- ❖ To format part of a text object, double click the object to enter Edit Mode, and then select the part you want to format. When the part is highlighted, apply the formatting
- ❖ To format a field inside a text object, double click the object to enter Edit Mode, and then click on the field. Once the field is highlighted, apply the formatting

**Hiding and Suppressing Sections**

Remember you can hide or suppress sections in a report by RIGHT clicking on the section name in Design view and choosing the appropriate command. Hiding a section causes the section to not display in the Preview tab. However, users can double click summaries to display hidden details. Suppressing a section causes the section to not display without any options for viewing it. A hidden or suppressed section will be grayed out in the Design tab.

**Guidelines**

As a reminder, you can add horizontal guidelines to the rulers at the left of each section and snap the tops or bottoms of objects to the guidelines to horizontally align them.

**Lesson 1: Refresher Exercise****❖ Exercise 1.4 - Format the Report**

1. Return to the *Design* view  
*It is easier to add and format objects from Design view.*
2. Add the title and format as you see it in the sample report at the end of this exercise. Add the Northwind Traders logo (included in class files) to the right side of the **Report Header**
3. Delete the **Group #1 Name** and **Group #2 Name** fields from **Group Headers #1 and #2**
4. Using the sample report as a reference, create a text box in **Group Header #1**. Type the text **Supplier Name:** then add the **Group #1 Name: SupplierName** field from the Group Name fields category in the Field Explorer. Format all objects in the text box to Bold. You may need to resize the text box. See the sample at the end of the exercise for final formatting

**Supplier Name: {G roup #1 Name}**

5. Repeat step 4 for **Group Header #2**. Substitute **Category:** for Supplier Name:

**Category: {G roup #2 Name}**

6. Add text boxes in **Group Footers #1 and #2** to the left of the subtotals and format to be bold, right justified. Add text to reflect subtotal information with **Group Name** field information similar to the following:

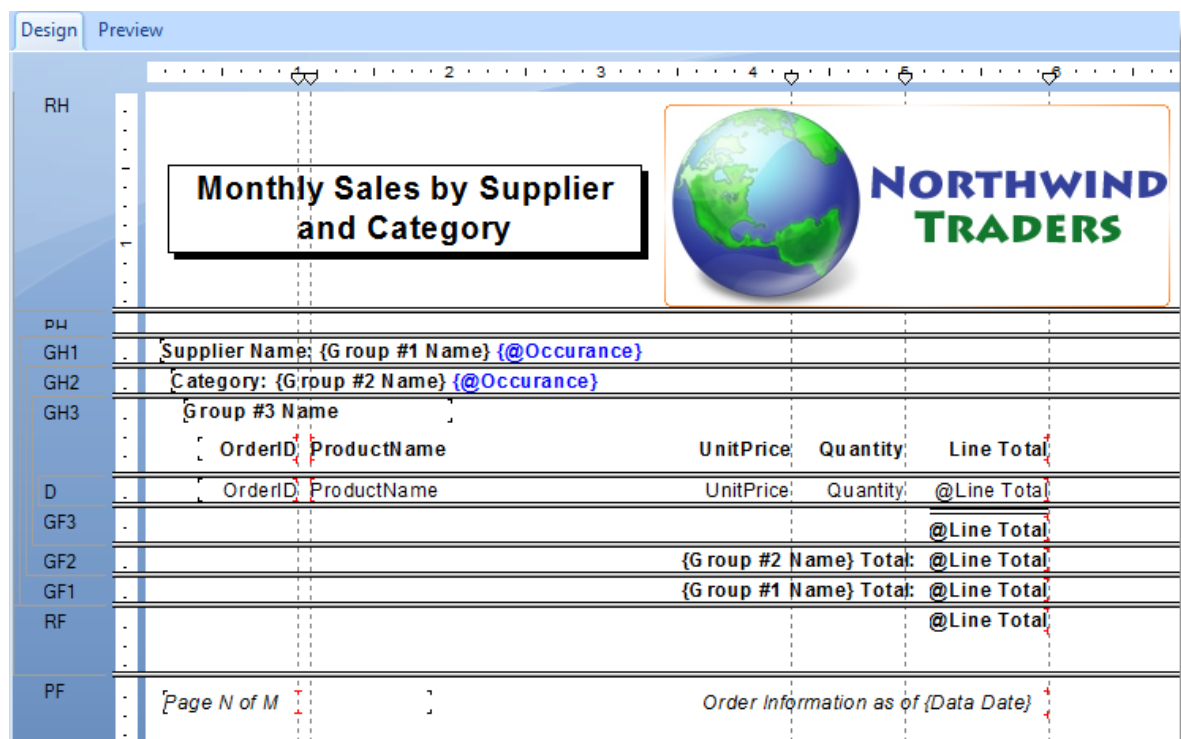
GF3	-				@Line Total
GF2	-			{G roup #2 Name} Total:	@Line Total
GF1	-			{G roup #1 Name} Total:	@Line Total
RF	-				@Line Total

7. Format the summary field in the **Group Footer #3** section to have a top double line border
8. Resize **Group Header #3** to be .5" tall. Multi-select all field headers in the **Page Header** section and move them down into the available space in **Group Header #3**. Format the titles to bold and remove the underline.  
*By placing the titles in this section, the titles will reprint with each month's data.*
9. Format the **OrderID** field to display without a comma. Format the **UnitPrice** field, the **Line Total** formula, and all the summary fields to have a floating \$, if necessary
10. Depending on how you have the default formats set for **Date/Time** fields; you may need to reformat the **Group #3 Name** fields. The date should look like this:  
**January 2007.**

**Lesson 1: Refresher Exercise**

11. From the **Special Fields** list, add the **Page N of M** field to the left side of the **Page Footer**. Add a text box on the right side of the page footer that reads **Order information as of**. Add the **Data Date** special field after the text. Format both items to be italicized
12. To add the words “**(Repeated Occurance)**” or “**(First Occurance)**” for **Group Headers #1 and #2**, place the **Occurance** formula field in both **Group Header #1** and **#2** text boxes. Format just the **Occurance** formula to be **Blue** in each of the text boxes
13. Save and preview the report. Do not forget you can navigate easily through the report using the **Group Tree** section at the left of the screen. Just click the group you want to view. Close the report

The Design view of the report should be similar to the following illustration:



**Lesson 1: Refresher Exercise**

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# NOTES





# **Lesson 2**

## **Power Formatting with Multiple Sections**

**Lesson 2: Power Formatting with Multiple Sections**

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**Lesson Objectives**

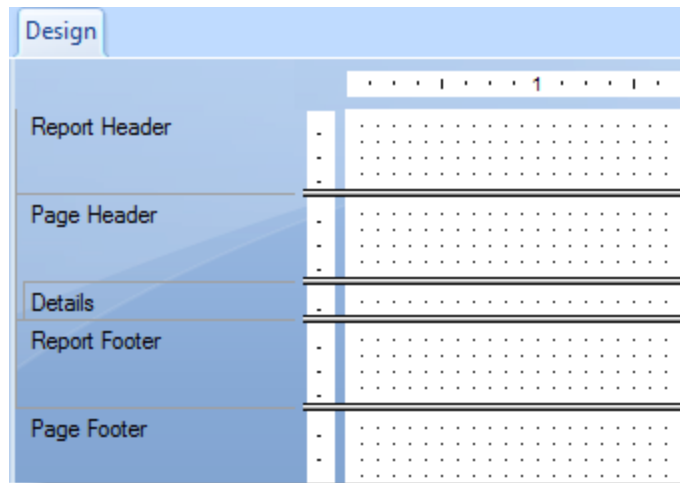
After completing this lesson, you will be able to:

- ❖ **Create multiple sections**  
*Expand your formatting power by learning how to add sections to the report*
- ❖ **Underlay a section**  
*Display a graphic or chart beside the data it represents by utilizing the underlay feature*
- ❖ **Use multiple sections for conditional formatting**  
*Add additional sections that only display under certain conditions*

## Lesson 2: Power Formatting with Multiple Sections

### Using Multiple Sections in Reports

By default, Crystal Reports gives you five design areas to use when building your report: Report Header, Page Header, Details, Report Footer, and Page Footer.



Each area contains only a single section when you first begin your report. There are certain reporting tasks you can perform most efficiently by creating multiple sections within an area, such as:

- ❖ Putting conditional messages to appear under certain conditions
- ❖ Formatting objects/sections differently based on field values
- ❖ Alternating background colors on a row-by-row basis
- ❖ Adding blank lines under specific conditions, such as every fifth row
- ❖ Managing the Underlay feature when some objects should not underlay

When you understand the power of multiple sections, you discover many ways you can use them to produce the report effects you want. The following are some ideas for using multiple sections:

- ❖ Suppose you want to display current order amounts in the Details section. If the customer has outstanding amounts you want to display them as well. You add an additional Details section (b) and conditionally format it to display only if there are outstanding order amounts.
- ❖ You are printing an employee listing grouped by Employee Name. You have information on each employee, including address, telephone, start date and sales for the last month. You also have a field displaying the employee's picture you want shown beside the printed data. You cannot put it in the Employee Name group header because it prints above the rest of the data and takes up too much space. So, you create a second group header section, put the picture there, and then turn on "Underlay Following Sections". The picture will then print beside each employee's data.


## Lesson 2: Power Formatting with Multiple Sections

- ❖ You need a single page summary report of the top twenty customers. Included in the report, you need a graph showing each region's percent of total sales. There is not enough room to print the graph above or below the customer listing. You can put the graph in a Report Header b section and underlay the section, causing the graph to print along side the data.
- ❖ Your report prints customer invoices and a list of the orders in the last month. You want to include a nice letter to thank paid up customers for keeping their account current. For overdue customers, you want a more forceful letter asking them for payment. You can create two Group Header sections and conditionally suppress each one depending on the condition of the account. The Detail section would show all orders currently not paid, along with their due dates.

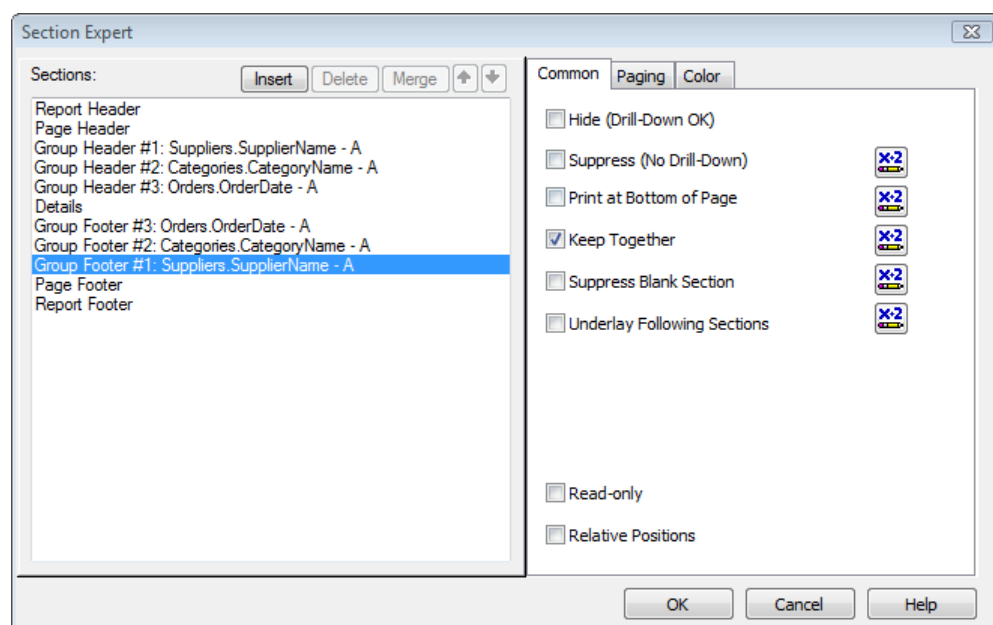
These are only some ideas for using multiple sections. You are going to try some of these ideas in following exercises.

### Using the Section Expert to Work with Sections

In the Section Expert, you can easily insert, merge and delete sections. You can also move sections within an area and conditionally format sections. Remember, you can open the Section Expert in three ways:

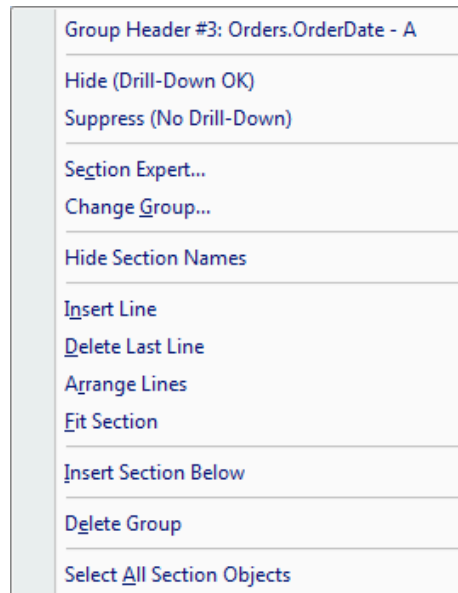
- ❖ Choose Report|Section Expert...
- ❖ Click the Section Expert  button on the Experts toolbar
- ❖ RIGHT click the section name you want to format, then choose Section Expert from the shortcut menu

In the Section Expert, you can select the section you want to work with in the *Sections:* list, and then use the Insert, Delete, or Merge buttons to manipulate additional sections. The arrow buttons allow you to move sections within an area.



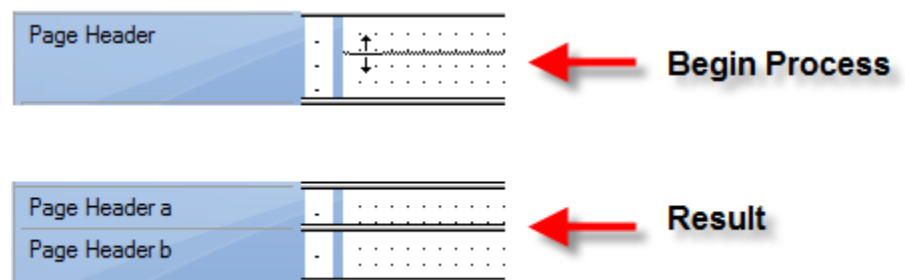
## Lesson 2: Power Formatting with Multiple Sections

You can also perform all these section procedures from the Section shortcut menu. RIGHT click on the left side of the screen where you see the section name of the section you wish to change. The shortcut menu contains commands for inserting, merging and deleting sections.



**WARNING:** If there is currently only one section in an area, the Merge, Move and Delete commands do not display. You only see the Merge command if you RIGHT click on a section that has another section of the same type below it.

Crystal Reports has a true shortcut for inserting a section below an existing section. Left click on the vertical separator bar in the section you wish to add. Hold down the mouse button until the mouse pointer changes to a double-headed arrow with a single line horizontally separating the arrows. Drag the line up or down and release. This method of inserting a new section keeps all the formatting from the section above.



**Lesson 2: Power Formatting with Multiple Sections****❖ Exercise 2.0 – Insert an Additional Group Header Section**

1. Create an **Employee Sales** report using the **Employees** and **Orders** tables in the **Northwind 2008** database
2. Group by the **LastName** field from the **Employee** table. Check on the *Keep Group Together* option in the **Group Options** tab
3. Insert the **OrderID**, **OrderDate** and **OrderAmount** fields from the **Orders** table. Format the **OrderDate** field to display only the date
4. Summarize the **OrderAmount** field for all levels including grand total
5. Resize the **Group Header #1** section to approx. **.5"** tall. Move the field title headers down to the **Group Header #1** section
6. Create a **Record Selection Formula** filter to limit records to only orders in 2008. The formula should look similar to the following:

**{Orders.OrderDate} >= Date(2008,1,1)**

7. Place a text object into the **Page Header** section with the title **Employee Sales Orders for FY 2008 YTD**. Format the title like the illustration later in this exercise
8. Suppress the **Report Header** section
9. Add the **Photo** field from the **Employees** table into the **Group Header #1** section. Be sure to place the field to the right of the field headers
10. Save the report as **Employee Sales Orders for 2008.rpt** and preview the report

The report should be similar to the following illustration:

Employee Sales Orders for FY 2008 YTD		
Buchanan		
OrderID	OrderDate	OrderAmount
10,954	03/17/2008	\$1,902.10
10,870	02/04/2008	\$160.00
10,872	02/05/2008	\$2,166.80
10,841	01/20/2008	\$4,581.00
10,823	01/09/2008	\$3,107.50
10,851	01/26/2008	\$2,740.00
10,812	01/02/2008	\$1,852.00
10,922	03/03/2008	\$742.50
10,866	02/03/2008	\$1,461.60
10,899	02/20/2008	\$144.00
10,874	02/06/2008	\$310.00
11,043	04/22/2008	\$210.00
10,869	02/04/2008	\$1,630.00
		<b>\$21,007.50</b>



## Lesson 2: Power Formatting with Multiple Sections

The report would look better if the photo displayed beside the records. You can underlay the Group Header #1 to accomplish this. However, if you underlay the entire Page Header the Group Name field and field headers will also display over the order information. We need to place the photo in a separate section below the Group Name field and field titles and then underlay Group Header #1b.

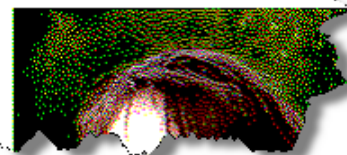
11. Return to **Design** view.
12. Insert a section below the **Group Header #1** by right clicking the words **Group Header #1** and choosing *Insert Section Below*. Move the photo into **Group Header #1b**. Right click in **Group Header #1a** and choose *Fit Section*
13. RIGHT click the section name for **Group Header #1b**, then choose *Section Expert...* Notice the *Section Expert* now displays both Report Header sections.

### ❖ Exercise 2.1 – Underlay a Section

1. Click the *Underlay Following Sections* check box in the **Common** tab, and then click **OK**.
2. Save (**Employee Sales Orders for 2008**) and preview the report.

The report should look like the following illustration:

Employee Sales Orders for FY 2008 YTD		
Buchanan		
<u>OrderID</u>	<u>OrderDate</u>	<u>OrderAmount</u>
10,954	03/17/2008	\$1,902.10
10,870	02/04/2008	\$160.00
10,872	02/05/2008	\$2,166.80
10,841	01/20/2008	\$4,581.00
10,823	01/09/2008	\$3,107.50
10,851	01/26/2008	\$2,740.00
10,812	01/02/2008	\$1,852.00
10,922	03/03/2008	\$742.50
10,866	02/03/2008	\$1,461.60
10,899	02/20/2008	\$144.00
10,874	02/06/2008	\$310.00
11,043	04/22/2008	\$210.00
10,869	02/04/2008	\$1,630.00
		\$21,007.50
Callahan		
<u>OrderID</u>	<u>OrderDate</u>	<u>OrderAmount</u>
11,034	04/20/2008	\$554.40
10,883	02/12/2008	\$36.00
11,036	04/20/2008	\$1,692.00
10,987	03/31/2008	\$2,772.00
10,844	01/31/2008	\$735.00

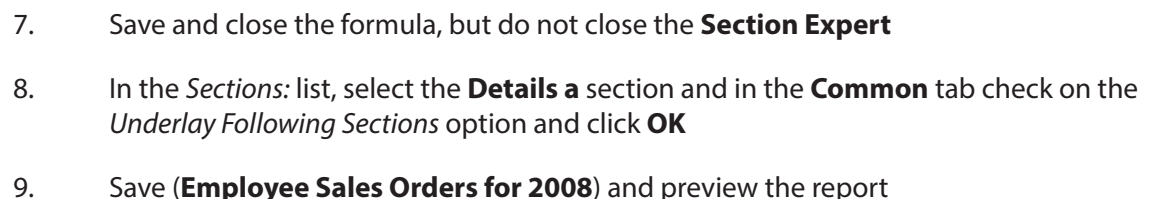


To achieve the desired goal, we need to add an additional Details section, add a formatted line box to the new section , turn on underlay and finally conditionally suppress the new section every other record.

1. Return to **Design** view
2. RIGHT click the **Details** section name, and then choose *Insert Section Below*
3. Change the order (swap places of Details A and Details B)
4. Draw a box to fit **Details a** in height and make it slightly wider than the data fields in the **Details b** section. Your Details sections should look similar to the following:

- If we preview, we see the **Details a** appears with every record. We now need to suppress it every other record. RIGHT-click the **Details a** section name from **Design** and choose *Section Expert*
- Click on the X+2 button next to the Suppress (No-Drill-Down) option. The Format Formula Editor opens. Enter the following formula:

**NOTE:** The RecordNumber function found in the Print State function category returns a number corresponding with the position of the record being displayed. The record number does not represent the order in which the records were returned by the database, but by the order in which they are printed (displayed) in the report. The Mod operator is found in the Arithmetic operators list. The Mod operator returns the remainder of a division between a numerator and denominator. In this case, the even number records return 0 remainder and odd number records return 1. Our formula returns a True value on even number records and will suppress those records.

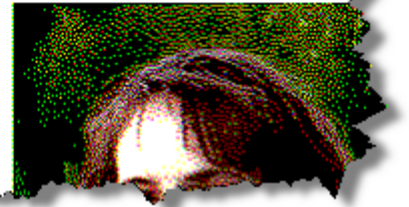




**Lesson 2: Power Formatting with Multiple Sections**

The report should look similar to the following example:

Employee Sales Orders for FY 2008 YTD		
<b>Buchanan</b>		
<u>OrderID</u>	<u>OrderDate</u>	<u>OrderAmount</u>
10,954	03/17/2008	\$1,902.10
10,870	02/04/2008	\$160.00
10,872	02/05/2008	\$2,166.80
10,841	01/20/2008	\$4,581.00
10,823	01/09/2008	\$3,107.50
10,851	01/26/2008	\$2,740.00
10,812	01/02/2008	\$1,852.00
10,922	03/03/2008	\$742.50
10,866	02/03/2008	\$1,461.60
10,899	02/20/2008	\$144.00
10,874	02/06/2008	\$310.00
11,043	04/22/2008	\$210.00
10,869	02/04/2008	\$1,630.00
		<b>\$21,007.50</b>
<b>Callahan</b>		
<u>OrderID</u>	<u>OrderDate</u>	<u>OrderAmount</u>
11,034	04/20/2008	\$554.40
10,883	02/12/2008	\$36.00
11,036	04/20/2008	\$1,692.00
10,987	03/31/2008	\$2,772.00
10,844	01/21/2008	\$735.00
10,845	01/21/2008	\$4,059.00



**Note:** The alternate row color example in the previous lesson can be improved on in a few ways, such as making sure the first record in each group has a colored background. We will achieve this through the use of Running Total fields covered in the next lesson.

**Lesson 2: Power Formatting with Multiple Sections****Challenge Exercise – Formatting with Multiple Sections**

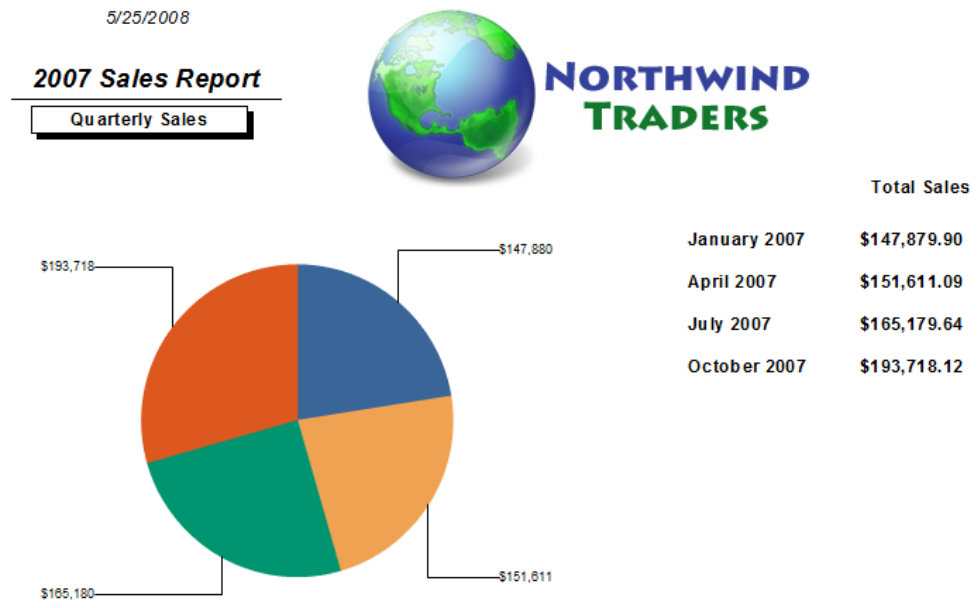
Suppose you need to create a Quarterly Sales report showing the sales for last year (2007). This will be a summary report including a graph of the sales for each quarter and the sales totals for each employee. The finished report needs to look like the following illustrations.

1. Start by creating a new report based on the **Northwind 2008** database. Add the **Employees** and **Orders** tables
2. Use the **Group Expert** to insert a group on the **OrderDate** field. Choose to print the group once for each quarter. Insert another group on the **LastName** field
3. Select only records in **2007** using the *is between* option in the **Select Expert**
4. Put the **OrderDate** field and the **OrderAmount** field into the **Details** section at the RIGHT side of the report. Put the field headings into **Group Header #2**
5. Summarize the **OrderAmount** field by **OrderDate** group (Group #1) and by **LastName** group (Group #2)
6. Move the **Group #1 Name** field into the **Group Footer #1** and position it close to the summary field. You may need to resize it. Do the same for the **Group #2 Name** field (into Group Footer #2). Reformat the **Group #1 Name** field to look like the following:  
**January 2004**
7. Add the title and the print date to the **Report Header** section. Format both objects similar to the example at the end of the exercise. Add the **Northwind Traders** logo. Add a subtitle "**Quarterly Sales**" as shown in the example  
*HINT: For the 2007 Sales Report text box, add a bottom border to have a separator line.*
8. Suppress the **Page Header** and hide the **Group Header #2** section, the **Group Footer #2** section and **Details** section
9. Now you are ready for the extra sections. The report needs to have a graph of the sales by quarter displayed beside the summary values using the underlay feature. Since the graph appears once on the report, you need to put it in the **Report Header**. To accomplish this we need an additional **Report Header** section. Right click on the **Report Header** section name, and then choose *Insert Section Below*
10. Insert a chart into **Report Header b**. Use the **Chart Expert** to ensure that it is a pie chart graphing the **Sum of Order Amount by Order Date**. On the **Options** tab, display the values and format them to look like currency with no decimals (\$1). Turn off the **Legend**. Turn off all the **Auto-Text** entries on the **Text** tab and delete any text. Click **OK** when finished
11. Ensure the chart is in the left side of **Report Header b** section and resize to be only **4"** wide.
12. Turn on the *Underlay Following Sections* command for **Report Header b** but not for **Report Header a**

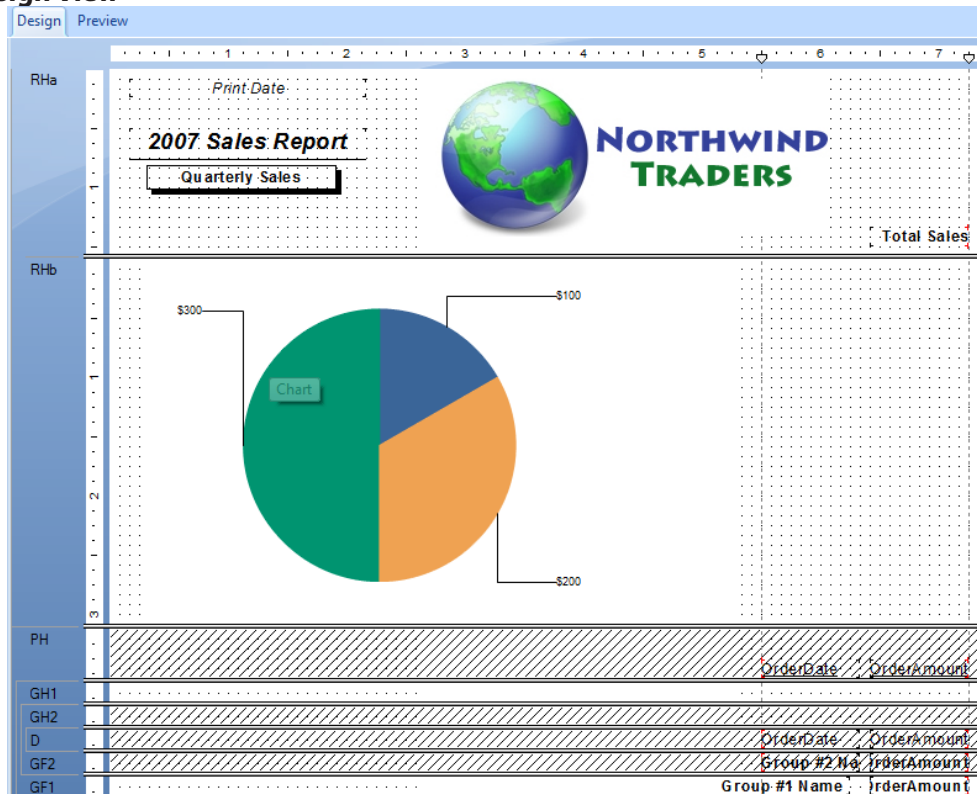
## Lesson 2: Power Formatting with Multiple Sections

13. Finally you want to add a title for the quarterly sales figures. Add a text object to **Report Header a** that lines up with the **OrderAmount** summary fields. Type **Total Sales**. Format the box to be bold with a bottom single border
14. Save this report and name it **Quarterly Sales Report.rpt**. Preview the report

### Preview View



### Design View



## Lesson 2: Power Formatting with Multiple Sections

### Challenge Exercise – Conditionally Formatting Using DrillDownGroupLevel

The Quarterly Sales report displays summary level information. However, when you created this report, you included the detailed information. The information in the Group #2 sections and the Details section was hidden in the previous exercise. If you drill down into the report by selecting the summary information for January 2004, you will notice the report will display column headings for the first drill down. The drill down will look similar to the following example:

<u>OrderDate</u>	<u>OrderAmount</u>
Buchanan	\$2,634.40
<u>OrderDate</u>	<u>OrderAmount</u>
Callahan	\$19,271.60
<u>OrderDate</u>	<u>OrderAmount</u>
Davolio	\$15,330.10
<u>OrderDate</u>	<u>OrderAmount</u>
Dodsworth	\$2,979.30
<u>OrderDate</u>	<u>OrderAmount</u>
Fuller	\$7,639.30
<u>OrderDate</u>	<u>OrderAmount</u>
King	\$21,461.60
<u>OrderDate</u>	<u>OrderAmount</u>
Leverling	\$29,658.60
<u>OrderDate</u>	<u>OrderAmount</u>
Peacock	\$44,795.20
<u>OrderDate</u>	<u>OrderAmount</u>
Suyama	\$4,109.80
January 2004	\$147,879.90

Obviously we do not want the column headings to appear at this level of detail. However, we do not want to delete them, because they will serve a useful purpose when you drill down to the order details for each employee. In order to prevent the column headings from appearing at the first drill down, we use a formatting option called DrillDownGroupLevel. By using this function in conjunction with conditional suppression of a section, the column headings will display at the order detail level, but not at the employee summary level.

<u>OrderDate</u>	<u>OrderAmount</u>
01/02/2007	\$2,713.50
01/08/2007	\$1,622.40
01/13/2007	\$372.00
01/16/2007	\$720.00
01/21/2007	\$1,273.20
02/04/2007	\$631.60
02/05/2007	\$393.00
02/12/2007	\$537.60
02/19/2007	\$531.40
02/20/2007	\$2,096.00
02/24/2007	\$2,684.00
02/25/2007	\$656.00
02/28/2007	\$234.80
03/06/2007	\$235.20
03/12/2007	\$1,051.20
03/17/2007	\$182.40
03/20/2007	\$1,472.00
03/27/2007	\$1,560.00
03/31/2007	\$305.30
Callahan	\$19,271.60

## Lesson 2: Power Formatting with Multiple Sections

In this exercise, you will format the report to only display the column headings at the order detail level.

1. Return to the **Design** view. Right click on the **Group Header #2** section and select the *Section Expert...*
2. Locate the **X+2** button beside the *Suppress (No Drill-Down)* option
3. The **DrillDownGroupLevel** function is found in the **Print State** functions list. The formula for preventing the **Group Header #2** from displaying at level 1 is:

**DrillDownGroupLevel = 1**

4. Save and close the **Format Formula Editor**
5. Close the **Section Expert**
6. Save (**Quarterly Sales Report**) and preview the report
7. From the **Preview** tab, double click the value for **January 2007**  
*Notice the information for January 2007 now displays the employees and their summary information. The column headings no longer appear at this level of detail.*
8. Drill down to view the detail orders for **Davolio**. Notice the column headings appear above the **OrderDate** and **OrderAmount** columns.
9. Save the report (**Quarterly Sales Report**) and close.



**Tip:** If you are unsure what the **DrillDownGroupLevel** value is for the group you are working with, create a formula with the **DrillDownGroupLevel** value in it and place it into the header. You will then see the value as you drill down. Once you know the value, simply place it into the **Section Expert** as shown above to prevent the heading from displaying on drill down. Another way of knowing the level is to assume **Preview = Level 0**, **Group 1 = Level 1**, **Group 2 = Level 2** and so on.

## Lesson 2: Power Formatting with Multiple Sections

### Challenge Exercise – Conditionally Formatting Multiple Sections

Suppose you also want to include a message in the report congratulating all the sales reps with sales over \$20,000 in any quarter. The message only displays when the sales person drills down on the quarter to see employee sales for that quarter. You only want the message to appear under the employee names meeting the top sales goals for that quarter. The results should look like this:

<b>Buchanan</b>	<b>\$2,634.40</b>
<b>Callahan</b>	<b>\$19,271.60</b>
<b>Davolio</b>	<b>\$15,330.10</b>
<b>Dodsworth</b>	<b>\$2,979.30</b>
<b>Fuller</b>	<b>\$7,639.30</b>
<b>King</b>	<b>\$21,461.60</b>
Congratulations Robert!	
You are a top sales producer for this quarter.	
<b>Leverling</b>	<b>\$29,658.60</b>
Congratulations Janet!	
You are a top sales producer for this quarter.	
<b>Peacock</b>	<b>\$44,795.20</b>
Congratulations Margaret!	
You are a top sales producer for this quarter.	
<b>Suyama</b>	<b>\$4,109.80</b>
<b>January 2007</b>	<b>\$147,879.90</b>

Since the sales for each employee is a summary field, there is no way to compare it with summaries from other groups. So, you need to add the message and suppress it based on a combination of which quarter it is and the employee name.

1. Return to **Design** view.
2. RIGHT click the **Group Footer #2** section name at the left of the screen, and then choose *Insert Section Below*
3. Add a text box to the **Group Footer #2b** section. Type **Congratulations**, and insert the **{Employees.First Name}** field. Then type **! You are one of the top sales producers for this quarter.**
4. Resize the text object so it looks good to you and move it to the right side of the section, directly under the summary information for **Group Footer #2a**
5. Now you are ready to conditionally suppress the **Group Footer #2b** section. RIGHT click the **Group Footer #2b** section name, and choose *Section Expert...*
6. Click the **X+2** button after the *Suppress (No Drill Down)* check box.

**Lesson 2: Power Formatting with Multiple Sections**

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7. Enter the following formula:

**Sum ({Orders.OrderAmount}, {Employees.LastName}) < 20000**

8. Save and close the formula. Close the **Section Expert**. Save and preview the report. Double click on the **January 2007** sales to see if the formula worked
9. Save (**Quarterly Sales Report**)

The drill-down pages of the report should look similar to the example at the beginning of this challenge exercise.

# NOTES

