

# **Crystal Reports 2013 Designer 3 Workshop**

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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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### 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:



- ❖ Create and incorporate custom functions into formulas
- ❖ Build high level advanced formulas with looping statements and case select
- ❖ Use SQL statements to build Crystal Reports SQL Expressions and Commands
- ❖ Apply advanced database concepts with views and stored procedures
- ❖ Performance fine tune reports for shorter run times
- ❖ Build advanced Cross-Tabs using the new Crystal Reports 2008 advanced Cross-Tab features
- ❖ Apply everyday tips and tricks into corporate reports

## 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

**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*
- ❖ **Conditionally format your report**  
*Make your report more informative and attractive with formatting*
- ❖ **Parameterize your report**  
*Use parameter fields to provide flexibility to the user as to the data they are viewing*
- ❖ **Add multiple charts to a report**  
*Use more than one chart and conditional formatting to graphically display data for different groups*



## Lesson 1: Refresher Exercise

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### 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 more tables to the report that can change the number of records displayed.

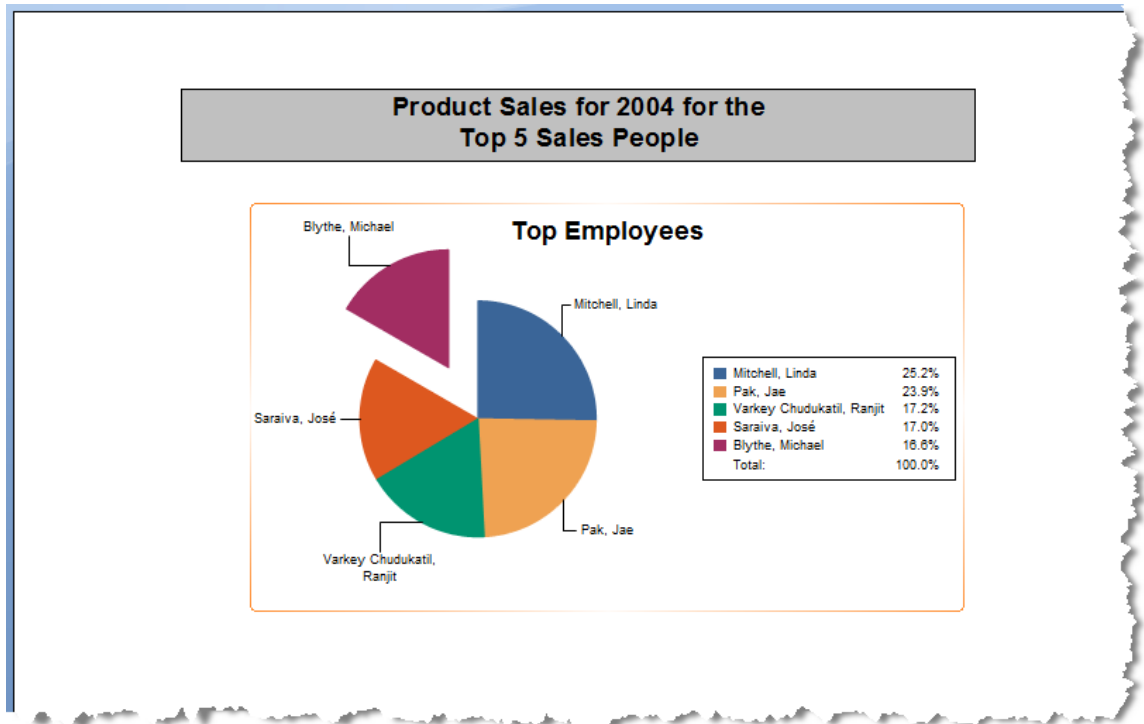
You must look at the business requirements for the report and decide what fields you need and the tables in which they are located. It is also helpful to look at things such as groupings, whether you need Cross-Tabs, fields needed for formulas and selection criteria.

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

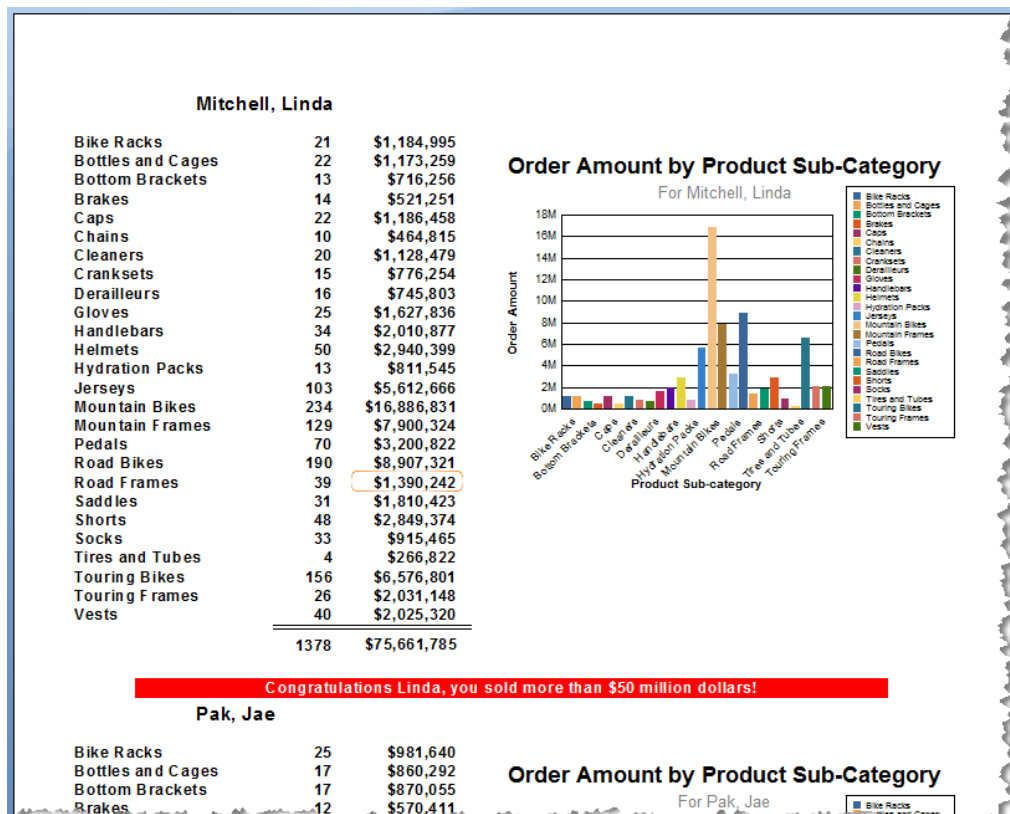
- ❖ The first page of the report needs to show the top N sales people by product sales; N needs to be a user defined variable.
- ❖ The body of the report shows the sales detail for each sales person showing the number of orders and amount by product sub-category. Beside each sales person should be a bar chart showing order amount by product sub-category for that sales person.
- ❖ The user needs to be able to choose a year for the report with a default value of 2004.
- ❖ Need to be able to see quickly any sales person with over \$50,000,000 of sales
- ❖ The person requesting the report has supplied you with a printout of what the report should look like, both the first page and detailed pages. See the samples on the next page.

**Lesson 1: Refresher Exercise**

The screen shot below is a view of the first page of the report:



Page 2 of the report should look as follows:



## Lesson 1: Refresher Exercise

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

- ❖ For the Detail section, you need the SalesOrderID and SubTotal fields
- ❖ For grouping, you need the SalesPersonID and the Product Sub-category Name fields
- ❖ Finally, you need to select orders based on the OrderDate field

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

- ❖ The SalesOrderID, SubTotal and OrderDate fields are in the SalesOrderHeader table
- ❖ The SalesPersonID field is in the SalesPerson table; Sales Person Name is in the Contact table via the Employee table
- ❖ The Product Sub-category Name field is in the ProductSubcategory table. To get to this table you need the SalesOrderDetail and Product tables

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 2008.

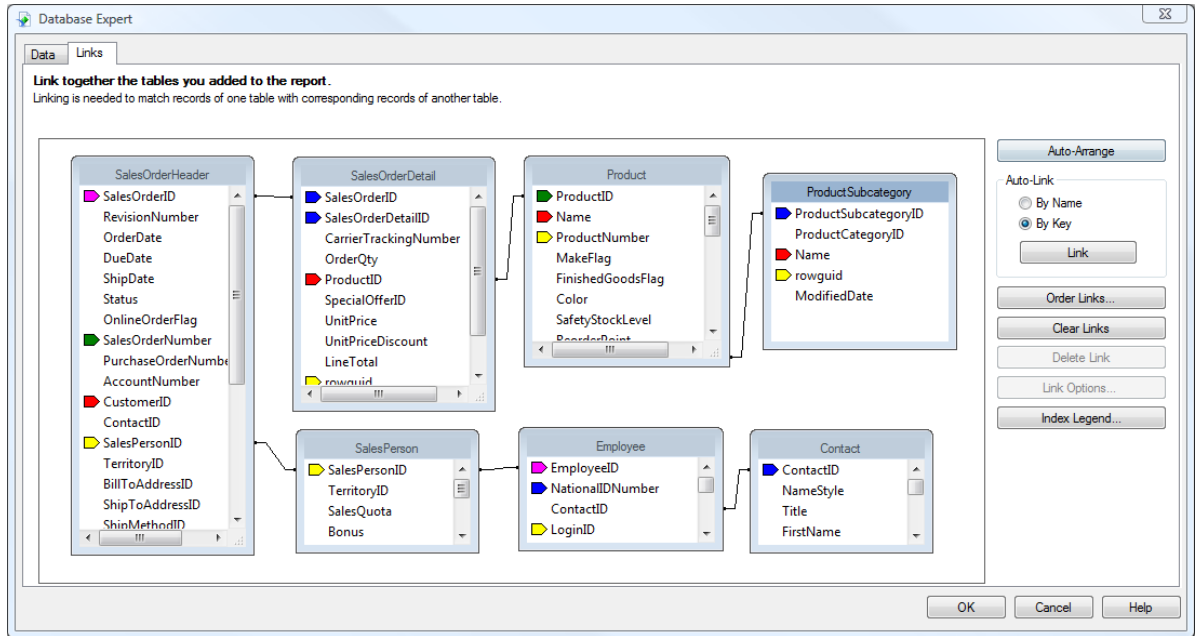
Crystal Reports 2008 attempts to link tables together where the “To” table contains a primary key (indexed, no duplicates). The reason is to improve database performance and in most instances is the best choice to reduce database querying time. In some cases this is not the best choice and it is fairly 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:

## Lesson 1: Refresher Exercise



**NOTE:** 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.

### 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.





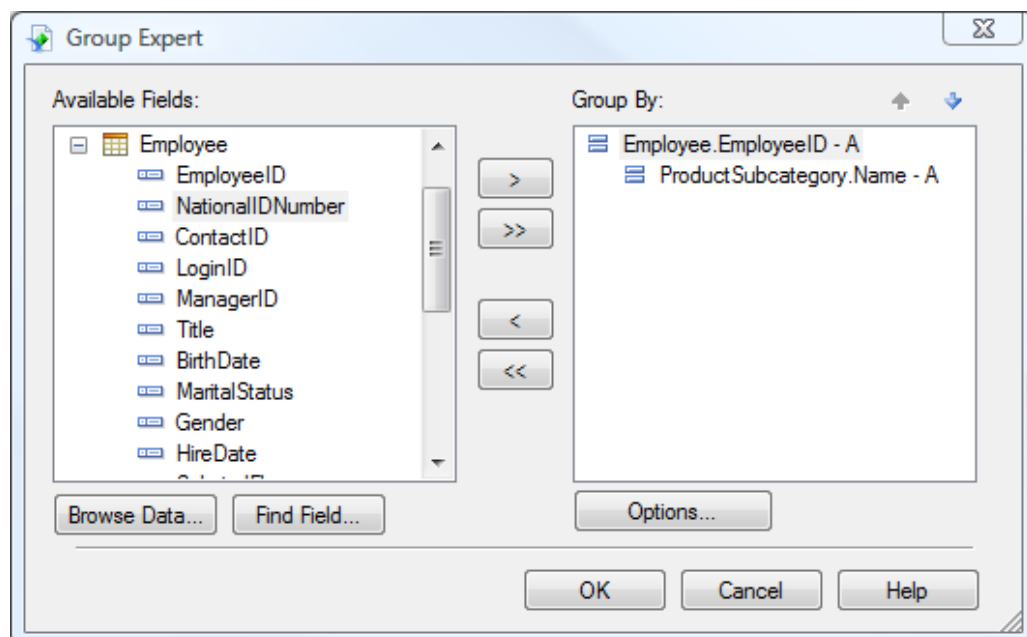
**NOTE:** Your instructor will provide the database connection entries if they differ from the standard entries in Exercise 1.0.

**Lesson 1: Refresher Exercise**❖ **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 the **OLE DB (ADO)** data sources; the OLE DB (ADO) dialog will open.
2. In the **OLE DB Provider** section, select **SQL Native Client**, and then click **Next**. The **Connection Information** section appears.
3. Enter **localhost\SQLEXPRESS** in the *Server:* field, **sa** in the *User ID:* field and **cr2008** in the *Password:* field (the password is case sensitive). Select **AdventureWorks** from the *Database:* drop-down field. Be sure that the *Integrated Security:* checkbox is not checked. Click **Finish**.
4. Add the tables indicated by the business requirements.  
(*SalesOrderHeader, SalesOrderDetail, SalesPerson, Employee, Contact, Product and ProductSubcategory*)
5. 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.
6. Add the appropriate fields to the **Details** section  
(*SalesOrderID, SubTotal*)
7. Change the Printer Setup to a **Portrait** page layout, if necessary. Change the margins to be **.5"** on all four sides

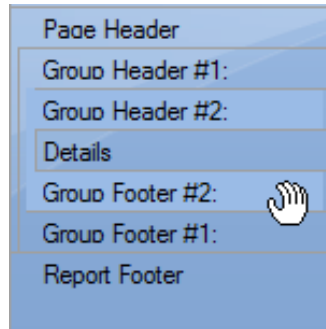
**Advanced Grouping**

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 a Product Sub-category Name group nested inside a Contact (Employee) Name group as shown in the Group Expert illustration below:

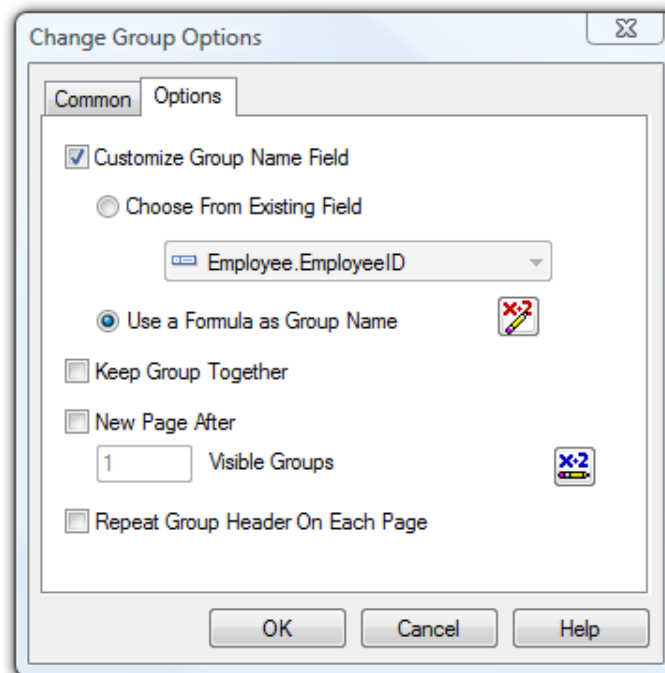


## Lesson 1: Refresher Exercise

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:





Remember that you can group on a field but display a formula or another field name as the group name field. When you group on Employee ID using the option shown below (Using a Formula as Group Name) you can display the employee name:



Also remember that 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.

**Lesson 1: Refresher Exercise****❖ Exercise 1.1 – Create groups and summarize the SalesOrderID and SubTotal field**

1. Open the **Group Expert** window using the Group Expert  button. Create a group on the **ProductSubcategory.Name** field.
2. Create a second group on the **Employee.EmployeeID** field. Choose to *Use a formula as Group Name*, displaying the Employee Name as Last Name, First Name (from the **Contact** table).
3. The report requirements call for the report to display information by **EmployeeID** and then **Product Sub-category Name**, so you need to change the order of the groups. Click the Group Expert  button. Select the **Product Sub-category Name** field in the *Group By:* list and then click the Down Arrow to reorder the groups *The EmployeeID should be the first group in the Group Expert with the Product Sub-category Name nested underneath.*
4. Create a summary for the **SalesOrderID** and **SubTotal** columns. 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.*
5. Move the summaries in **Group Footer #2** to **Group Header #2**, and then hide the **Details** and **Group Footer #2** sections.

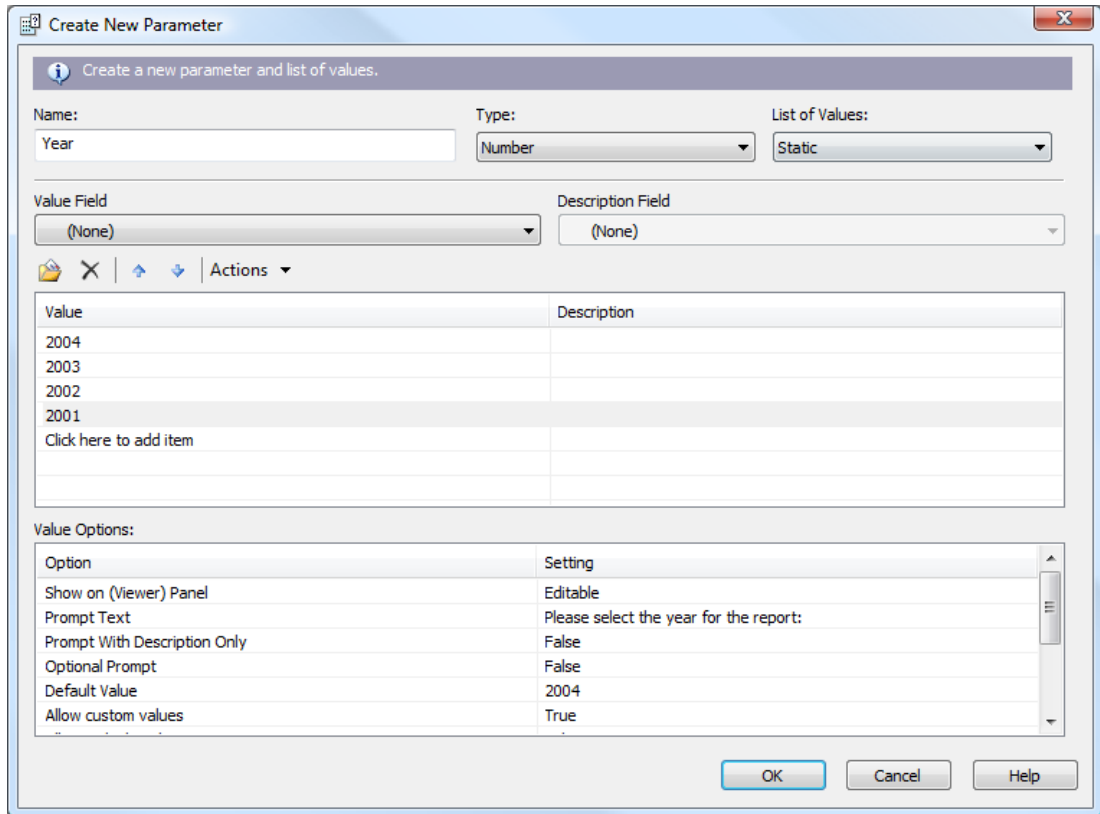
**Selecting Certain Records**

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 a user selected year. First you need to create a parameter field and then use it in the record selection formula.

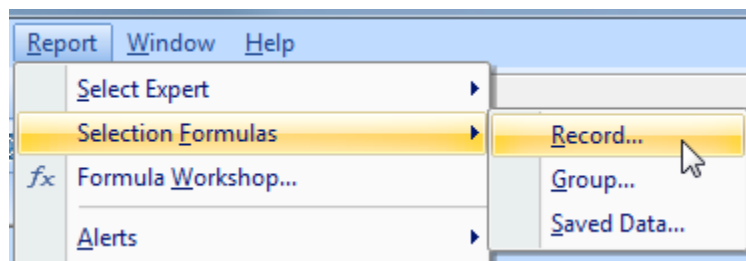
### Lesson 1: Refresher Exercise

#### ❖ Exercise 1.2 – Select Records for a Specific Year

1. Create a parameter field called **Year** with a **Number** data type and a default value of **2004** as shown in the dialog below:



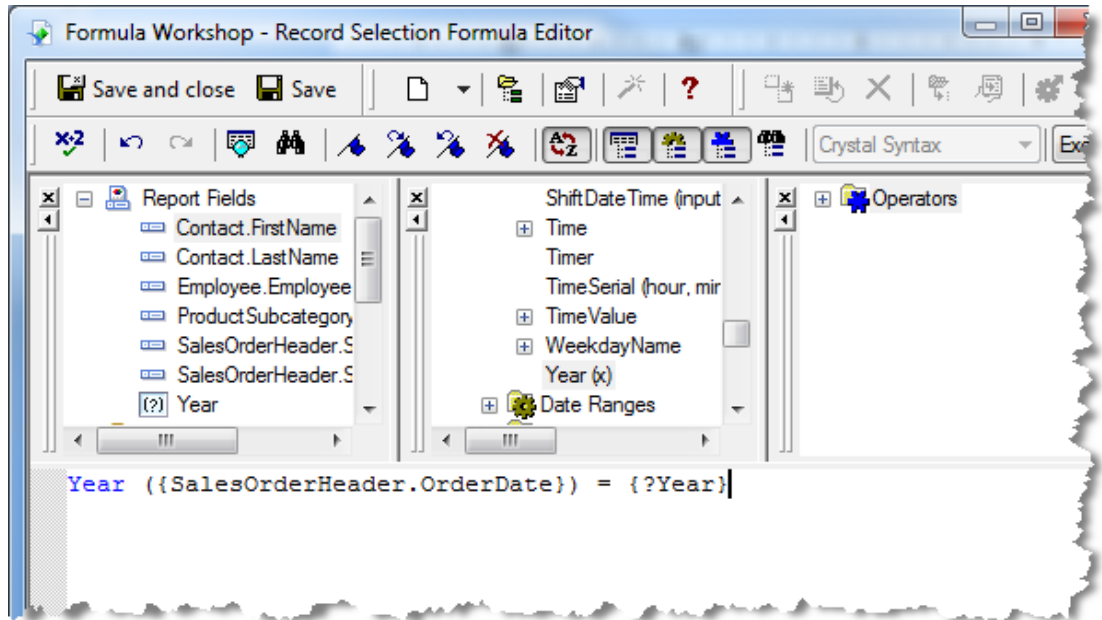
2. Under the **Report Menu** choose to edit the record selection formula as shown in the menu below:





### Lesson 1: Refresher Exercise

3. In the formula editor you need to enter the following formula:



4. At this point save and preview the report. Name the report:  
**Refresher.rpt**

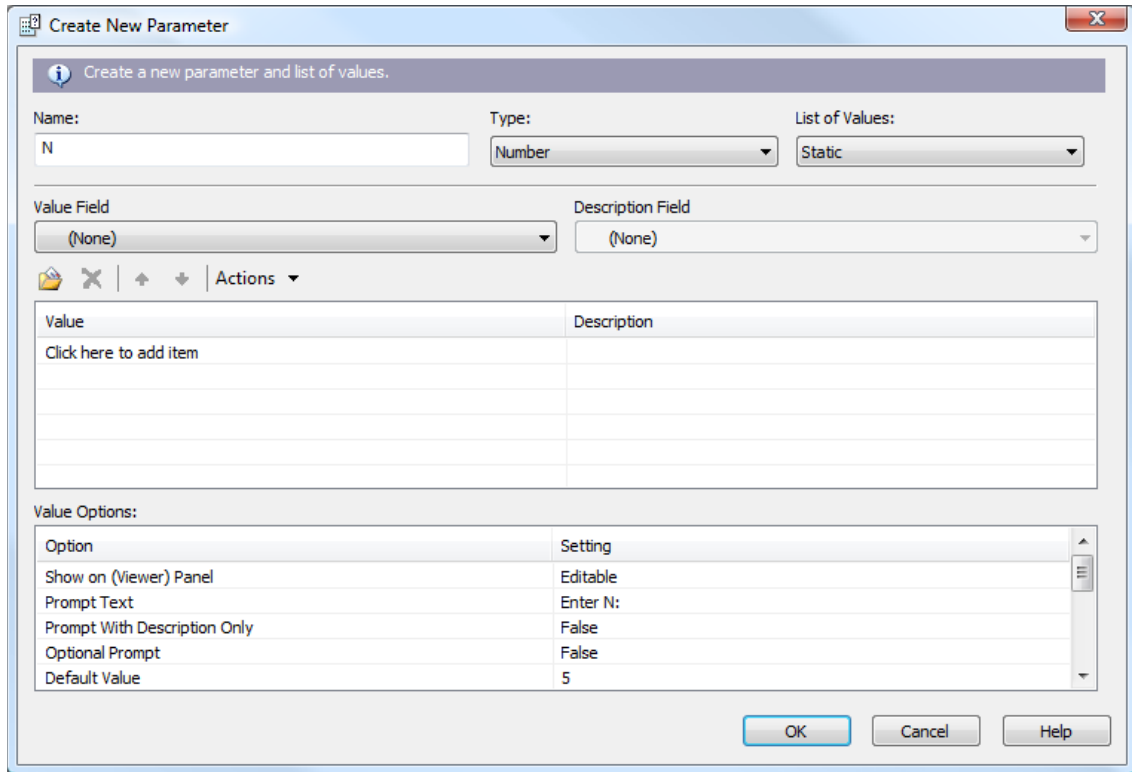
### Group Sorting


An additional requirement of this report is group sorting. Now you have the group summary fields you can choose how to sort the groups. One of the requirements outlined is the ability to look at the Top N sales people and top is measured by order amount. It is also a requirement to be able to select the value of N at run time.

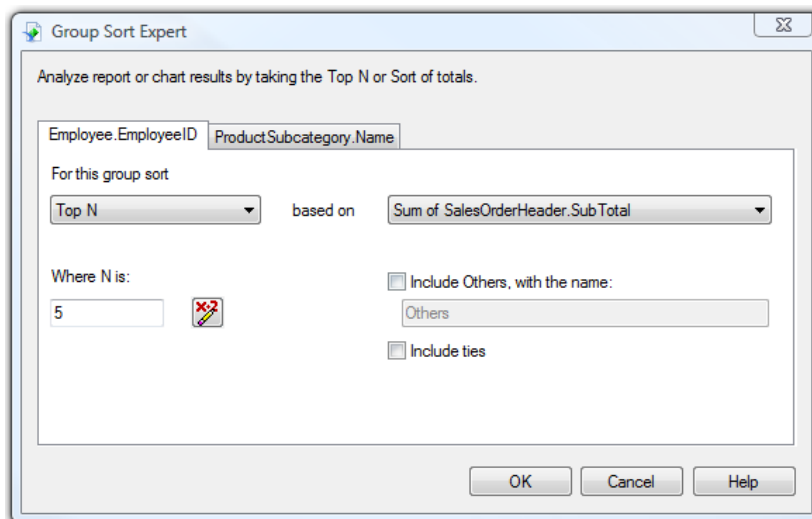
## Lesson 1: Refresher Exercise

### ❖ Exercise 1.3 - Sort Groups

1. Before you start sorting your groups you need to create a parameter field for **N** as the N value needs to be user defined. Create a simple parameter field with a default value of **5** as shown below:



2. Click on the **Group Sort Expert**  and you will be able to select the type of sort for your group as shown below. The Group Sort Expert has a tab for each group on the report and within that tab you can choose the summary field on which you want to base your sort. You then decide which type of sort (Top N, Bottom N, All Sort etc) that you would like to do.




## Lesson 1: Refresher Exercise

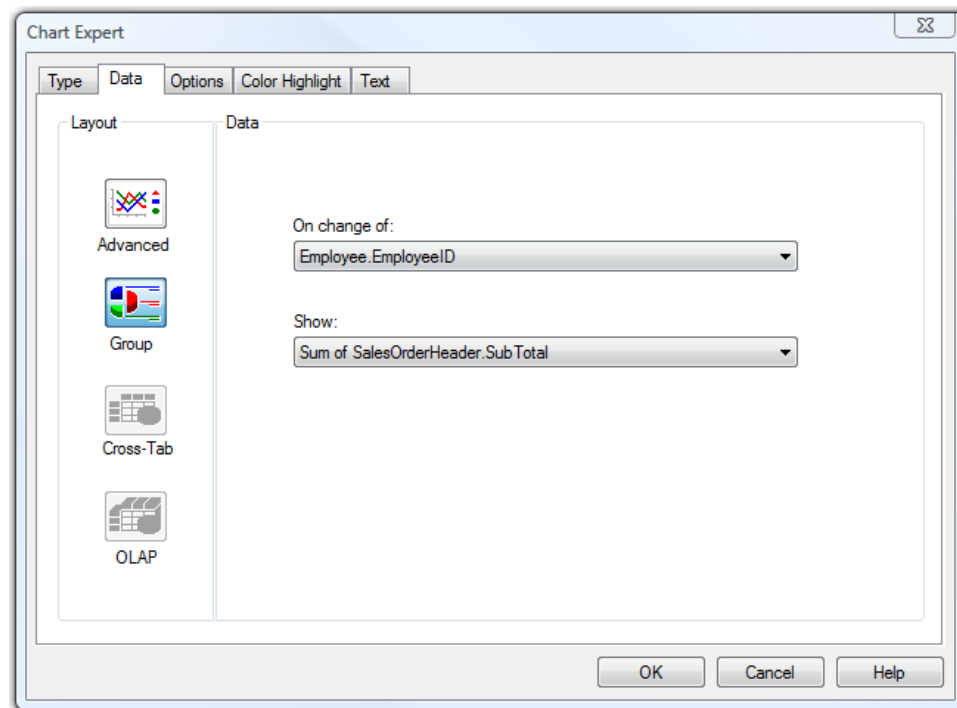
3. In this case you want to sort on **EmployeeID**; do a **Top N** sort based on **SubTotal** and exclude *Others*.
4. In order for **N** to be user defined you need to click on the conditional box (next to *Where N is*). Simply add the parameter field **{?N}** to the formula box.
5. Preview your report and select values for both parameter fields. Save your report.

### The Report Header

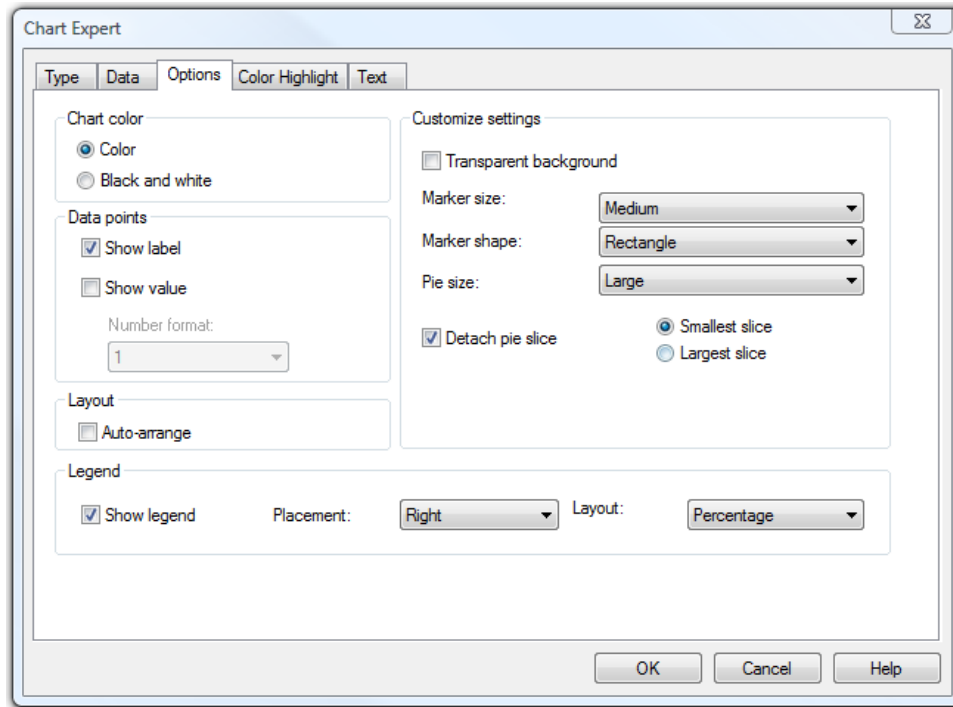
Now the report is providing the correct information before you begin formatting you should think about the business requirements for the report header. The report needs a pie chart on the front page with a text title that contains the parameter values for the report.

#### ❖ Exercise 1.4 – Report Header

1. Insert a text object into the report header with an appropriate title for the report. Make sure you insert both parameter fields so their values at runtime are displayed. Format the title to stand out.
2. Insert a pie chart into the **Report Header** by clicking on **Insert Chart** ; Using the **Chart Expert**, choose a pie chart and then make sure the correct data is selected as shown below:



3. Under **Options** tab you should choose to **show a label** and also **detach the largest piece of the pie** as shown below. Also uncheck the *Auto-arrange* option.


**Lesson 1: Refresher Exercise**

4. Add the title **Top Employees** to the chart, and format as you would like.
5. Finally, in the **Section Expert** choose to format the **Report Header** with a new page after (on the **Paging** tab) to make sure the **Report Header** is the front page of the report.
6. Save the report.

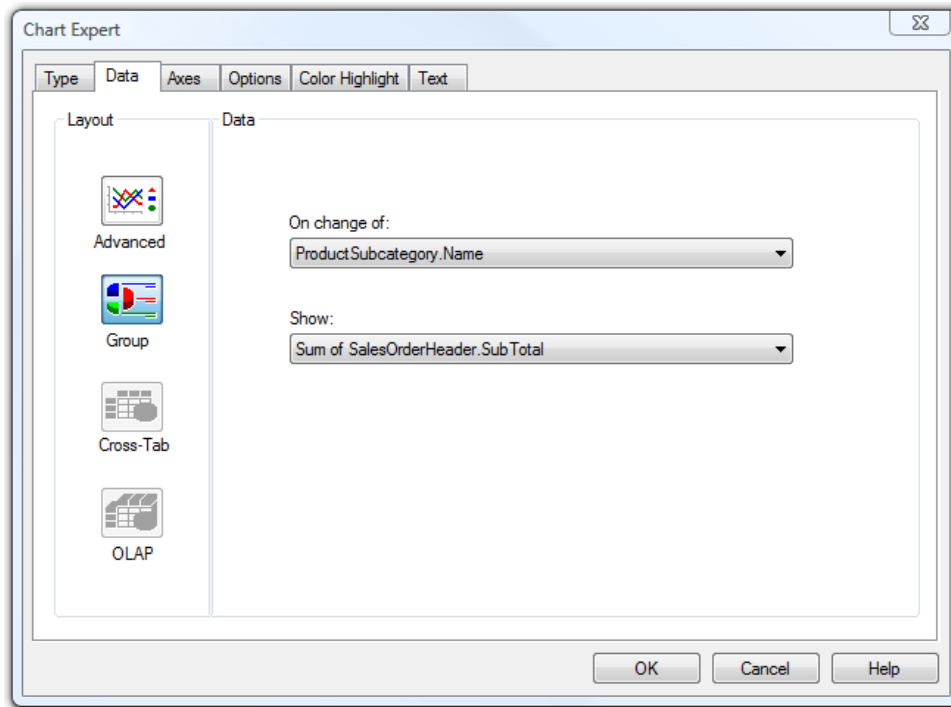
**The Group Chart**

As well as the chart in the report header there is also a chart in the main report for each employee. This chart is showing the product sub-categories sold for an employee.

**❖ Exercise 1.5 – Group Chart**

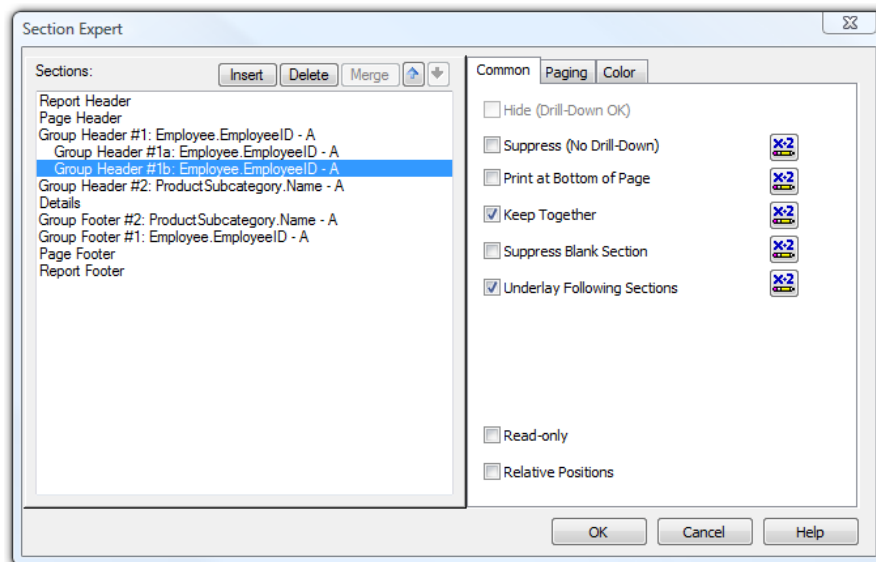
1. Click on the **Insert Chart**  button and place the chart into **Group Header 1**. Open the **Chart Expert** and choose a bar chart; click on the **Data** tab to choose *SubTotal by ProductSubcategory.Name* as shown below:

**Lesson 1: Refresher Exercise**



An additional requirement is to have the chart beside the detailed data for the sales person. To do this, we will use the Underlay option in the section expert. However, you need to put the chart in its own section to prevent the group title from being underlaid as well.

2. Insert a new group header section for **Group 1**. Move the chart to **Group Header 1b**. Reformat the **Group Header 1a** to remove the excess white space. *Hint: use Fit Section.*
3. In the Section Expert select **Group Header 1b** and choose to underlay the following section:



4. Save the report.

**Lesson 1: Refresher Exercise**

Your report is almost complete but needs further formatting to ensure any sales person who sold over \$50,000,000 in a year needs to be recognized. You can achieve this with conditional formatting on the employee group footer adding a message when the sales are over \$50,000,000.

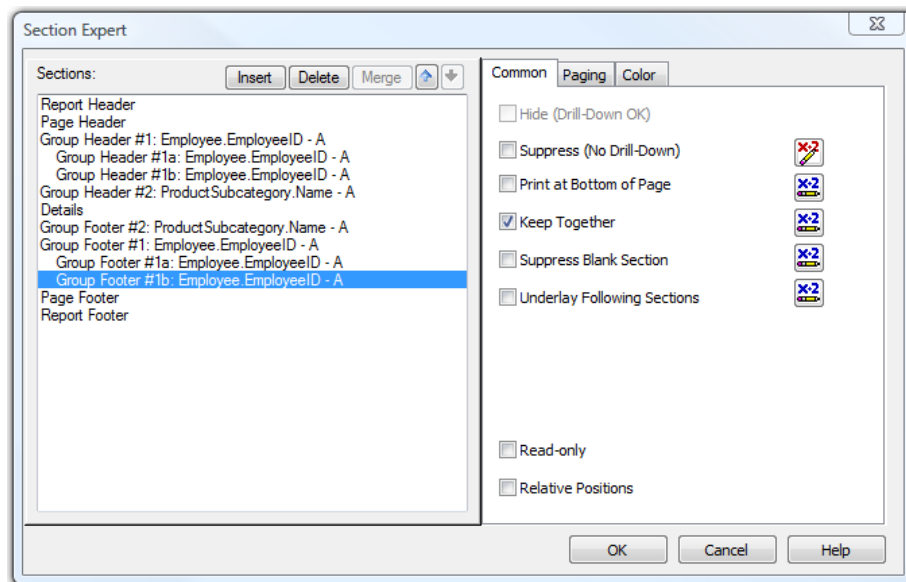
❖ **Exercise 1.6 - Conditionally Format the Report**

1. Return to the **Design** view. It is easier to add and format objects from Design view.
2. Insert an additional group footer section for **Group Footer 1** and add a text object to it with the sales person’s first name embedded. The text object should look similar to the following:

**Congratulations {FirstName}, you sold more than \$50 million dollars!**

3. If you preview the report now you see that this text object displays for every sales person regardless of what they have sold. You now need to conditionally suppress the section. You need the section to suppress if sum of sales by Employee ID is less than \$50,000,000. In the **Section Expert** add the following formula to the conditional box next to the *Suppress* option for **Group Footer #1b**:

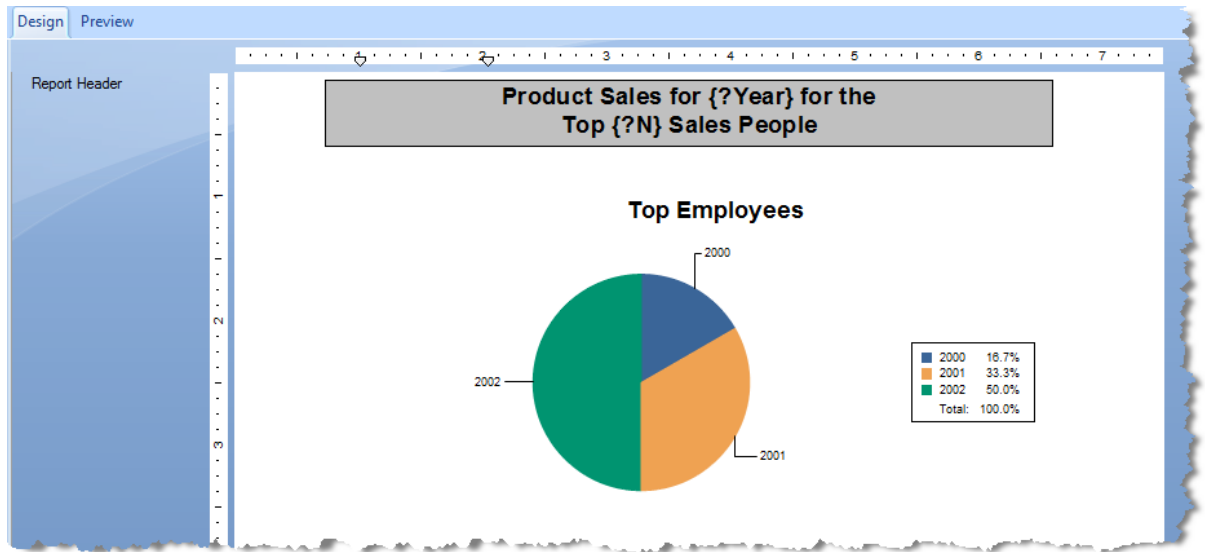
**Sum({SalesOrderHeader.SubTotal},{Employee.EmployeeID}) < 50000000**



4. **Save** your report and run it with different values for N and the year. Make sure it meets the business specifications.

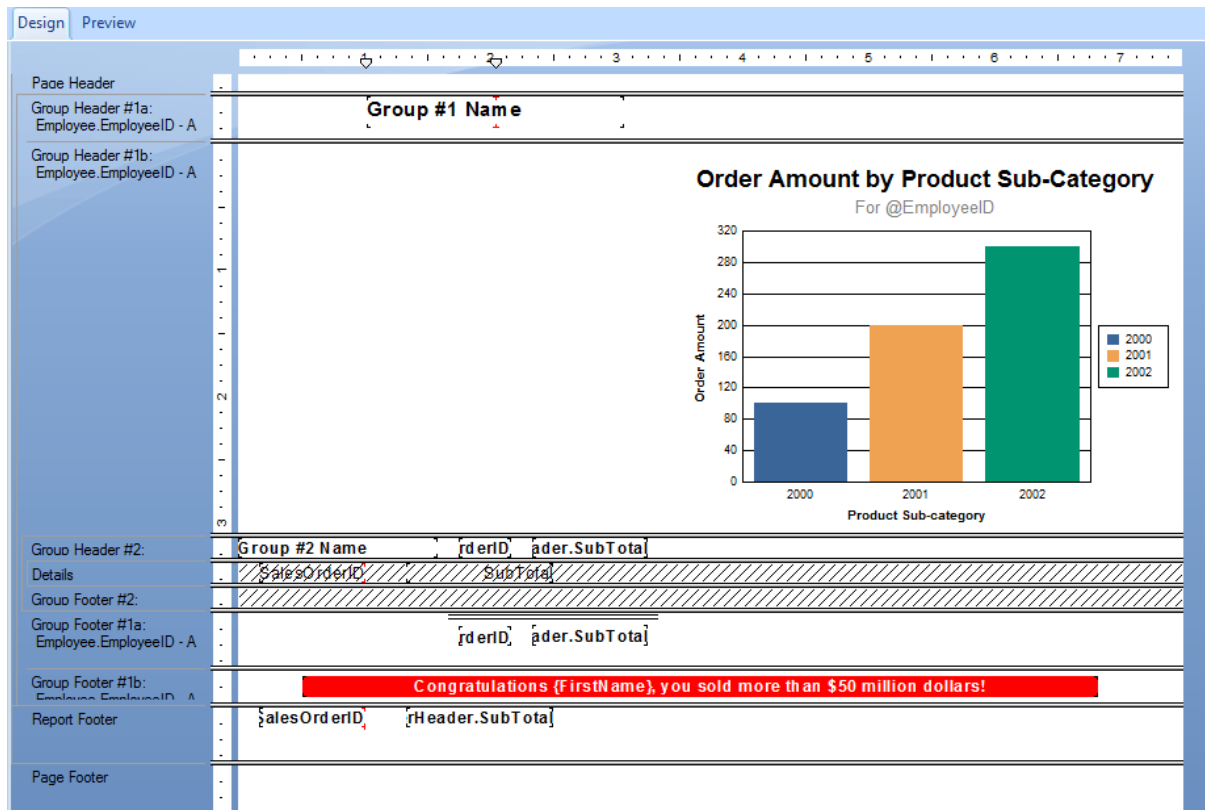
**Lesson 1: Refresher Exercise**

The Design view of your report should look as follows:



This is the Design View of the Report Header – note the chart is a place holder and does not show the data.

The Design view for the rest of the report should look as follows:



# NOTES

