AS A NOTE

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Jim Cline
ClineSys / ExcelCEO.com

*Excel*CEO
Chief Excel Officer

THE MASTER GUIDE TO FINANCIAL REPORTING AND ANALYSIS

**"Bridging the Gap between Accounting and I.T.",
Excel 2010**

Course Manual   **www.ExcelCEO.com**

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INTRODUCTION

When I was a college student in the 1980s, I took a course called "Introduction to Computers." The first part of the class was devoted to WordPerfect, a popular word processing program at the time. That part of the course was helpful, but it was the rest of the semester that changed my life forever. That is when I was introduced to a spreadsheet program called Lotus 1-2-3. As an Accounting major, I loved the ability to manipulate numbers any way I wanted on a spreadsheet. When we got to the macros section of the class, I fell in love all over again. I knew I had discovered my career.

Over the past 30+ years of working with spreadsheets, I decided to write this course. I have compiled in this course the material that took me years to learn, in easy-to-understand examples, lessons, projects and code. I will walk you through hundreds of formulas, functions and code examples that are designed to give you the experience necessary to masterfully work Excel on your own. I explain each task or concept just like I was at your desk, helping you each step of the way. However, I cannot teach you all of the logic that you will need in every situation you may encounter. I will show you how to use Excel and I will do my best to teach you logic for many different situations, but it is up to you to apply that logic to your particular circumstance.

Let me explain how this course works. The projects, illustrations, tasks and examples taught in this course could be considered as on-the-job training, as it would take you years to gain this experience on your own. In the course, there are more than 500 screenshots helping to show you how to do the almost 1,500 tasks you will perform. The concepts herein are designed to teach you the basics of financial reporting and analysis. These are real world examples that you could find in actual situations. In fact, many of the exercises are actual projects that I have done over the years in my experience as an auditor, tax accountant, real estate appraiser, financial analyst, report developer, programmer and instructor. As you work these examples, I encourage you to think about the concept being taught and make up examples of your own, using data and situations you are familiar with. This will greatly reinforce the concepts taught herein.

This course is based on progressive learning. When I teach a concept, I will explain in full detail how to do it. Thereafter, I will not explain it in detail, but I will assume that you have learned that concept. If you need to refresh your memory on how to accomplish the task, you will have to refer back to the pages where that concept was originally taught. I encourage you to try to do it on your own before referring back, unless you are completely lost. In my years of experience, I have discovered that is the best way to learn. The course is made up of 18 chapters, and it should take you between one and four hours to complete each chapter, including working the examples, completing the Review Questions and taking the online exam at the end of each chapter. Some of the more advanced chapters may take more time, depending on your experience level.

Introduction

It is important to realize that the concepts taught in this course are very versatile and there are many ways to do essentially the same thing. If you have learned a concept in a way that is different from how it is presented in this course but it achieves the same objective, feel free to use it. This course is designed to give you exposure to a variety of ways of doing things. For example, most people are familiar with using the mouse to execute commands, but I prefer to use the keyboard whenever I can. I find that I can move around a spreadsheet much faster by using keystrokes on the keyboard than I can with a mouse. As much as is reasonable, I will teach how to use both the mouse and keystrokes on the keyboard to show you how to execute the commands.

In developing this course, I created a company whose accounting system is complex enough to simulate real world activity, but simple enough to be used in the examples and projects. I didn't want the students to have to take a course just to learn the accounting system of this company, but I had to make it complex enough to teach the necessary concepts. As such, I created a fictitious company called Nitey-Nite Mattresses. Nitey-Nite's business is to operate 29 retail stores across the United States. Nitey-Nite purchases mattresses, pillows and other merchandise from vendors and sells them at their retail stores.

Please note that the financial data contained herein is purely fictitious and does not resemble the activity in any way of any similar retail store today. The accounting methods used in these examples and projects do not necessarily conform with GAAP (Generally Accepted Accounting Principles) requirements for the industry, although the financial statements and accounting practices herein reflect standard double-entry accounting methodology.

This course is written specifically for Excel 2010. In Excel 2007, the Microsoft engineers introduced the concept of the Office Ribbon, which is located at the top of the program window. All of the toolbars and menus prior to Excel 2007 have been reorganized into the Office Ribbon tabs and galleries. If you are an experienced user for any version prior to 2007, you will initially find yourself very frustrated. Excel 2010 expands on the capabilities of Excel 2007, although there haven't been many major changes. If you are new to Excel, you will find it very easy to unlock the powerful data analysis capabilities as compared to previous versions.

I sincerely hope that you will enjoy this course. If you find any errors that should be corrected or if you would like to send me any feedback, please email me at Customer.Service@ExcelCEO.com. Thank you.

Jim Cline

Introduction

User ID and Password

When you purchased this course, the order confirmation screen contained a Password to use with your email address. You will use that Email address and Password to download the practice files, take tests and gain general access to the ExcelCEO system. Please write down that Email and Password in the inside cover of this manual or store in some other secure place so you can refer back to it when needed.

Practice File Downloads

To work the many examples illustrated in this course, you need to download the Practice Files from the **ExcelCEO** website. To download the practice files, log in to the **ExcelCEO** website with you Email and Password, and click on the **Download** link on the **Main Menu**. Follow the instructions in the dialog boxes and on the website to properly download the practice files on to your computer. We recommend you download the files exactly as the instructions indicate.

Review Questions

As you work through the course manual, you will periodically be instructed to sign on to the ExcelCEO website and complete the Review Questions. Review Questions are questions that are formatted in the same way as the actual examination questions, but are provided for review purposes only. Review Questions are not graded even though the program will indicate whether or not the chosen answer is correct or incorrect. If you choose a wrong answer, a message will pop up indicating why the chosen answer is wrong and the program will allow you to choose another answer. You must choose the correct answer before continuing to the next question. You should log on to the website to review the Review Questions when you see this paragraph in the manual:

> **Review Questions**: It is now time to complete the hands-on Review Questions. Log on to *www.ExcelCEO.com* with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 1, Section 1 of 3** option and complete the review questions.

The program will guide you to the correct Review Questions section or Test based on the sections you have already completed. Each chapter (except Chapter 18) contains from one to four sections of review questions.

Chapter Examinations

There are 18 chapters in the course, contained in four sections (Beginning, Intermediate, Advanced, and Master. At the end of each chapter, you will be instructed to go to ExcelCEO.com, log in and take an exam. After you log in with your User ID and Password and complete the Review Questions, you will click on the Take a Test (Excel

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2010) link which will navigate you to the appropriate test. All tests are administered sequentially after you successfully pass the previous exam. The exam uses questions from a database of hundreds of possible questions, so it is highly unlikely that any two people will get the same exam. Some of the exam questions are based on the examples in the practice files, so I would encourage you to complete **all** of the exercises in the course. For example, if you complete an exercise that calculates net income by store, one exam question may ask you *"What is the 2010 Net Income for Store 1002 if you change Other Revenue to $25,000?"* Each question is in a multiple choice format, and you will have four choices from which to choose.

The only recorded score for each exam is the passing grade. After obtaining a passing grade, you will be able to print out a Certificate of Completion as proof that you've read the material, worked the examples, completed the review questions and passed the exam. You must score a 70% or above on each exam to pass.

CPE (Continuing Professional Education) Credits

ClineSys is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be submitted to the National Registry of CPE Sponsors through its website: www.learningmarket.org

To claim CPE credits under NASBA guidelines, the CPA must successfully complete this course within one year from the date of purchase. The CPE credits for each chapter in this manual are listed below. Upon completion of a chapter, sign on to www.ExcelCEO.com with your email address and password and click on the Certificates link to print a copy of the certificate of completion. As of December 31, 2010, the student can take up to two retests on final exams that were failed. After the second retest (or the third time to take the chapter exam), the student cannot receive CPE credits for the chapter.

Chapter	CPE Credits	Chapter	CPE Credits	Chapter	CPE Credits
1	3.0	7	2.0	13	2.0
2	2.0	8	3.5	14	2.5
3	2.0	9	3.0	15	2.0
4	2.0	10	2.0	16	3.0
5	1.5	11	2.5	17	2.0
6	2.0	12	3.0	**TOTAL**	**40.0**

Note: There is no CPE credit given for completing Chapter 18. The completion of Chapter 18 is required to earn an ExcelCEO Excel Master certificate.

Introduction

New in 2010!

As you work through the course and I introduce a concept that is new to Excel 2010, I will indicate it. As I stated previously, there haven't been many new changes from Excel 2007, as the major changes were made from Excel 2003 to Excel 2007. The following table summarizes the most significant enhancements to Excel 2010:

Item	Excel 2003	Excel 2007 and 2010
Columns in a worksheet	256	16,384
Rows in a worksheet	65,536	1,048,576
Number of conditional formats applied to a cell	3	Limited only by the available memory
Sorting levels in a table	3	64
Items displayed in a Filter list	1,024	32,768
Characters displayed in a cell	1,024	32,768
Unique cell styles in a workbook	4,000	65,536
Number of nested levels in a formula	7	64
Maximum arguments in a formula	30	255
Number of columns allowed in a PivotTable	255	16,384
Number of fields displayed in the PivotTable Field List	255	16,384

Other enhancements in Excel 2010 covered in this course include sparklines, slicers, repeating data in PivotTable rows, enhanced search filters, search fields in PivotTables, and the SUMIFS(), COUNTIFS(), AVERAGEIFS() functions.

Keyboard Shortcuts

Keyboard shortcuts are keyboard strokes that execute functionalities without having to choose the options from the Office ribbon with the mouse. Keyboard shortcuts generally include the use of the [Ctrl], [Alt], and/or [Shift] keys. For those of you who liked to use keyboard shortcuts in Excel 2003, you'll be happy to know that the same shortcuts exist in Excel 2007 and 2010. To get a complete list of keyboard shortcuts available in Excel, go to the Excel Help menu, search for "keyboard shortcuts" and click on "Excel shortcut and function keys".

Conventions Used In This Course

The basis behind this course is learning by example. As such, I have included hundreds of tasks, examples and projects. Steps to complete a task are numbered and are shown in *italicized* and **bold** text. Here is an example:

1. *Click on* **Cell B12**.
2. *Type* **=SUM(B2:B11)** *and press* **[Enter]**.

To further assist you, I have included hundreds of screen shots and pictures of the icons used in the examples, such as this Save icon:

Action keys (keys that do something other than type a character on the screen) on the keyboard are referred to in brackets, such as the **Enter** key **[Enter]** and the **F2** key **[F2]**. Sometimes it is required to hold down one or more keys on the keyboard to perform a certain action. For example, to make a cell bold, you press and hold the **Control** key **[Ctrl]** and then type the "**b**" key. I will refer to this action as **[Ctrl]+b**. Action keys can also be sequential, by typing one key at a time. For example, to execute the process to set a column width using action keys would be to press the **[Alt]** key, then the **o**, **c**, and **w** keys, each separated by a comma. I will refer to this action as **[Alt], o, c, w**. These work in Excel 2010 just as they do in Excel 2003, so if you are accustomed to using action keys in Excel 2003, you'll feel at home with Excel 2010.

Prerequisites

Prerequisites for taking the Excel series of this course include a basic knowledge of a Windows operating system, and knowing how to use the keyboard and mouse. This course is written specifically for people with accounting or financial training, so I will assume you know the basics of income statements and the transactions (the debits and credits) that make up the statements. Familiarity and prior experience with Excel is helpful, but not essential. With that said, let's get started.

Jim Cline

SECTION I: BEGINNING EXCEL

The first section of this course is designed to teach you the basics of Excel 2010. I realize that you may already have some Excel experience and may even consider yourself to be an Excel expert. As such, you may think this material is insulting your intelligence by asking you to complete the examples. However, please understand that I have designed this course as one that builds on concepts taught in previous lessons. I expect for you to continue your education beyond Excel to other topics I teach, including Access and SQL. The ideas and concepts I teach in the Excel course serve as a foundation for concepts you will learn in later courses, and I must be assured that you have reviewed and understand the basics. I will therefore ask you to work **all** of the examples in these exercises. So please bear with me while I may bore you with the easy stuff. Who knows? You may even learn a trick or two. Additionally, you will need to complete the exercises in their entirety in order to answer some of the questions in the exams.

If you are a former Excel 2003 (or previous version) user and tried to use Excel 2007 or 2010 with no instruction, you have probably become very frustrated. The new Excel interface is vastly different from previous versions, and you have probably asked questions like *"How in the blazes do I open the* Find *dialog box?"* Rest assured you are not alone. I will point out those differences in many of the exercises herein, which gives you even more of a reason to work ALL of the exercises.

*Excel*CEO
Chief Excel Officer

Excel 2010

Complete Self-study Course

CHAPTER ONE – EXCEL 2010 BASICS

In this chapter, you will:

- Navigate within a workbook.
- Work with Office Button and Office Ribbon.
- Enter basic data.
- Move cell contents.
- Use Excel Options.
- Underline, bold, italicize, align text and format cells.
- Execute Keyboard Shortcuts.
- Create a Cell Style.
- Resize column widths.
- Use the Merge and Center functionality.
- Create simple formulas, including using the SUM() function.
- Copy and Paste.
- Work with the Align icons.
- Insert columns and rows.
- Work with dates.
- Use Data Fill.
- Delete rows and text.
- Use the Freeze Panes and Split Windows commands.
- Insert Comments
- Work with File Properties.
- Email a file from Excel as an attachment.

Excel 2010 Basics

Excel is an electronic **spreadsheet**.   It allows you to organize data into lists, filter, sort, summarize, compare, rank, add, subtract, multiply, divide, and do just about anything you want to do with those numbers. In the information age of today, time is money, and Excel helps you get and analyze information very quickly. You can calculate the average days outstanding on your receivables. You can calculate the total sales figures for each region of your company. You can calculate the average age of your customers. You can present it all in graphs that allow upper management to see trends. And the more you know how to organize and manipulate those numbers, the more valuable you become to your company.

In this chapter, you will learn the basics of Excel. Please note that it is not my goal to insult your intelligence by making you do some seemingly easy tasks, as you may have a great deal of experience with Excel. However, I have included in this chapter a few tricks that not many Excel users know about, so it will definitely be worth your while to work every example in the chapter, and in the whole book for that matter. Let's first discuss what is new in Excel 2010.

The Office Ribbon

When you first open a new Excel workbook, you will see the Office Ribbon at the top of the screen that looks like this:
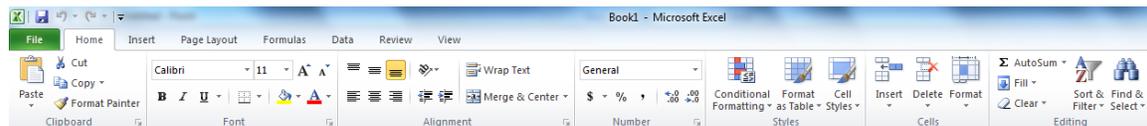
Figure 1.1

Note that the Office Button in Excel 2007 has been replaced with the File tab in Excel 2010. In the next few exercises, we'll go through how to navigate within the ribbon.

1. *Open* **Excel 2010** *(Assuming you have* **Windows 7***, click*

    on the **Start** *button*, **All Programs**, **Microsoft Office**, **Microsoft Excel 2010)**. *For* **Windows 10***, click the* **Cortana** *bar, type* **Excel 2010** *and click the* **Microsoft Excel 2010 Desktop App** *option.*
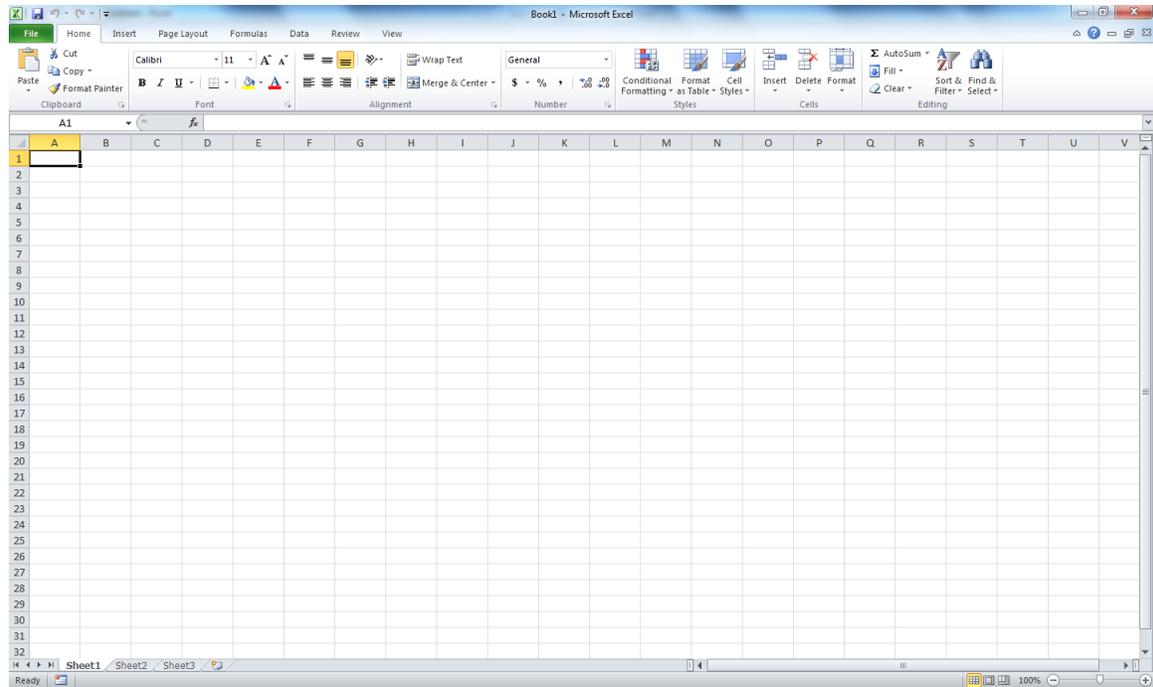
Figure 1.2

*(**Note**: If Excel doesn't open to a blank worksheet, click on the File tab, then on New, Blank Workbook, then Create.)*

When you open Excel 2010, it should open to a blank **workbook** as shown in Figure 1.2. Let's review the different sections of the Excel 2010 ribbon.

In the upper left corner of the Excel screen, just to the right of the Microsoft Excel button is the Quick Access Toolbar . We'll discuss the Quick Access Toolbar a little later. Along the top and center of the spreadsheet is the Title Bar . It shows the name of the file. In the upper right corner of the spreadsheet are the standard Minimize, Restore Down, and Close buttons . Just below the Title Bar of the spreadsheet are eight tabs (File, Home Insert, Page Layout, Formulas, Data, Review, and View). All of these tabs, with the exception of the File tab, are the same as in Excel 2007. The File tab in Excel 2010 replaced the Office Button in Excel 2007. When you click on any tab, the Office Ribbon will change to show the icons associated with that tab. If you hold your cursor over almost any icon or menu item, a screen tip will appear. The screen tip tells you what the icon or menu item does. Hold your cursor over the Format Painter icon and you will see the following screen tip.

Figure 1.3

If you click on the File tab, you will see the following screen.
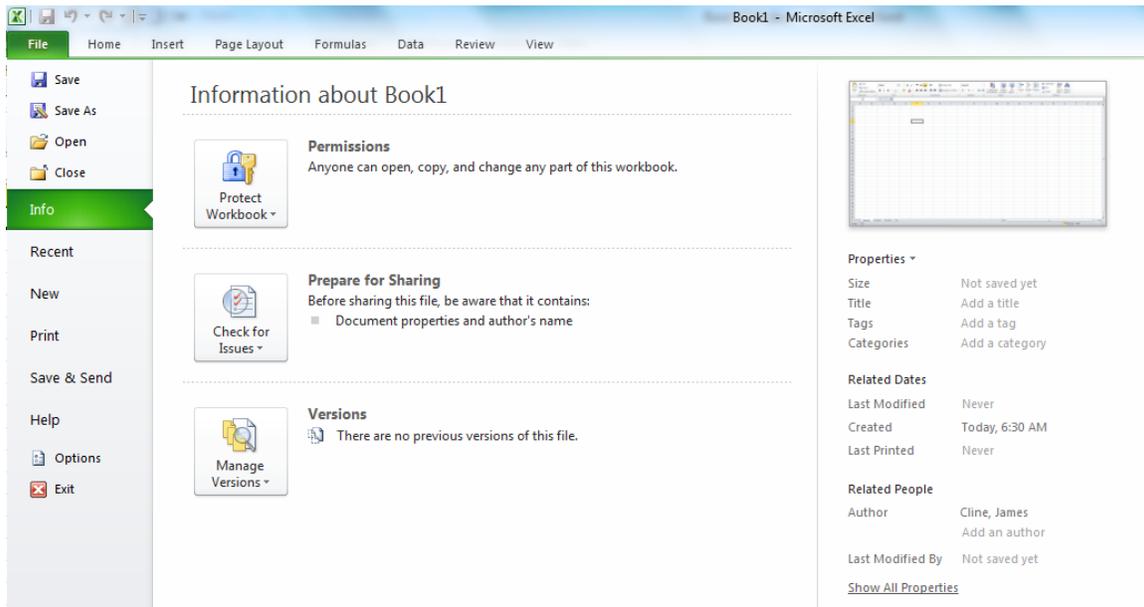
Figure 1.4

We'll go through the menu items on the left in future exercises. If you have experience with previous versions of Excel, you should already be familiar with some of the icons, like Save, Save As, Open, Close and New. You make each choice active by clicking on it. For example, if you click on the Info tab, it shows information about the spreadsheet that you currently have open. We'll go through each of the various options as needed throughout the course. The section to the right in the dialog box gives more information and choices within the selected tab. The Options button allows you to create and customize certain options within Excel. The Exit button will close Excel.

When you open Excel 2010, it opens to a blank **workbook** with three tabs located along the bottom of the screen. Each tab contains a **worksheet**, also called a spreadsheet. You select an individual worksheet by clicking on the tab. The main body of the worksheet is divided into **columns** (indicated by alphabetic characters across the top of the spreadsheet) and **rows** (indicated by numeric characters located along the left side of the spreadsheet). The box at the intersection of a column and row is called a **cell**. The location of a cell is referred to by its column letter and row number. Cell A1, for

example, is the first cell on the spreadsheet. Cell A6 is located in Column A, Row 6, Cell F19 is located in Column F, Row 19 and so forth. The body of the spreadsheet looks like Figure 1.5:

Figure 1.5

When you open a new workbook, Excel gives you three worksheets by default within the workbook. You can add more worksheets or delete worksheets, and I'll show you how to do that in this and later chapters. Each worksheet or tab is named by default *Sheet1*, *Sheet2, Sheet3* and so forth and are shown in tabs at the bottom of the screen.
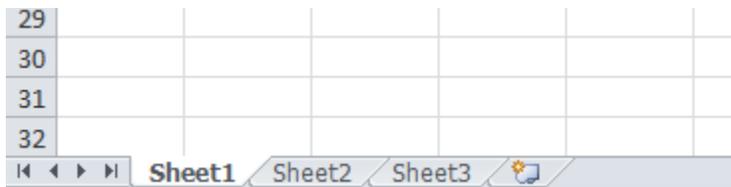
Figure 1.6

You make a tab current by simply clicking on the tab. You can use the **tab selectors** to select the tabs at the beginning, one tab to the left, one tab to the right, or the last tab. Unless you have numerous tabs on the workbook, you can usually see all of them at the bottom of the screen. Typically, data in each tab should relate to other data in the workbook. For example, the first tab may contain a list of vendors and the second tab could contain invoices payable to each vendor. If you right-click on any of the tab selectors, a dialog box pops up that shows you all of the tabs in the workbook. If you have more than 16 tabs in a workbook, a "*More Sheets*" option will appear.

Entering and Editing Data

Let's start by typing some data onto a blank spreadsheet. That is one of the beautiful things about Excel – anyone can open a spreadsheet and start typing data into cells and make Excel do something. There are basically two ways to type data onto a spreadsheet: typing directly into the cell and entering it using the Formula Bar. Let's first enter data directly into the spreadsheet.

2. *Click on the* **Home** *tab.*
3. *With the* **Sheet1** *tab selected, click on* **Cell A1** *and type* **Nitey-Nite Mattress** *and press the* **[Enter]** *key.*
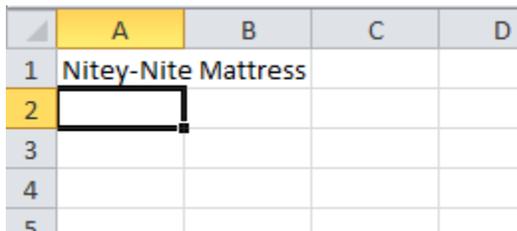
◢	A	B	C	D
1	Nitey-Nite Mattress			
2				
3				
4				
5				

Figure 1.7

Pressing the **[Enter]** key inputs the typed characters onto the spreadsheet. However, we find that we've made a mistake. The name of the company is Nitey-Nite Mattresses. We will now edit the name to include the extra "es".

4. *With your mouse, click on* **Cell A1**.

The Formula Bar is the box located just above the column lettering at the top of the screen with "*fx*" or Insert Function button to the left. We will discuss the use of the Insert Function button later.   The Formula Bar should look like this:

| *fx* | Nitey-Nite Mattress |

.

5. *Click inside the* **Formula Bar**.

Once you click inside the Formula Bar, you will see an "X" and a check mark to the left.

| X ✓ *fx* | Nitey-Nite Mattress | If you click on the X, it will undo any changes you made to the cell before they were entered. The check mark accepts the changes. It is similar to the [Enter] key, except the mouse will not move down one cell.
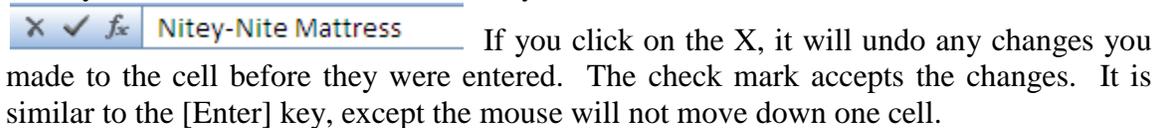
6. *Edit the text to read* **Nitey-Nite Mattresses** *and click the* **check mark** *on the* **Formula Bar**.

The Formula Bar and spreadsheet should now look like this:

	A	B	C	D	E	F	G
1	Nitey-Nite Mattresses						
2							
3							

A1 · fx Nitey-Nite Mattresses
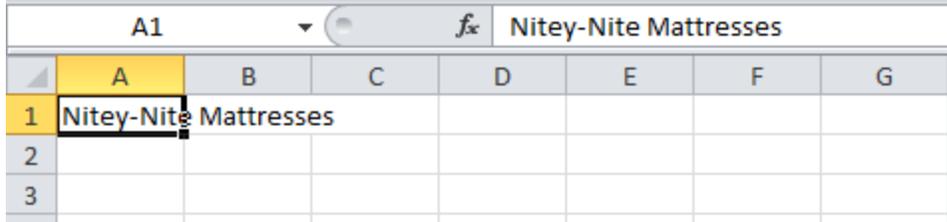
Figure 1.8

Moving a Cell

Moving a cell is very easy. Let's suppose that you wanted the Nitey-Nite Mattresses text in Cell C1 instead of Cell A1. All you have to do is drag the text over. Let's try it.

> 7. *Place your cursor over the bottom or side line of* **Cell A1**. *Your cursor will turn to a pointing arrow with a cross of arrows.*
> 8. *Click, hold, and drag the cell over to* **Cell C1** *and release.*

C1 · fx Nitey-Nite Mattresses

	A	B	C	D	E	F	G
1			Nitey-Nite Mattresses				
2							
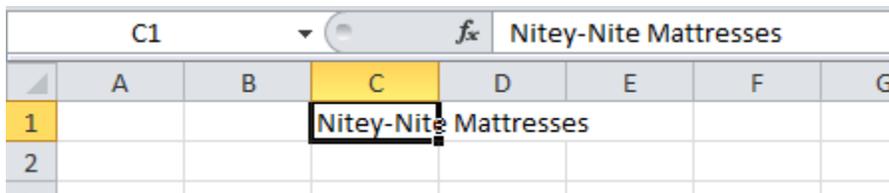
Figure 1.9

The **Nitey-Nite Mattresses** text is now in Cell C1. Alternatively, you can **Cut and Paste** the cell. When you cut and paste the cell, you are cutting the cell contents into memory then pasting those contents to another cell location.

When you open a new workbook, Excel 2010 selects the Home tab by default. Let's now cut and paste the contents of Cell C1 using the icons in the Home tab.

> 9. *With the* **Home** *tab selected and with your cursor on* **Cell C1**, *click on the* **Cut** *icon* ✂ Cut *.*

Cell C1 is now surrounded by a moving dotted line, indicating that the cell is either copied or cut.
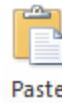
> 10. *Click on* **Cell A1** *and click the* **Paste** *icon* Paste ▾ *. (Note: You can click on either the icon or the drop down arrow then click on the Paste icon. This is a little different from Excel 2007.)*
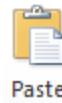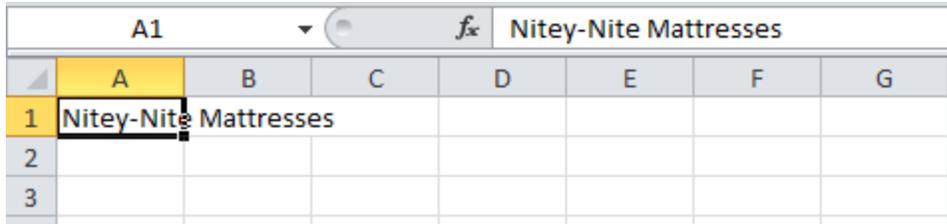
Figure 1.10

The text is now back in Cell A1.

Excel Options

When you press the **[Enter]** key, your cursor may skip down one cell. Personally, that bugs me, because I usually want the cursor to stay where it is after I press [Enter]. The only exception is when I am entering in data, but I can make the cursor automatically jump to the next cell in other ways. So for now I want to turn off the automatic skipping down of one cell. You can do this using **Excel Options**. Steps 11 through 14 show how to turn that off. If you don't want to turn it off, just skip those steps. However, you should read over the instructions in case you need to do it someday.

> 11. *Click on the* **File** *tab and then click on the* **Options** *button near the bottom of the left section of the dialog box.*
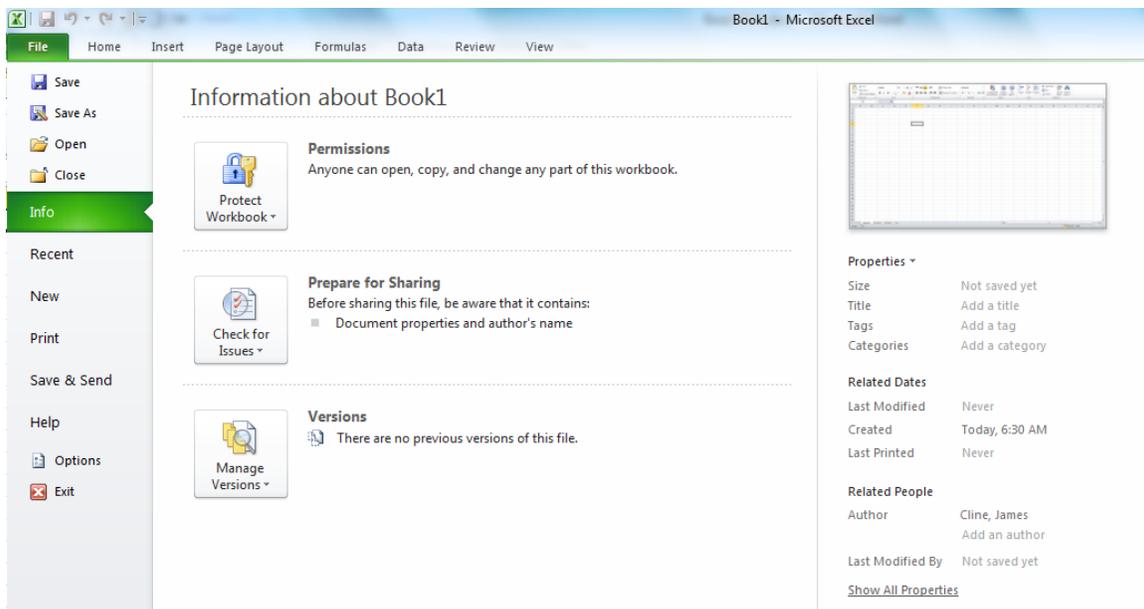
Figure 1.11
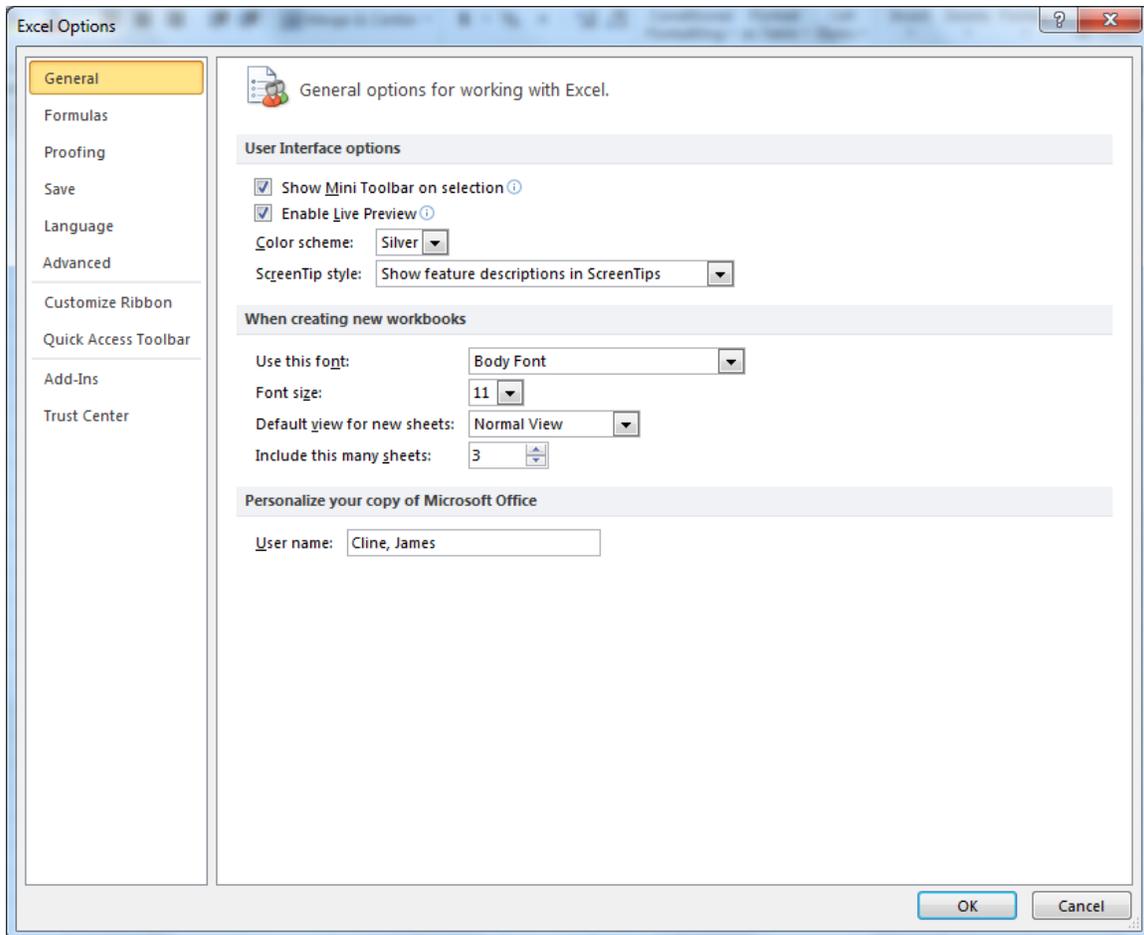
Figure 1.12

The Excel Options dialog box opens. There are MANY options you can change in this dialog box. I encourage you to click on the menu items to the left to find out which options are contained in each. In this exercise, we'll turn off the functionality that moves the cursor down when you press [Enter].

> 12. *Click on the* **Advanced** *menu item on the left side of the dialog box.*
> 13. *If necessary, uncheck the* **After pressing Enter, move selection** *box (the first box under Editing Options).*
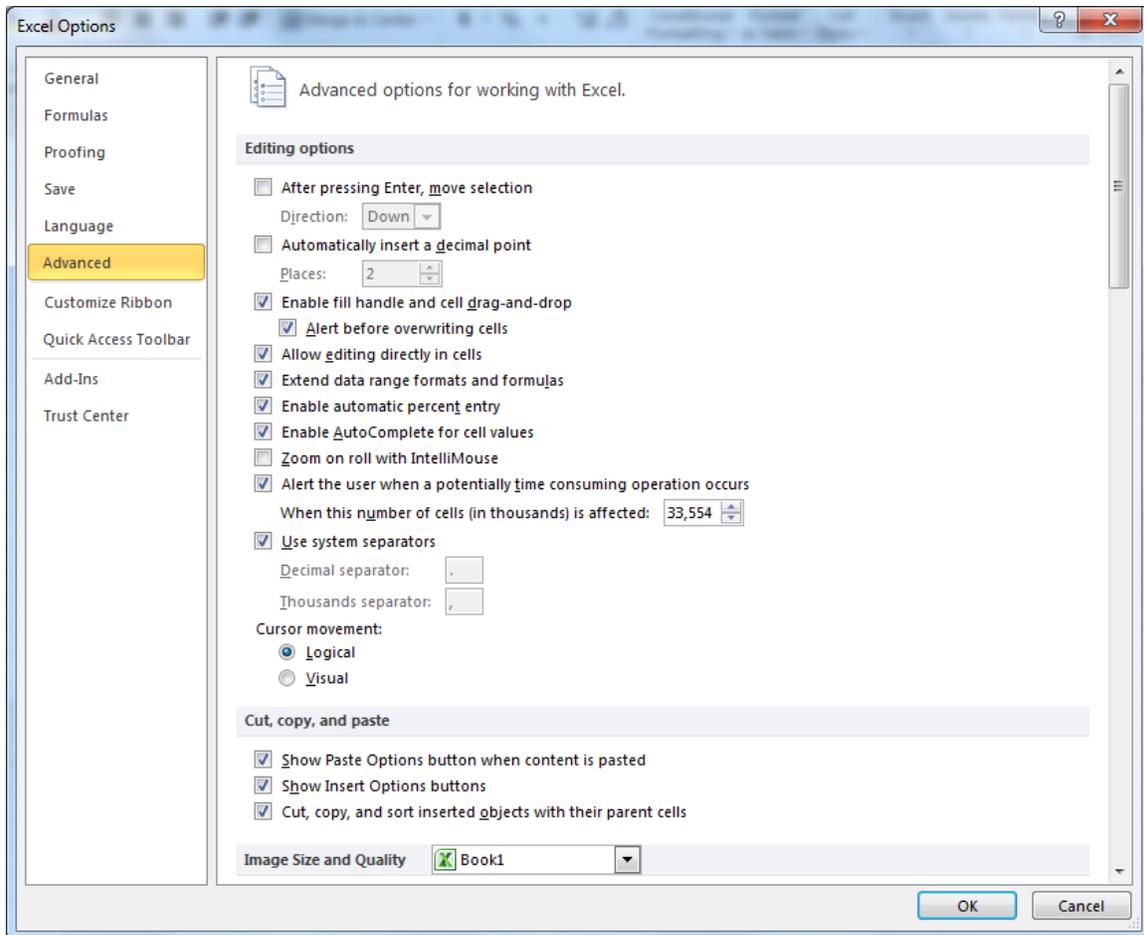
Figure 1.13

> *14. Click **OK**.*

The dialog box disappears and you return to the worksheet. Now you will input some more data on to the worksheet.

1. *Type the following data into the indicated cells:*

> **Cell A3: Three Year Sales Summary**
> **Cell A5: Sales**
> **Cell A6: Mattresses**
> **Cell A7: Pillows**
> **Cell A8: Total Sales**
> **Cell B5: 2010**
> **Cell C5: 2009**
> **Cell D5: 2008**
> **Cell B6: 33415463**
> **Cell B7: 14682832**
> **Cell C6: 31583481**
> **Cell C7: 13422897**
> **Cell D6: 29574225**
> **Cell D7: 11244335**

Your spreadsheet should now look like Figure 1.14:

	A	B	C	D	E	F
1	Nitey-Nite Mattresses					
2						
3	Three Year Sales Summary					
4						
5	Sales	2010	2009	2008		
6	Mattresse	33415463	31583481	29574225		
7	Pillows	14682832	13422897	11244335		
8	Total Sales					
9						
10						

Figure 1.14

Formatting Cells

Not to be disrespectful, but your spreadsheet looks kind of, uh, bland. Fortunately, we
have some tools at our disposal to make the report look more attractive. Most of the
formatting tools you need to make the report look nicer are found in the Home tab. There
are seven standard groups in the Home tab: Clipboard, Font, Alignment, Number, Styles,
Cells, and Editing. The formatting tools you'll need are found in the Font, Alignment,
and Number groups. Take a few moments to look at those icons. Hold your cursor over
each icon and read the screen tip to see what that icon does. Let's clean up the report a
little by using some formatting.

2. *Click on* **Cell B5**.
3. *Click the* **Underline** *icon* <u>U</u> *in the* **Font** *group.*

Now Cell B5 is underlined. You want to underline the other years in Cells C5 and D5 as well, but you don't have to do it one cell at a time.

> 4. *Left-click on* **Cell C5** *and hold.*
> 5. *Drag the cursor over to* **Cell D5** *(to select both cells).*
> 6. *Release the left click on the mouse (this process is called* **selecting cells***).*
> 7. *Click the* **Underline** *icon.*

	A	B	C	D	E	F
1	Nitey-Nite Mattresses					
2						
3	Three Year Sales Summary					
4						
5	Sales	2010	2009	2008		
6	Mattresse	33415463	31583481	29574225		
7	Pillows	14682832	13422897	11244335		
8	Total Sales					
9						
10						
11						

Figure 1.15

Now Cells B5, C5 and D5 are underlined.

Keyboard Shortcuts

If you prefer to use the keyboard to select multiple cells, you can click on Cell C5, hold down the [Shift] key and press the right arrow key on your keyboard to select both cells. With those cells selected, you can press and hold the [Ctrl] key and type the letter "u" to underline the cells. The [Ctrl]+u trick is the same in all Microsoft Office programs. These are called **keyboard shortcuts**. A keyboard shortcut is the keyboard version of executing commands (or choosing options) that could also be done with a mouse. There are many other keyboard shortcuts in Excel. One easy way to find out what they are is to hold your cursor over the icon and read the screen tip. If a keyboard shortcut is available, it will tell you what it is. For example, if you hold your cursor over the Copy icon in the Clipboard group of the Home tab, you will see the following screen tip:

Copy (Ctrl+C)

Copy the selection and put it on
the Clipboard.

Figure 1.16

To the right of the **Copy** choice you see (**Ctrl+C**). This means that you can type **Ctrl+C** and the Excel will copy whatever you have selected. The **Ctrl+C** reference is the shortcut. It is a little deceiving in that the C in the reference is capitalized, and the shortcut works when [Caps Lock] is on or when you type Ctrl+c (lower case c). If you type Ctrl+Shift+c (to put the **c** in upper case), it will not work. If you prefer to use the keyboard to do many commands (like me), these keyboard shortcuts can save you a lot of time.

Let's now return to our spreadsheet. Our file is starting to look a little better, but those numbers need some formatting. The years look good, as years are typically shown with no formatting, but the sales numbers need to have some formatting, so let's do that now.

    8. *Select* **Cells B6** *through* **D7**.
    9. *In the* **Number** *group of the* **Home** *tab, click on the* **Number Format**

       drop down arrow | General   ▾ |*.*

ABC **123**	**General** No specific format
12	**Number** 33415463.00
🪙	**Currency** $33,415,463.00
🧾	**Accounting** $33,415,463.00
📅	**Short Date** ##########
📅	**Long Date** ##########
🕐	**Time** ##########
%	**Percentage** 3341546300.00%
½	**Fraction** 33415463
10²	**Scientific** 3.34E+07
ABC	**Text** 33415463
	More Number Formats...
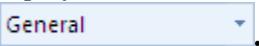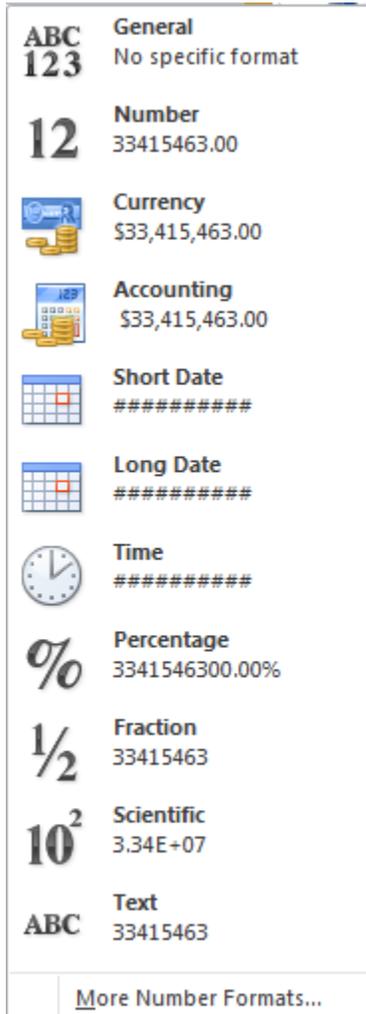
Figure 1.17

This is a short list of commonly used number formats. We want to format our sales figures with commas with no decimal places, and such a format is not included in this list. In this and previous versions of Excel, you could use the Format Cells dialog box. To display the Format Cells dialog box in Excel 2010, click on the **Dialog Expander**, located at the lower right corner of the Number group.
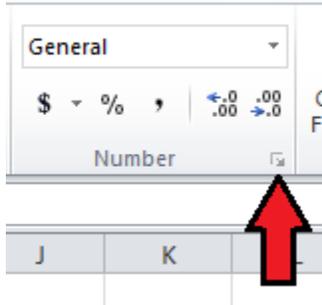
Figure 1.18

> 10. *Click anywhere outside the* **Number Format** *list (to make the list disappear).*
> 11. *Click on the* **dialog expander***, located in the lower right corner of the* **Number** *group of the* **Home** *tab.*
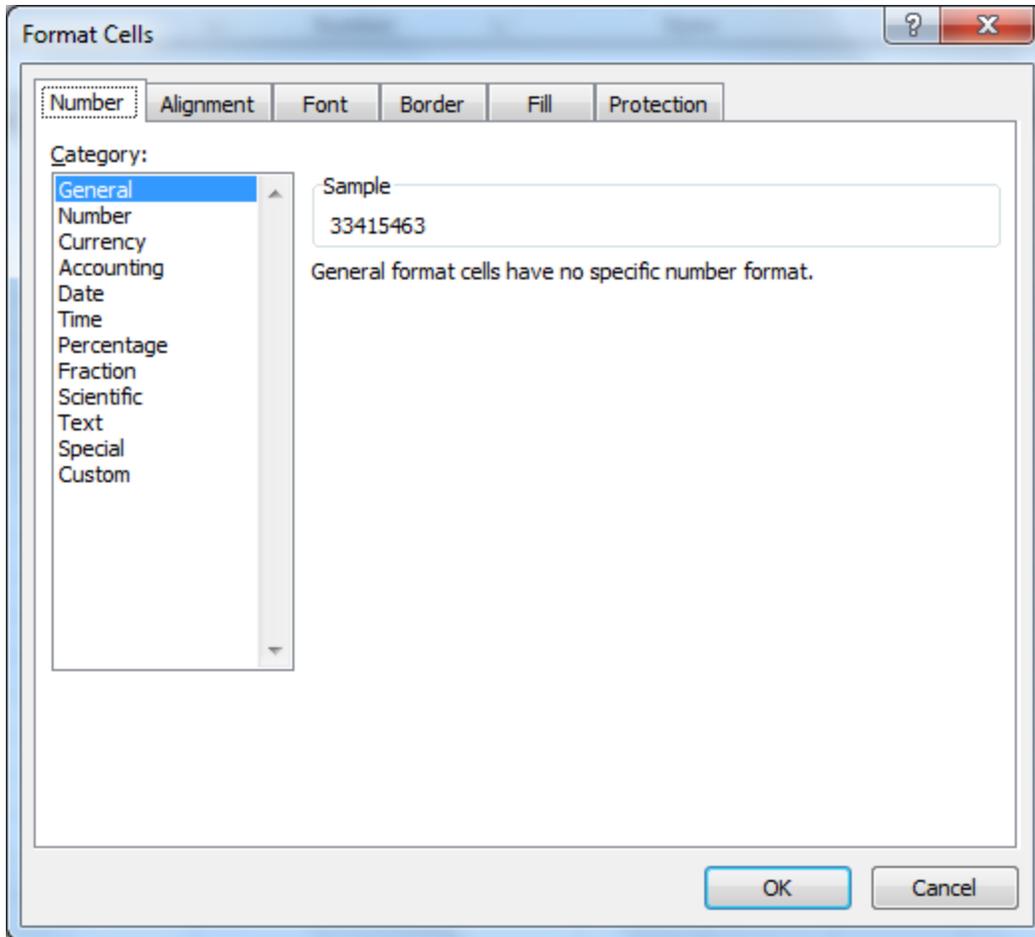
Figure 1.19

The Format Cells dialog box opens. Another way to open the Format Cells dialog box is to right-click anywhere in the spreadsheet and choose Format Cells.

> 12. *In the* **Format Cells** *dialog box, make sure the* **Number** *tab is selected.*
> 13. *In the* **Category:** *field, click on* **Number***.*
> 14. *Check the* **Use 1000 Separator (,)** *box.*
> 15. *Click on the down arrow in the* **Decimal places:** *box until it reaches* **0***.*

Figure 1.20

16. Click **OK**.

Figure 1.21

You should spend some time experimenting with the different cell formatting options in the Format Cells dialog box. You will most likely use many of the formats available.

> ***Review Questions****:   It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 1, Section 1 of 3** *option and complete the review questions.*

Cell Style

When creating reports, it's nice to have a standard format for the numbers. I like to use a cell format of Number with the comma separator with zero decimal places. Sometimes it can be tedious to remember the different formats of all the possible styles. Excel provides a great tool for you to store the formatting style and use it again and again. This functionality is called a **Cell Style**. Let's set up a style.

1. *With* **Cells B6** *through* **D7** *selected, click on the* **Cell Styles** *icon in the* **Styles** *group of the* **Home** *tab.*
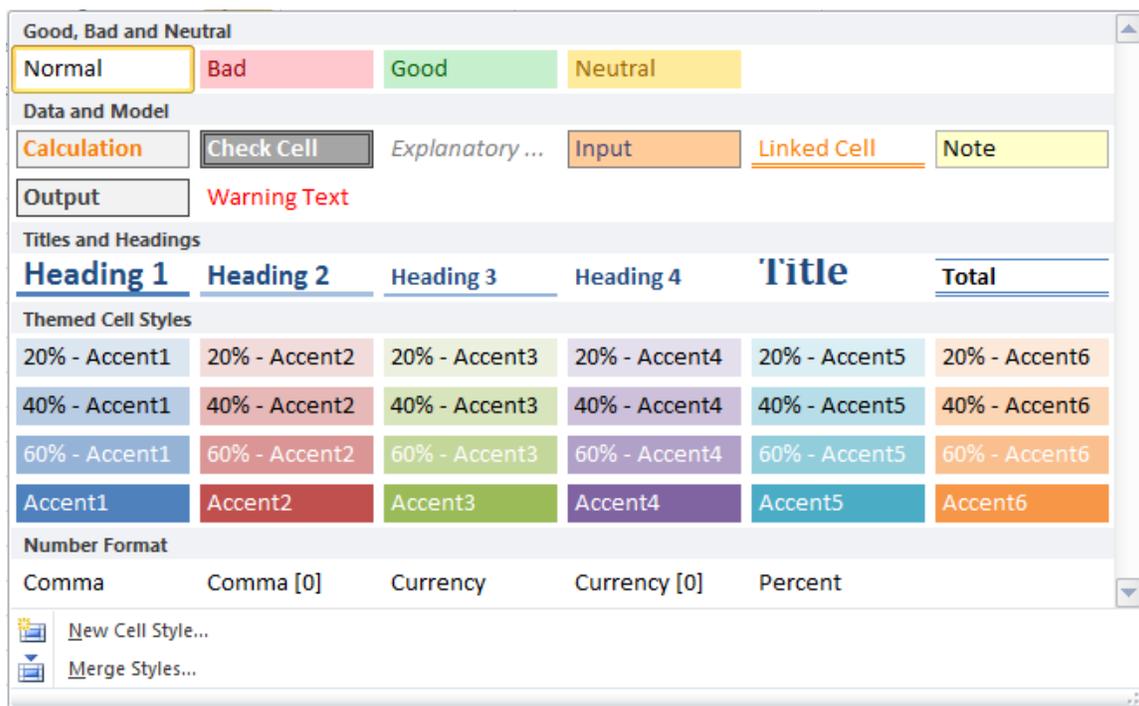
Figure 1.22

You can use one of these styles provided by Excel 2010, or you can create one of your own. One great feature about Excel 2010 is that you can hover your cursor over a formatting style and see what it would look like on your spreadsheet without having to click on the style. Let's try it.

2. *Place your cursor over the* **60% - Accent1** *box (located under* **Themed Cell Styles***, first column, third row), but don't click on it.*

When you place your cursor over the style, watch how the formatting for Cells B6 through D7 change. Play around with it a bit. Place your cursor over different styles and see which one you like best.

Let's suppose that you don't want any of the styles provided in the dialog box. You can create your own style.

  3. *In the* **Cell Styles** *dialog box, click on the* **New Cell Style…** *icon.*
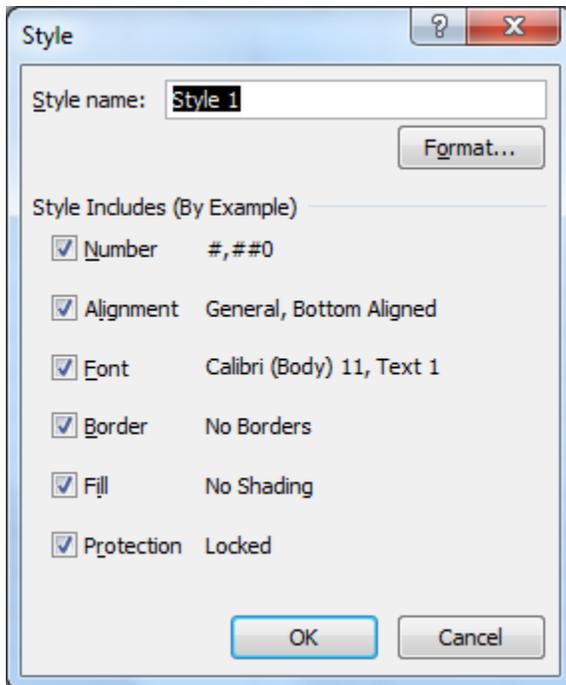
Figure 1.23

The Style dialog box appears. Note that it is already pre-populated with the style for which the cell range is currently formatted. If you like, you can change the formatting by clicking the Format… button. Clicking the Format…button will make the Format Cells dialog box appear, and you can make any change you want.

  4. *In the* **Style name:** *box, type* **ClineSys1** *and click on the* **Format…** *button.*
  5. *In the* **Number** *tab, make sure* **Number** *is chosen under the* **Category** *group, the* **Use 1000 Separator (,)** *box is checked, and* **0** *is in the* **Decimal places** *box.*
  6. *Click on the* **Font** *tab.*
  7. *Under* **Font Style***, choose* **Bold***, then click* **OK***.*
  8. *Click* **OK** *in the* **Style** *box.*

Nothing happened to the formatting of Cells B6 – D7. Why? You created a new cell style but you haven't applied it to the range yet. Let's do that now.

9.   *Click on the* **Cell Styles** *icon.*
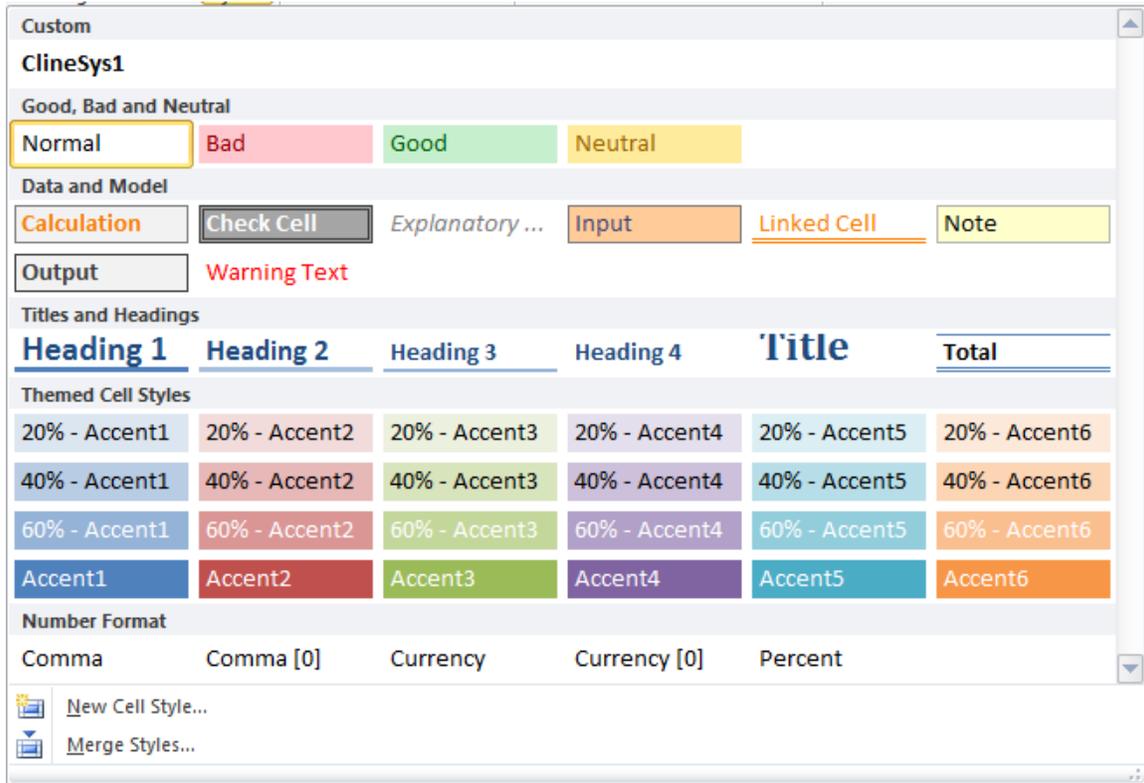
Figure 1.24

You should now see the ClineSys1 style listed under the Custom group.

10. *With the range* **B6 – D7** *selected, click on the* **ClineSys1** *custom style.*

Figure 1.25

The range is now formatted with the custom style you created.

Column Widths

Do you see how the last "s" in the word Mattresses in Cell A6 is cut off? That is because **Column A** isn't wide enough. A standard Excel column measures 8.43 characters, but can be increased to 255 characters or decreased down to zero (hidden). These sizes represent the number of characters that can be displayed in a cell that is formatted with the standard font. There are a number of ways you can resize a column. Let's explore some of those ways.

1. *Place your cursor on the column margin (the line between* **Columns A** *and* **B***) above* **Row 1** *and your cursor will become a vertical line with left and right arrows.*
2. *Double-click on the column line.*

Column A is automatically resized to fit the cell containing the longest text string in the column, which would be Cell A3 (Three Year Sales Summary). We don't need for the column to be that wide. All we want to do is to adjust it so it is just to the right of the word "Mattresses" in Cell A6.

3. *Place your cursor on the column line between* **Columns A** *and* **B** *where your cursor turns to a vertical line with left and right arrows.*
4. *Click, hold, and drag the column line to the left.*

As you drag the line to the left, you will see a ScreenTip box. This box tells you the width of the column as you drag it.

5. *Drag the column line until the screen tip reads* **Width: 10.00 (75 pixels)** *and release.*

   Trick: *You can also set a column width by using the keyboard. With your cursor placed in the column(s) you want to adjust, type the* [Alt] *key and then type the letters "*o*", "*c*" and "*w*", then input the desired column width. (These are the commands to set column widths in Excel 2003, but it also works in Excel 2007 and 2010.)*

At this point, you should be able to see all of the word "Mattresses" in Cell A6.

	A	B	C	D	E
1	Nitey-Nite Mattresses				
2					
3	Three Year Sales Summary				
4					
5	Sales	2010	2009	2008	
6	Mattresses	33,415,463	31,583,481	29,574,225	
7	Pillows	14,682,832	13,422,897	11,244,335	
8	Total Sales				
9					
10					

Figure 1.26

Merge and Center

It really would be nice if we could have the title centered over the report. What's that you say? Can we do that? Sure we can. Just about every time I think of a question that begins with "*I wonder if Excel can ...*", it usually can. It just takes a little investigation on how to get it done. In this case, you can use the **Merge and Center** icon.

6. *Select* **Cells A1** *through* **D1**.
7. *Click the* **Merge and Center** *icon* [Merge & Center icon] *in the* **Alignment** *group of the* **Home** *tab.*

This action combines the four cells as one and centers the text "Nitey-Nite Mattresses" over the report. You can use the Merge and Center icon to merge and center, merge across, merge cells or unmerge cells. To see these choices, simply click on the drop down arrow located on the right side of the Merge & Center icon. Let's do some more formatting.

8. *Click on the* **Font Size** *box* `11` *in the* **Font** *group of the* **Home** *tab and choose* **14**.
9. *Click on the* **Italics** *button* *I* .

This increases the size of the text to a size 14 font and italicizes the text.

10. *Select* **Cells A3** *through* **D3** *and use the* **Merge and Center** *icon to center that text over the report.*
11. *Change the* **font size** *to* **12**.

Figure 1.27

Simple Formulas

Now we will calculate the Total Sales. This is the meat of Excel – calculations and formulas. When typing formulas, you must always begin the formula with an equal sign "=". Let's begin with the most basic of Excel formulas: adding two cells **together**.

> 12. *Click on* **Cell B8**, *type* **=B6+B7** *and press* **[Enter]**.

Figure 1.28

> ***Trick:*** *To input this formula, you can also type "=" then click on* Cell B6, *then type the "+" sign and click on* Cell B7. *Alternatively, type "=" then scroll to* Cell B6 *with the arrow keys on your keyboard, type the "+" sign, then scroll to* Cell B7.

The SUM() Function

This is one of the easiest calculations in Excel. But what if you want to add a bunch of numbers together? Answer: use the **SUM()** function. Even though we don't have a lot of numbers to sum, I'll show you how it works. I will cover other helpful functions in later chapters.

> 13. Click on **Cell C8** and type the following partial formula: **=SUM(** then click on **Cell C6** and drag the cursor down to **Cell C7**, release the mouse, type the closing parenthesis **)** and press **[Enter]**.
>
> **Trick:** You can also type *=SUM(* then scroll to Cell C6 with the arrow key on your keyboard, press and hold the **[Shift]** key and then the down arrow key to select Cell C7, type the closing parenthesis and press [Enter]. Alternatively, you can click on Cell C8 and double-click the AutoSum icon Σ AutoSum ▾ in the Editing group of the Home tab. BUT BE CAREFUL! If you do that, the icon automatically inputs the formula adding up all contiguous cells above it, including the Year heading (2009). Because of that, I prefer not to use that icon much.

The formula in Cell C8 should read "=SUM(C6:C7)". Whenever you type a formula into a cell, the result appears in the cell. The formula itself appears in the Formula Bar as shown in Figure 1.29:

	A	B	C	D	E
1		*Nitey-Nite Mattresses*			
2					
3		Three Year Sales Summary			
4					
5	Sales	2010	2009	2008	
6	Mattresses	33,415,463	31,583,481	29,574,225	
7	Pillows	14,682,832	13,422,897	11,244,335	
8	Total Sales	48,09⬦95	45,006,378		
9					
10					

Figure 1.29

To the left of Cell C8, you should see a caution icon. This icon will appear when formulas that are next to each other are not consistent. The formula in Cell B8 reads "=B6+B7", which is not consistent with the formula in Cell C8, even though they are basically the same. For now, click on the caution icon and choose Ignore error. We will explore those messages in more detail in later chapters.

> 14. Click on the caution icon next to **Cell C8** and choose **Ignore error**.

Copy and Paste

It appears that you will be using the same basic formula for the summation of sales in Column D, and Excel has provided the functionality where you can **copy** a formula and **paste** it in other cells.

1. *With your cursor on* **Cell C8***, press the* **Copy** *icon* *in the* **Clipboard** *group of the* **Home** *tab.*

You will see a moving dotted line around Cell C8. This is the indication that the cell is copied and is in memory.

2. *Click on* **Cell D8** *and click the* **Paste** *icon in the* **Clipboard** *group of the* **Home** *tab.*
3. *Press the* **[Esc]** *key to take the* **Copy** *command out of copy mode.*
4. *Ignore the error on* **Cell D8***.*

    Trick: *You can also type [Ctrl]+c to copy and [Ctrl]+v to paste. I like to use the keyboard commands much more than the icons.*

When you use the Copy command (either from the icons or the keyboard), Excel assumes that the cell references will change in the direction of the Copy and Paste commands. For example, when you copied the formula "=SUM(C6:C7)" over one column to Cell D8, Excel assumed you will use the cells above Cell D8 and accordingly changed the formula to "=SUM(D6:D7)". Wasn't that nice of Mr. Gates?

    Trick: *To copy a formula over, down or up without the cells changing, copy the formula in the Formula Bar, press [Esc] (to exit out of Edit mode), click on the cell you want to copy the formula to, and press [Ctrl]+v to paste it.*

Now all we have to do is to clean it up a little more and we will have a working report.

5. *Select* **Cells B7** *through* **D7** *and click the* **Underline** *icon* *in the* **Font** *group of the* **Home** *tab.*
6. *Select* **Cells A5** *through* **D5***, then press and hold the* **[Ctrl]** *key, select* **Cells A8** *through* **D8***, release the* **[Ctrl]** *key and click the* **Bold** *icon* *.*
7. *Select* **Cells B6 – D7** *and click the* **Bold** *icon.*

Since the selection B6 – D7 was already bolded, by clicking the bold icon again removes the bold. By pressing and holding the [Ctrl] key, you can select a non-contiguous range of cells.

> ***Trick:*** *A keyboard shortcut to Bold, Italicize or Underline is to select the cells you want to format, press and hold the [Ctrl] key and press the "b" key (for Bold), the "i" key (for Italics) and/or the "u" key (for Underline).*

When we bolded some of the cells, it may have increased the size of the text a bit, so it may be a good idea to resize all the columns to give the numbers a little more breathing room. Excel 2010 usually does a good job of resizing columns as data is entered, but sometimes it's a good idea to resize everything just for grins. Here's a trick on how to resize all of the columns in the spreadsheet at once.

8. *Click in the blank gray box that is above* **Row 1** *in the spreadsheet and to the left of* **Column A**.

This highlights or selects the contents of the entire spreadsheet.

9. *Place your cursor over any column line above* **Row 1** *where the cursor turns to a vertical line with right and left arrows, and double-click on the column line.*
10. *Click on any cell in the spreadsheet to deselect the entire spreadsheet selection.*

When you double-click the column line, you should see the columns automatically adjust their widths.

	A	B	C	D	E	F
1	*Nitey-Nite Mattresses*					
2						
3	Three Year Sales Summary					
4						
5	Sales	2010	2009	2008		
6	Mattresses	33,415,463	31,583,481	29,574,225		
7	Pillows	14,682,832	13,422,897	11,244,335		
8	Total Sales	48,098,295	45,006,378	40,818,560		
9						
10						

Figure 1.30

Aligning Text

Notice that all of the numbers are right-justified and all of the text is left-justified. With Excel, you can change the alignment of any cell to be right, centered, or left justified by using the **Align Text Left** ☰, **Center** ☰ and **Align Text Right** ☰ icons. You can also align cells vertically, using the **Top Align** ☰, Middle Align ☰, and **Bottom Align** ☰ icons. All of these icons are located in the Alignment group of the Home tab. Let's center the Years.

11. *Select* **Cells B5** *through* **D5**.
12. *Click the* **Center** *icon* ≡.

	A	B	C	D	E
1		*Nitey-Nite Mattresses*			
2					
3		Three Year Sales Summary			
4					
5	Sales	2010	2009	2008	
6	Mattresses	33,415,463	31,583,481	29,574,225	
7	Pillows	14,682,832	13,422,897	11,244,335	
8	Total Sales	48,098,295	45,006,378	40,818,560	
9					
10					

Figure 1.31

13. *Click the* **Save** *icon* 💾 *in the Quick Access Toolbar just above the* **File** *tab.*

By clicking the Save icon on a workbook that is not yet named will display the Save As dialog box.

14. *In the* **Save As** *dialog box,* **navigate to the** **Chapter1** *folder under the* **C:\ClineSys\Excel 2010** *folder on your computer.*
15. *In the* **File name** *box, type* **myIncomeStmt**.
16. *Make sure the* **Save as type** *box is set to* **Excel workbook**.
17. *Click the* **Save** *button.*
18. *Close the file by clicking on the* **Close Window** *icon (the second* ✕ *in the upper-right corner of the spreadsheet).*

> *Review Questions: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* ***Excel 2010 Review Questions, Chapter 1, Section 2 of 3*** *option and complete the review questions.*

Let's start another project. In this project, you will add to your Excel skills in formatting a spreadsheet by creating a multiple page report.

At Nitey-Nite Mattresses, there are ten store managers that are considered to be the best in the company. Upper management wants you to develop a report that shows the daily sales of each of these people. It is known as the Top Ten Report. They want the report to show the daily sales for each person each month for the last three months. You have an unformatted text file that gives you all of the data you need to create the report. All you have to do is take that text file and format it to create the Top Ten Report. The text file is located on Sheet1 of the May_Sales.xlsx file.

1. *Click on the* **File** *tab, and then click on the* **Open** 📂 Open *icon.*
2. *Navigate to the* **May_Sales.xlsx** *file from the* **C:\ExcelCEO\Excel 2010 \Chapter1** *folder and open it.*
3. *Click on the* **File** *tab again, click on the* **Save As** *icon.*

This opens the Save As dialog box.

4. *Click on the drop down menu in the* **Save as type** *box and review the types of files you can save the file as (Excel Workbook (*.xlsx), Excel 97-2003 Workbook (*.xls), etc.)*
5. *Make sure the* **Save as type Excel Workbook (*.xlsx)** *is selected.*
6. *Change the name of the file to* **myMay_Sales.xlsx** *and click the* **Save** *button.*
7. *Make sure you have* **Sheet1** *selected.*

   Note: Throughout this course, whenever you use an ExcelCEO-provided file, you will open the file then save it with the word "my" at the beginning of the file name.

◢	A	B	C	D	E	F
1	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Orte	Terry Smith	Richard Lev
2	March					
3	0	0	2899.271	0	0	0
4	3372.845	2707.26	2711.093	3247.457	2362.036	3192.77
5	3527.327	0	0	3203.783	0	0
6	0	2079.363	3010.594	0	3992.861	2649.212
7	2140.938	3762.33	3079.858	2962.761	3952.102	3282.037
8	3688.903	0	0	2698.619	3569.702	2768.765
9	0	2334.847	0	2786.929	0	0
10	3036.317	4095.819	2889.348	0	2647.149	3953.033
11	3149.362	3773.781	2578.677	0	0	0
12	0	3600.029	2580.386	0	3925.98	3714.296
13	0	2177.243	0	3067.289	3055.395	0
14	3186.126	3248.688	0	2322.214	2185.821	2969.763
15	3712.777	2412.706	3048.637	3844.38	3338.86	3156.647
16	0	3461.071	3472.454	3580.677	2781.251	2445.29
17	3880.424	2257.095	3397.746	2607.096	0	0
18	2201.218	2760.222	2672.50	2685.027	2257.07	2162.727

Figure 1.32

As you can see, the data is unformatted and needs a lot of work. Each row of data contains the sales for each day of the month, but it has no dates. As you scroll down in the file, you will see that the March data is followed by April data, which is followed by May data.

The first thing we need to do is to format the sale amounts and resize the columns so we can more easily read the data.

8. *Select the entire sheet.*
9. *Resize all columns.*
10. *Format all cells in* **Columns A** *through* **J** *to be* **Currency**, **two decimal places** *with the dollar* **($)** *sign (Do this from the* **Format Cells** *dialog box)*
11. *Place your cursor to the left of* **Row 1** *and left of* **Column A** *and the cursor will turn into a right arrow. Click on* **Row 1** *and the entire row will be selected.*
12. *Underline all cells in* **Row 1**.

Insert a Column

Next we will add a Date field to be the first field in the spreadsheet. To do so, we need to **insert a column** to the left of the data in which we can store the dates.

1. *Click on any cell in* **Column A**.
2. *In the* **Cells** *group of the* **Home** *tab, click on the drop down arrow below the* **Insert** *icon.*
3. *Choose the* **Insert Sheet Columns** *option.*

   Trick: Alternatively, to insert a column, you can right-click on any cell in Column A and choose Insert…, choose Entire Column from the Insert dialog box and click OK. If you prefer to use the keyboard method, you can type the [Alt] key and then type the letters "i" and "c".

4. *In* **Cell A1**, *type* **Date**
5. *In* **Cell A3**, *type* **3/1/2010**

	A	B	C	
1	Date	Jim Wilcox	Henry Sosa	J
2		March		
3	40,238	$0.00	$0.00	
4		$3,372.84	$2,707.26	
5		$3,527.33	$0.00	
6		$0.00	$2,079.36	
7		$2,140.94	$3,762.33	
8		$3,688.90	$0.00	

Figure 1.33

Dates

Hhhmmmm? The cell now reads 40,238. What's that all about? Let's talk a little about **dates**. In Excel, a date is simply a formatted number. The number 1 represents January 1, 1900. The number 2 represents January 2, 1900 and so forth, one day for each whole number. March 1, 2010 is 40,238, or in other words there are 40,238 days from January 1, 1900 to March 1, 2010. When you input a date in the Month/Day/Year format, Excel

will usually assume it is a date unless the cell had previously been formatted as another type of number. This makes performing calculations on dates very easy.

To further illustrate, let's suppose you have a birth date in one cell, say February 7, 1961, and another date, use June 13, 2011, in another cell. If you subtract February 7, 1961 from June 13, 2011 and format the result as a number, you get 18,388, or the number of days from February 7, 1961 to June 13, 2011. To get the age, simply divide 18,388 by 365.25 (the 0.25 is to account for the leap year day every four years) which results in 50.34 years. The time of the day is stored in numbers less than 1. For example, 40,707.46 formatted as date and time is June 13, 2011 at 11:02 AM. We'll do those and more complex date calculations in future exercises and projects, but for now let's just input the dates we need.

6. *Format* **Cell A3** *as* **Date**, *in a* **mm/dd/yyyy** *format (choose *3/14/2001 in the* **Date** *category,* **Number** *tab in the* **Format Cells** *dialog box)*

◢	A	B	C	D
1	Date	Jim Wilcox	Henry Sosa	Jerry Ban
2		March		
3	3/1/2010	$0.00	$0.00	$2,8!
4		$3,372.84	$2,707.26	$2,7:
5		$3,527.33	$0.00	!
6		$0.00	$2,079.36	$3,0:
7		$2,140.94	$3,762.33	$3,0
8		$3,688.90	$0.00	!
9		$0.00	$2,334.85	!
10		$3,036.32	$4,095.82	$2,8!
11		$3,149.36	$3,773.78	$2,5
12		$0.00	$3,600.03	$2,5!
13		$0.00	$2 177 24	!

Figure 1.34

Data Fill

Cell A3 should now read "3/1/2010". If you were to type in the date for every line item, it would take quite awhile, as you have three months of data. Excel provides a way to make this much easier. It is called **Data Fill**. Using Data Fill, you can fill in the data below (up or to the side) beginning with the cell that is currently selected. When you use Data Fill with dates, Excel assumes you want to increase each date by one day. Let's try it.

7. *With* **Cell A3** *selected, place your cursor over the small black box located in the bottom right corner of the cell.*

Your cursor will turn to bold plus sign "+". This activates the Data Fill button.

8. *Click and drag the* **Data Fill** *button down to* **Cell A33** *and release.*

As you drag the cell down, you will notice a screen tip appears on every cell the cursor is dragged to, increasing the date by one day. You can also double-click the Data Fill button and Excel will automatically fill in the dates for every cell beneath. Double-clicking on Data Fill works only when you want to fill in data BELOW the cell you are currently on. When you do this, all cells below must be *contiguous* (i.e., no blank cells) and the data in the rows must reflect data that is one day apart.

Deleting

Our data is not quite in the right format, as three rows of data (currently Rows 2, 34 and 65) contain the name of the month but no daily sales data. Let's **delete** those rows so we can use Data Fill properly. I will show you three ways of deleting rows in the steps below.

   1. *Click on* **Cell A2** *(or any cell in* **Row 2***).*
   2. *In the* **Cells** *group of the* **Home** *tab, click on the drop down arrow below the* **Delete** *icon and choose* **Delete Sheet Rows***.*
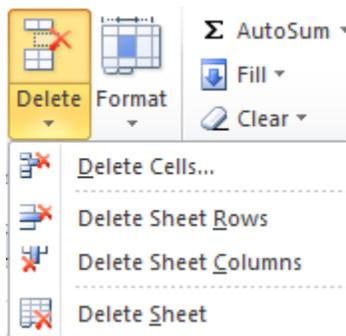
Figure 1.35

Row 2 is deleted and all of the rows beneath Row 2 move up. BE CAREFUL! If you click the Delete icon itself (not the drop down arrow), Excel will delete the **cell** and move the other cells in that column up one row. That can really make a mess of your spreadsheet if you're not careful.

   3. *Click on* **Cell A33***.*
   4. *On your keyboard, type* **[Alt], e, d, r, [Enter]**

This is the keyboard method of deleting rows. Watch the commands on the screen execute as you type the various keys. Now we'll do the right-click method of deleting a row.

   5. *Right-click anywhere on* **Row 63***.*

A series of choices pops up in a short menu.

6. *Choose* **Delete…**
7. *Click on the* **Entire row** *radio button and click* **OK**.

Remember, right-click is your friend. If you want to do something and can't remember where it is, try a right-click and see if the correct choice pops up.

If you want to delete only the contents of the cells but not the rows themselves, you can select the range and press the [Delete] key on your keyboard or use the Cut icon ✂ Cut. Using the [Delete] key or the Cut icon will delete only the contents of the cells, but it will not delete the formatting. One difference between the two is that the Cut icon will keep the deleted selection in memory, while using the Delete key will not.

Now that your data is all contiguous, you can add dates for every row of data in one easy step.

8. *Click on* **Cell A32** *(the last date we populated with a date).*
9. *Double-click the* **Data Fill** *box.*

The dates are filled in through Row 93, which is exactly what we wanted to do.

27	3/26/2010	$3,523.81	$2,599.26	$3,1.
28	3/27/2010	$3,074.87	$2,994.15	$2,2!
29	3/28/2010	$3,779.59	$3,427.56	!
30	3/29/2010	$2,081.29	$3,330.59	$2,3.
31	3/30/2010	$3,364.14	$3,635.87	$3,0.
32	3/31/2010	$3,045.12	$2,313.08	!
33	4/1/2010	$0.00	$0.00	!
34	4/2/2010	$0.00	$0.00	$3,6.
35	4/3/2010	$3,625.93	$0.00	$2,7.
36	4/4/2010	$3,042.41	$3,508.83	!
37	4/5/2010	$3,357.76	$3,830.97	$2,3.
38	4/6/2010	$2,093.86	$0.00	!
39	4/7/2010	$3,876.79	$2,429.78	$3,0.
40	4/8/2010	$0.00	$0.00	!
41	4/9/2010	$0.00	$2,915.11	!
42	4/10/2010	$2,741.68	$2,597.44	$2,2.
43	4/11/2010	$3,392.57	$3,340.09	$3,7!
44	4/12/2010	$2,043.43	$3,095.35	!
45	4/13/2010	$3,034.60	$3,904.76	$1,9.
46	4/14/2010	$2,140.59	$0.00	$2,9!
47	4/15/2010	$2,931.00	$3,845.60	$2,6!

Figure 1.36

Freeze Panes and Split Windows

Notice that the names in Row 1 are the same for the three months of data. As you scroll down the page to see April and May data, the names of the managers disappear. When you scroll down, you would like to fix or **freeze** the first row of names. Let's do that.

1. *On your keyboard, press* **[Ctrl]+[Home]** *(this takes you to* **Cell A1***).*
2. *Click on the* **View** *tab.*
3. *In the* **Window** *group, click on the* **Freeze Panes** *icon.*

Freeze Panes
Keep rows and columns visible while the rest of the worksheet scrolls (based on current selection).

Freeze Top Row
Keep the top row visible while scrolling through the rest of the worksheet.

Freeze First Column
Keep the first column visible while scrolling through the rest of the worksheet.
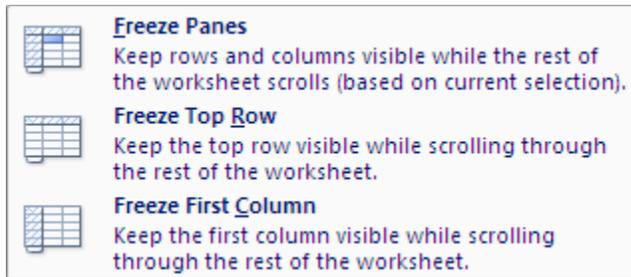
Figure 1.37

4. *Click on the* **Freeze Top Row** *item.*

The first row of names will now remain in place while you scroll down through the rest of the records. If you want to freeze column(s) on the left, simply position your cursor in the cell to the immediate right of the last column you want to freeze and choose Freeze Panes. Let's do that.

5. *Click on the* **Freeze Panes** *icon and choose* **Unfreeze Panes***.*
6. *Click on* **Cell B2***.*
7. *Click on the* **Freeze Panes** *icon and choose the* **Freeze Panes** *item.*

Now you can scroll up and down, to the right and to the left and the titles and dates are frozen. You can also use the **Split** functionality under the Window group of the View tab. The split window differs from the freeze panes option in that a split window allows you to scroll independently in each window.

Insert a Row

In looking at this data, I think we really need totals by person. That way, upper management can see monthly totals for each of the top ten people. Currently, there are no blank rows between the monthly data, so we need to **insert** a couple of blank rows after every month end. This is similar to inserting columns like you previously learned.

8. *Click on* **Cell A33** *and click on the* **Home** *tab.*
9. *Click on the drop down arrow under the* **Insert** *icon on the* **Cells** *group and choose* **Insert Sheet Rows***.*

10. *Repeat the previous step to insert a second row.*
11. *In* **Cell A33**, *type* **Total**

25	3/24/2010	$0.00	$2,612.14	$2,597.
26	3/25/2010	$3,627.55	$2,800.55	$0.
27	3/26/2010	$3,523.81	$2,599.26	$3,120.
28	3/27/2010	$3,074.87	$2,994.15	$2,293.
29	3/28/2010	$3,779.59	$3,427.56	$0.
30	3/29/2010	$2,081.29	$3,330.59	$2,335.
31	3/30/2010	$3,364.14	$3,635.87	$3,012.
32	3/31/2010	$3,045.12	$2,313.08	$0.
33	Total			
34				
35	4/1/2010	$0.00	$0.00	$0.
36	4/2/2010	$0.00	$0.00	$3,673.
37	4/3/2010	$3,625.93	$0.00	$2,779.
38	4/4/2010	$3,042.41	$3,508.83	$0.
39	4/5/2010	$3,357.76	$3,830.97	$2,346.
40	4/6/2010	$2,093.86	$0.00	$0.
41	4/7/2010	$3,876.79	$2,429.78	$3,046.
42	4/8/2010	$0.00	$0.00	$0.

Figure 1.38

Note: To set the height of a row, click on the bottom line of the row and drag it down or up. You can also set the row height by clicking on the Format icon in the Cells group and choose Row Height… and type in the height you want the row to be.

12. *Insert two rows at the break between* **April** *and* **May**.
13. *Type the word* **Total** *at the end of the* **April** *and* **May** *data.*

Now you are ready to sum the sales numbers for each manager in each month.

14. *In* **Cell B33**, *type a formula that sums the contents of all cells above it. (Remember how to do this? If not, go back to the SUM() function you used previously)*
15. *Copy that formula to* **Cells C33** *through* **K33**.
16. *Bold* **Cells A33** *through* **K33**
17. *Underline* **Cells B32** *through* **K32**.

29	3/28/2010	$3,779.59	$3,427.56	$0.0
30	3/29/2010	$2,081.29	$3,330.59	$2,335.1
31	3/30/2010	$3,364.14	$3,635.87	$3,012.1
32	3/31/2010	$3,045.12	$2,313.08	$0.0
33	Total	$71,996.75	$85,205.52	$60,096.9
34				
35	4/1/2010	$0.00	$0.00	$0.0
36	4/2/2010	$0.00	$0.00	$3,673.2
37	4/3/2010	$3,625.93	$0.00	$2,779.9
38	4/4/2010	$3,042.41	$3,508.83	$0.0

Figure 1.39

> 18. Do the same for **April** and **May** totals.

Comments

In scrolling through the report, you notice that Lee Underwood had kind of a low month in April where he sold only $41,722.92. When you called him to see what happened, he explained that he had some sickness in his family and was unable to come to work for a number of days during the month. You decide you would like to communicate this information to upper management, and you want to put it somewhere in the file, but where? Excel provides a nifty little tool called **Comments**. In any cell, you can type any comment you want. Let's try it here.

> 1. *Right-click on* **Cell I65** *and choose* **Insert Comment**.

Your computer name should show up as the first part of the comment.

	I	J	K
	Lee Underwood	Thomas Maker	Evan Thurston
).00	$0.00	$3,491.55	$2,284.33
).00	$2,297.11	$2,351.83	$3,409.41
).00	$3,615.87	$0.00	$3,325.97
.75	$0.00	$2,553.96	$3,277.78
.24	$0.00	$2,448.52	$2,149.98
.86	$3,302.81	$2,511.24	$3,823.15
).51	$0.00	Cline, James:	
.55	$41,722.92		
).77	$0.00		
.94	$0.00		
).00	$2,894.49	$4,232.15	$0.00
.81	$3,373.27	$2,539.88	$2,240.36
).00	$0.00	$0.00	$3,152.23

Figure 1.40

> 2. *In the* **Comment** *box, type* **Lee had some family sickness this month**.
> 3. *Press the* **[Esc]** *key twice to exit* **Insert Comment** *mode.*

Figure 1.41

When you escape out of design mode for the comment, the comment will either remain visible or it will disappear, depending on if you have used the Comment functionality previously. If it remains visible, you can right-click on the cell and choose Hide Comment. The commented cell is tagged with a red triangle in the upper right corner of the cell. It will remain displayed until you hide it. Let's do that now.

4. *Right-click on* **Cell I65** *and choose* **Hide Comment** *(if necessary).*

The comment will now remain hidden until the user moves the cursor over the cell. You now decide you want it to remain visible so upper management can immediately see it when they open the report.

5. *Right-click on* **Cell I65** *and choose* **Show/Hide Comments***.*

Again, this makes the comment visible whenever the user is looking at the spreadsheet. Note that the displayed comment will **not** print when you print the report.

6. *Insert a comment in* **Cell I69** *that reads* **Lee returned to work today.**

You can also use the Comments group of the Review tab to manage all comments in the spreadsheet. I typically find that I don't need that group much as I can use the right-click functionality to manage all the comments I have. To remove a comment, you can right-click on the commented cell and choose Delete Comment.   You can remove all commented cells at once by using the Go To dialog box.

7. *Click on any cell that does not contain a* **Comment***.*
8. *Press the* **[F5]** *key on your keyboard.*
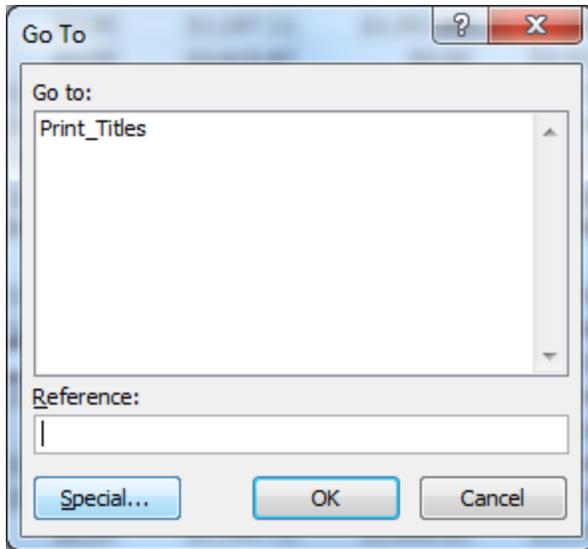
Figure 1.42

The **Go To** dialog box appears. The Go To functionality helps you to find text, numbers, formulas and formatting.

>   9. *In the* **Go To** *dialog box, click on the* **Special…** *button.*
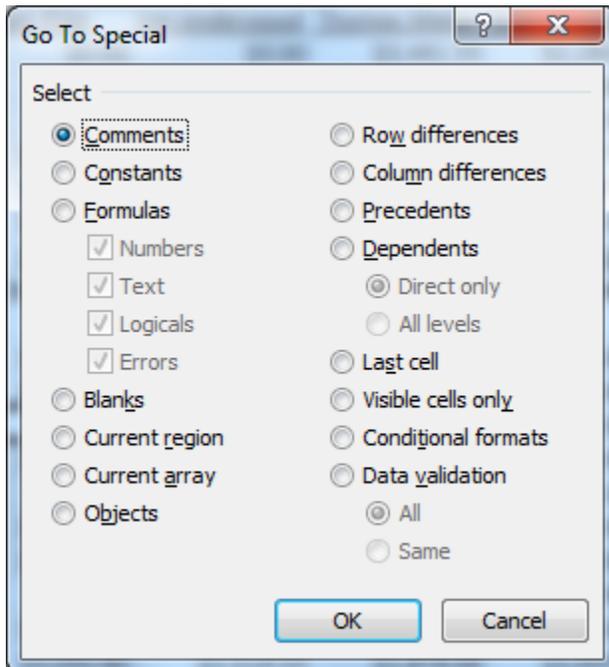
Figure 1.43

>   10. In the **Go To Special** *dialog box, make sure the* **Comments** *radio button is selected and click* **OK***.*

Excel will select the commented cells I65 and I69.

11. To delete the **Comments**, *right-click either* **Cell I65** *or* **I69** *and choose*
 Delete Comment*.*

Both comments are deleted. To edit a comment, right-click the cell where the comment is and choose Edit Comment.

File Properties

You will probably save this file on the hard drive of your computer, but many people save files on network drives. Sometimes, particularly if you create a lot of files, you may store them in places that you can't remember. In Excel, you can search for files based on certain criteria, like name, size, author, and keywords. This type of information is stored in the file's **properties**. It is good practice to put in keywords into a file to make it easier for you or your colleagues to find it later. Let's use "Top Ten" as the keyword for this file.

1. *Click on the* **File** *tab and make sure the* **Info** *icon to the left is selected.*
2. *In the panel to the far right, click on the* **Properties** Properties ▾ *icon (it's not real apparent so you may not see it right away).*
3. *Click on* **Show Document Panel***.*
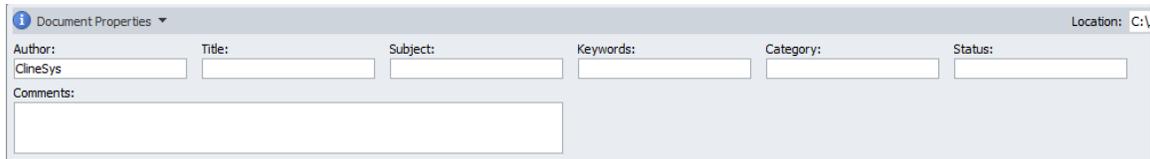
Figure 1.44

The Document Properties panel appears at the top of the spreadsheet.

4. *In the* **Keywords**: *box, type* **Top Ten***.*
5. *Click on the* **Close** *icon (***x***) to close the* **Document Properties** *panel.*

Review the other boxes in the Properties group to familiarize yourself with the types of file properties that are available.

Send File as Email Attachment

You know how sometimes you want to send the file you're working on as an attachment? Most people save the file, then open Outlook (or some other email management program), create a new email and attach the file to the email. In Excel, all of this can be done in three clicks while you still have the file open.

1. *Click on the* **File** *tab, click on* **Save & Send***.*
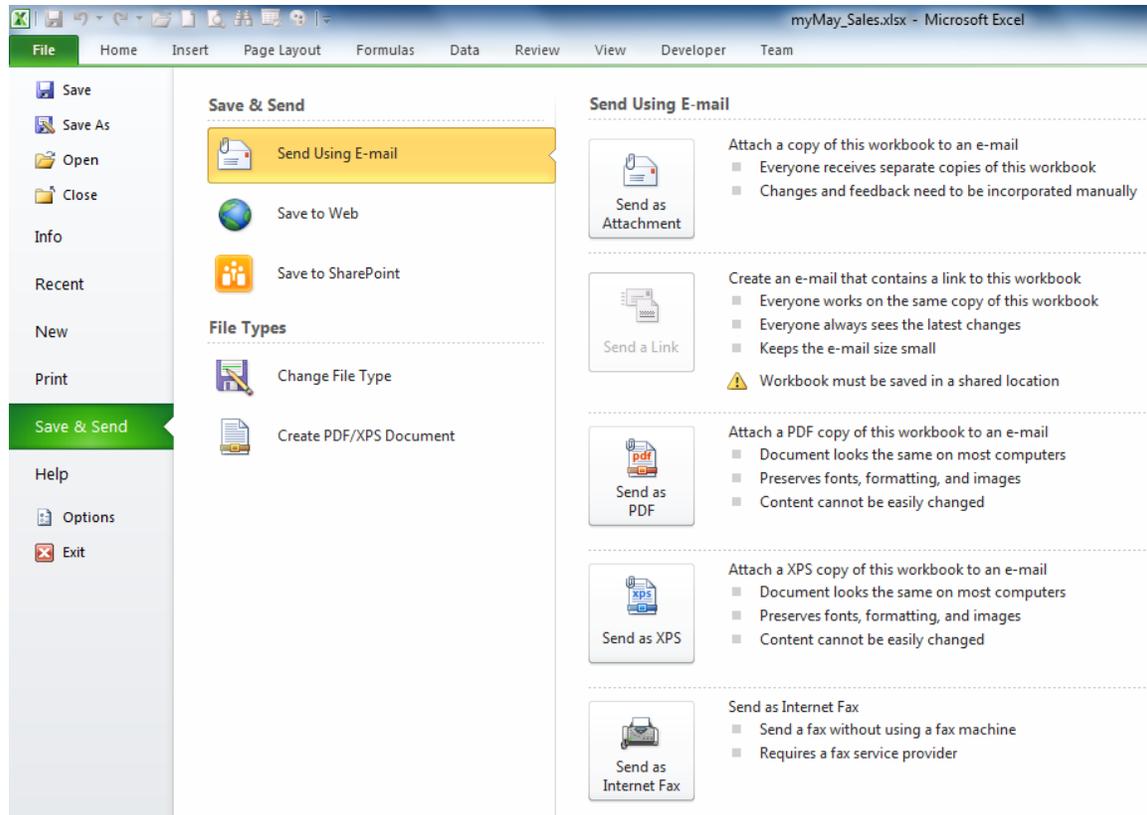
Figure 1.45

> 2. *With* **Send Using E-mail** *selected, click on the* **Send as Attachment** *icon.*

Outlook opens up a new email with the file attached. Now all you have to do is to type in the email address and your message, and click Send. If you haven't saved the file, that's OK. Excel will save a temporary copy of the file as it was when you clicked the Send as Attachment icon.

> 3. *Close the email without sending it to anyone.*
> 4. *Save and close the file.*
>
> **Review Questions***: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 1, Section 3 of 3** *option and complete the review questions.*

Conclusion

In this chapter, you learned the basics of Excel. You learned what a spreadsheet looks like, how to work the navigation, how to use the various tabs and the Office Ribbon, and how to enter basic data on a blank spreadsheet. You learned how to move the contents of a cell to another location and how to turn off the skipping down of the cursor when you press [Enter]. You cut and pasted data within cells, and formatted data and text by using

the underline, bold, italicize icons (and keyboard functions), you aligned text to be centered, left-justified and right-justified, and formatted cells using the Format Cells dialog box. You learned how to use keyboard shortcuts, resize column widths and row heights, and used the Merge and Center icon to center text across multiple columns. You created your own Cell Style.   You created simple formulas and inserted rows and columns. You wrote a formula using the SUM() function, worked with dates, used the Data Fill functionality, and learned how to delete cell contents. You can make a row and/or column stay fixed by using Freeze Panes and/or the Split Window functionality. You deleted rows and text, and can now insert comments in any cell of a spreadsheet. Finally, you learned about File Properties and how to send a workbook as an email attachment.

Chapter Exam

You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER TWO – FORMATTING

In this chapter, you will:

- Use the Underscore character.
- Use Format Painter.
- Use different types of cell formats.
- Copy and Paste formulas.
- Use AutoSum.
- Use Custom Formatting.
- Handle errors in formulas.
- Use Absolute, Mixed and Relative references.
- Indent text within a cell.
- Use Fill Color and Font Color.
- Draw borders around and within a report.
- Use the Undo and Redo buttons.
- Import, move and resize graphics.
- Create a template file.

Formatting

In one of my previous jobs as a real estate appraiser, I was assigned numerous tasks using my computer skills to create complex discounted cash flow analyses. Sometimes, my manager would ask me to analyze a property and not give him a report, but simply "a number" along with the supporting calculations. He would tell me not to worry about formatting a report – just give him one sheet of paper with the supporting calculations and the value of the property. And that is exactly what I gave to him. Every time I did this, he would take that sheet of paper and begin to mark it up with his infamous red pen and write *"Center this title", "Format this as a number with two decimal places", "Make these numbers right-justified",* etc, etc, etc. I got so upset when he did that, especially when he specifically told me not to format the report. He said that the report can't be right on the first try, so he HAD to edit something. I then decided that I was going to take the time to format ALL of the reports and analyses I gave him, even if he said not to do it. That taught me a great lesson – whenever you create a report, format it so that the person you give it to can review it, understand it, make no corrections, and send it along to the next person who needs to see it.

In this chapter, we'll be exploring more formatting options.

1. *Open* **Excel 2010** *and navigate to the file located at* **C:\ExcelCEO \Excel 2010\Chapter2\Sls_Jrnl.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter2\mySls_Jrnl.xlsx***.*

	A	B	C	D	E	F	G	H	I
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_	Disc_Pct	Warr_Amt	Deliv_Amt
2	1026	########	102620020	DMQF130	3	519	0	50	0
3	1026	########	102620020	DMKE128	1	809	0	50	55
4	1026	########	102620020	DMDB137	2	649	0	50	55
5	1026	########	102620020	DMQG131	1	569	0	50	55
6	1026	########	102620020	SMDE120	1	799	0	0	55
7	1026	########	102620020	LMQG162	2	269	0	0	0
8	1026	########	102620020	DMQE132	1	619	0	50	0
9	1026	########	102620020	LMTF167	1	109	0	50	0
10	1026	########	102620020	DMQG131	3	569	0	0	0
11	1026	########	102620020	CMTF154	2	219	0	0	55
12	1026	########	102620020	CMKF142	1	569	0	0	55
13	1026	########	102620020	LMKF158	1	469	0	0	0
14	1026	########	102620020	SMTG123	1	369	0	0	55
15	1026	########	102620020	SMTB125	2	459	0	50	0
16	1026	########	102620020	DMKF126	1	719	0	50	55
17	1026	########	102620020	CMKG143	1	619	0	0	55
18	1026	########	102620020	CMKG143	1	619	0	0	55
19	1026	########	102620020	DMQB133	1	669	0	0	55
20	1026	########	102620020	LMQE163	1	299	0	0	55
21	1026	########	102620020	SMDG119	2	709	0	0	55
22	1026	########	102620020	LMQE163	1	299	0	0	0

Figure 2.1

This is a file of the individual sales made in the month of May 2010 for Store No. 1026. Fields included are the store number (which is the same for all records as we are looking only at Store No 1026), the Sale Date, Ticket Number, Item Code, Quantity Sold, Sale Price per Item, the Discount percent given on the sale, Warranty Charge (if any) and a Delivery Charge (if any).

The Underscore Character

There is one thing I need to mention here that will save you a lot of headaches in your programming career. You may have noticed that many field names, like Sale_Date, Ticket_No and Item_Cd have an underscore (_) character in place of the space. There is a reason for this. The underscore character is a commonly accepted symbol to use in place of a space, as computer languages read an underscore character much easier than spaces. Particularly when you use those column names in a PivotTable (to be discussed later) or in other applications like Access or SQL Server, it will be much less confusing if you use the underscore character in place of the space. Depending on the program, field names sometimes are required to be all contiguous (no spaces) as spaces can greatly confuse programming languages. No, it's not real pretty, but you should get used to it.

To make it easier for us to read the data in the file, we need to clean it up a bit.

3. *Resize all columns to fit.*
4. *Click on* **Column F** *(the entire column should be selected), hold down the* **[Ctrl]** *key and click on* **Columns H** *and* **I***, release the* **[Ctrl]** *key, and click on the* **Accounting Number Format** *icon* $ *in the* **Number** *group of the* **Home** *tab.*

⊿	A	B	C	D	E	F	G	H	I
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty		Disc_Pct		
2	1026	01-May-10	1026200205011	DMQF130	3	$ 519.00	0	$ 50.00	$ -
3	1026	01-May-10	1026200205012	DMKE128	1	$ 809.00	0	$ 50.00	$ 55.00
4	1026	01-May-10	1026200205013	DMDB137	2	$ 649.00	0	$ 50.00	$ 55.00
5	1026	02-May-10	1026200205021	DMQG131	1	$ 569.00	0	$ 50.00	$ 55.00
6	1026	02-May-10	1026200205022	SMDE120	1	$ 799.00	0	$ -	$ 55.00
7	1026	03-May-10	1026200205031	LMQG162	2	$ 269.00	0	$ -	$ -
8	1026	03-May-10	1026200205032	DMQE132	1	$ 619.00	0	$ 50.00	$ -
9	1026	03-May-10	1026200205033	LMTF167	1	$ 109.00	0	$ 50.00	$ -
10	1026	03-May-10	1026200205034	DMQG131	3	$ 569.00	0	$ -	$ -
11	1026	04-May-10	1026200205041	CMTF154	2	$ 219.00	0	$ -	$ 55.00
12	1026	04-May-10	1026200205042	CMKF142	1	$ 569.00	0	$ -	$ 55.00
13	1026	04-May-10	1026200205043	LMKF158	1	$ 469.00	0	$ -	$ -
14	1026	05-May-10	1026200205051	SMTG123	1	$ 369.00	0	$ -	$ 55.00
15	1026	05-May-10	1026200205052	SMTB125	2	$ 459.00	0	$ 50.00	$ -
16	1026	05-May-10	1026200205053	DMKF126	1	$ 719.00	0	$ 50.00	$ 55.00
17	1026	06-May-10	1026200205061	CMKG143	1	$ 619.00	0	$ -	$ 55.00
18	1026	07-May-10	1026200205071	CMKG143	1	$ 619.00	0	$ -	$ 55.00
19	1026	07-May-10	1026200205072	DMQB133	1	$ 669.00	0	$ -	$ 55.00

Figure 2.2

Format Painter

Oops. It looks like the headings in Cells F1, H1 and I1 went away. However, if you click on any one of those cells, you will see in the Formula Bar that the words are still there. The cell has been formatted in a way that is not recognized, so the cells appear to be blank. The other column headings are is still readable, so you just need to format Cells F1, H1 and I1 the same way. You can do that by using the **Format Painter** icon. This tool allows you to copy the formatting, but not the text of a cell and "paint" another cell with the same format.

5. Click on **Cell G1** *(In actuality, you can click on any of the column headers except the ones we're going to format).*
6. Click the **Format Painter** *icon* ✦ Format Painter *in the* **Clipboard** *group of the* **Home** *tab.*
7. Click and hold on **Cell F1** *and drag to select* **Cells F1** *through* **I1***, and release.*

The heading for Cells F1, H1 and I1 should now reappear.

	A	B	C	D	E	F	G	H	I
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt
2	1026	01-May-10	1026200205011	DMQF130	3	$ 519.00	0	$ 50.00	$ -
3	1026	01-May-10	1026200205012	DMKE128	1	$ 809.00	0	$ 50.00	$ 55.00
4	1026	01-May-10	1026200205013	DMDB137	2	$ 649.00	0	$ 50.00	$ 55.00
5	1026	02-May-10	1026200205021	DMQG131	1	$ 569.00	0	$ 50.00	$ 55.00
6	1026	02-May-10	1026200205022	SMDE120	1	$ 799.00	0	$ -	$ 55.00
7	1026	03-May-10	1026200205031	LMQG162	2	$ 269.00	0	$ -	$ -
8	1026	03-May-10	1026200205032	DMQE132	1	$ 619.00	0	$ 50.00	$ -
9	1026	03-May-10	1026200205033	LMTF167	1	$ 109.00	0	$ 50.00	$ -
10	1026	03-May-10	1026200205034	DMQG131	3	$ 569.00	0	$ -	$ -

Figure 2.3

> ***Trick***: *If you want to use the* **Format Painter** *to format multiple cells that are not in a contiguous range, double-click the Format Painter icon. When you click on each cell, the Format Painter will remain activated. To deactivate it, simply left-click on the Format Painter icon.*

Formatting Cells

In Columns F, H and I, do you see how the "$" sign is left justified and the rest of the numbers are right justified? I don't like that. I want the "$" to be next to the numbers. Also, I don't like the dash (-) when there is a $0 dollar amount. I want it to appear as $0. There is another Currency option in the **Format Cells** dialog box, so let's try that one and see if it works better.

8. *Select* **Column F**.
9. *Navigate to the* **Format Cells** *dialog box and choose* **Currency**, **two decimal places** *with the* **$** *symbol.*
10. *Apply the same formatting to* **Columns H** *and* **I**.

Increase and Decrease Decimal Icons

That looks much better. But now that I'm looking at it, all of the sale prices are in dollars with two decimal places. I really don't need two decimal places because there are no cents on any of the sale prices. Instead of going into the Format Cells dialog box, you can use the **Increase Decimal** and **Decrease Decimal** icons to do it a little quicker. These icons are located in the Number group of the Home tab.

11. *Select* **Columns F, H** *and* **I**.
12. *Click on the* **Decrease Decimal** *icon twice.*

You can use the Increase and Decrease Decimal icons for other formats as well. Let's format Column G for **Percent**.

13. *Select* **Column G** *and click on the* **Percent Style** *icon* % *in the* **Number** *group of the* **Home** *tab.*
14. *Click on the* **Increase Decimal** *icon* ⁺.⁰₀ₒ *to increase the decimal place to* **one**.
15. *Resize all columns.*
16. *Freeze* **Row 1** *of the table.*

Using the formatting icons is a quick and easy way to format lots of data.

	A	B	C	D	E	F	G	H	I
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt
2	1026	01-May-10	1026200205011	DMQF130	3	$519	0.0%	$50	$0
3	1026	01-May-10	1026200205012	DMKE128	1	$809	0.0%	$50	$55
4	1026	01-May-10	1026200205013	DMDB137	2	$649	0.0%	$50	$55
5	1026	02-May-10	1026200205021	DMQG131	1	$569	0.0%	$50	$55
6	1026	02-May-10	1026200205022	SMDE120	1	$799	0.0%	$0	$55
7	1026	03-May-10	1026200205031	LMQG162	2	$269	0.0%	$0	$0
8	1026	03-May-10	1026200205032	DMQE132	1	$619	0.0%	$50	$0
9	1026	03-May-10	1026200205033	LMTF167	1	$109	0.0%	$50	$0
10	1026	03-May-10	1026200205034	DMQG131	3	$569	0.0%	$0	$0
11	1026	04-May-10	1026200205041	CMTF154	2	$219	0.0%	$0	$55
12	1026	04-May-10	1026200205042	CMKF142	1	$569	0.0%	$0	$55
13	1026	04-May-10	1026200205043	LMKF158	1	$469	0.0%	$0	$0
14	1026	05-May-10	1026200205051	SMTG123	1	$369	0.0%	$0	$55
15	1026	05-May-10	1026200205052	SMTB125	2	$459	0.0%	$50	$0
16	1026	05-May-10	1026200205053	DMKF126	1	$719	0.0%	$50	$55
17	1026	06-May-10	1026200205061	CMKG143	1	$619	0.0%	$0	$55
18	1026	07-May-10	1026200205071	CMKG143	1	$619	0.0%	$0	$55
19	1026	07-May-10	1026200205072	DMQB133	1	$669	0.0%	$0	$55

Figure 2.4

Would you like to see how many sales we made? We'll write the formula for that, but first let's review some of the data's field definitions. The Qty field is the quantity of items sold. The Unit_Sale_Amt field is the sale price per item sold. The Disc_Pct is the percentage amount of discounts that were given on the total sale *excluding* warranty and delivery charge.   The Warranty charge is a flat $50 per ticket no matter how many mattresses were sold (if purchased) and the Delivery charge is a one-time charge of $55, if purchased. So the total sale price of the ticket is the quantity times the unit sale price times (1-Disc_Pct) plus warranty and delivery charges. Let's do that calculation.

17. *In* **Cell J1** *type* **Total_SP** *(for sale price).*
18. *In* **Cell J2** *input the following formula:* **=E2*F2*(1-G2)+H2+I2**
19. *Make sure* **Cell J2** *is formatted as* **Currency** *with* **two decimal places**.

▲	A	B	C	D	E	F	G	H	I	J
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt	Total SP
2	1026	01-May-10	1026200205011	DMQF130	3	$519	0.0%	$50	$0	$1,607.00
3	1026	01-May-10	1026200205012	DMKE128	1	$809	0.0%	$50	$55	
4	1026	01-May-10	1026200205013	DMDB137	2	$649	0.0%	$50	$55	
5	1026	02-May-10	1026200205021	DMQG131	1	$569	0.0%	$50	$55	
6	1026	02-May-10	1026200205022	SMDE120	1	$799	0.0%	$0	$55	
7	1026	03-May-10	1026200205031	LMQG162	2	$269	0.0%	$0	$0	
8	1026	03-May-10	1026200205032	DMQE132	1	$619	0.0%	$50	$0	
9	1026	03-May-10	1026200205033	LMTF167	1	$109	0.0%	$50	$0	
10	1026	03-May-10	1026200205034	DMQG131	3	$569	0.0%	$0	$0	
11	1026	04-May-10	1026200205041	CMTF154	2	$219	0.0%	$0	$55	
12	1026	04-May-10	1026200205042	CMKF142	1	$569	0.0%	$0	$55	
13	1026	04-May-10	1026200205043	LMKF158	1	$469	0.0%	$0	$0	
14	1026	05-May-10	1026200205051	SMTG123	1	$369	0.0%	$0	$55	

Figure 2.5

Now we're starting to get into some more complex formulas. Multiplication in Excel is done by using the asterisk "*" and division is done by the slash "/" key. The result in Cell J2 should be $1,607.00. Now all you have to do is to copy that formula down for all rows in the spreadsheet. You've done that before by clicking the Copy and Paste icons, but this time you have 93 rows of data to copy to. You don't want to do it one at a time, so let me show you two ways to do a "mass copy" job. You learned how to do this in Chapter 1 with dates, but I want to make absolutely sure you understand this concept, so we'll walk through it again.

20. *With the cursor on* **Cell J2***, place the mouse pointer over the small black box in the lower right corner of the cursor. The pointer will change to a small plus sign "+" (Remember? This activates* **Data Fill***.)*
21. *Click, hold, and drag the pointer down to* **Cell J7** *and release.*

The formula is copied down and the total sale price is calculated for every row of data. Now, you still have a bunch of rows to copy to, so let's do it the REAL EASY way.

22. **Click** *on* **Cell J7**.
23. *Place the mouse pointer over the small black box in the lower right corner of the cursor where the pointer changes to a small plus sign "+".*
24. **Double-click** *on the* **plus sign**.

	A	B	C	D	E	F	G	H	I	J
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt	Total SP
2	1026	01-May-10	1026200205011	DMQF130	3	$519	0.0%	$50	$0	$1,607.00
3	1026	01-May-10	1026200205012	DMKE128	1	$809	0.0%	$50	$55	$914.00
4	1026	01-May-10	1026200205013	DMDB137	2	$649	0.0%	$50	$55	$1,403.00
5	1026	02-May-10	1026200205021	DMQG131	1	$569	0.0%	$50	$55	$674.00
6	1026	02-May-10	1026200205022	SMDE120	1	$799	0.0%	$0	$55	$854.00
7	1026	03-May-10	1026200205031	LMQG162	2	$269	0.0%	$0	$0	$538.00
8	1026	03-May-10	1026200205032	DMQE132	1	$619	0.0%	$50	$0	$669.00
9	1026	03-May-10	1026200205033	LMTF167	1	$109	0.0%	$50	$0	$159.00
10	1026	03-May-10	1026200205034	DMQG131	3	$569	0.0%	$0	$0	$1,707.00
11	1026	04-May-10	1026200205041	CMTF154	2	$219	0.0%	$0	$55	$493.00
12	1026	04-May-10	1026200205042	CMKF142	1	$569	0.0%	$0	$55	$624.00
13	1026	04-May-10	1026200205043	LMKF158	1	$469	0.0%	$0	$0	$469.00
14	1026	05-May-10	1026200205051	SMTG123	1	$369	0.0%	$0	$55	$424.00
15	1026	05-May-10	1026200205052	SMTB125	2	$459	0.0%	$50	$0	$968.00

Figure 2.6

Pretty cool, huh? Just like it did for dates in Chapter 1, Excel copies this formula down to all rows in the table. It knows to stop copying when it runs out of rows. For that reason, it is very important to maintain all of your tables with contiguous rows and columns.

AutoSum

Now let's add up all of the ticket sale prices in the whole table. You already know how to do a SUM() function. All you have to do is to go below the last cell in Column J and write the SUM() function. But there is another way to quickly look at the total sales. That is by using **AutoSum** in the Status Bar.

   25. *Select* **Cells J2** *through* **J9**.

J2			f_x	=E2*F2*(1-G2)+H2+I2					

	A	B	C	D	E	F	G	H	I	J
1	Store	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt	Total_SP
2	1026	01-May-10	1026200205011	DMQF130	3	$519	0.0%	$50	$0	$1,607.00
3	1026	01-May-10	1026200205012	DMKE128	1	$809	0.0%	$50	$55	$914.00
4	1026	01-May-10	1026200205013	DMDB137	2	$649	0.0%	$50	$55	$1,403.00
5	1026	02-May-10	1026200205021	DMQG131	1	$569	0.0%	$50	$55	$674.00
6	1026	02-May-10	1026200205022	SMDE120	1	$799	0.0%	$0	$55	$854.00
7	1026	03-May-10	1026200205031	LMQG162	2	$269	0.0%	$0	$0	$538.00
8	1026	03-May-10	1026200205032	DMQE132	1	$619	0.0%	$50	$0	$669.00
9	1026	03-May-10	1026200205033	LMTF167	1	$109	0.0%	$50	$0	$159.00
10	1026	03-May-10	1026200205034	DMQG131	3	$569	0.0%	$0	$0	$1,707.00
11	1026	04-May-10	1026200205041	CMTF154	2	$219	0.0%	$0	$55	$493.00
12	1026	04-May-10	1026200205042	CMKF142	1	$569	0.0%	$0	$55	$624.00

Figure 2.7

Look at the bottom right portion of your screen and you should see a box that contains the script "**Average $852.25   Count 8   Sum=$6,818.00**" (or something similar,

depending on the settings). This area of your screen is called the **Status bar**. If you right-click on the Status Bar, you will see the following list of options:

Customize Status Bar	
✓ Cell Mode	Ready
✓ Signatures	Off
✓ Information Management Policy	Off
✓ Permissions	Off
Caps Lock	Off
Num Lock	Off
✓ Scroll Lock	Off
✓ Fixed Decimal	Off
Overtype Mode	
✓ End Mode	
✓ Macro Recording	Not Recording
✓ Selection Mode	
✓ Page Number	
✓ Average	$852.25
✓ Count	8
Numerical Count	
Minimum	
Maximum	
✓ Sum	$6,818.00
✓ Upload Status	
✓ View Shortcuts	
✓ Zoom	100%
✓ Zoom Slider	

Figure 2.8

In this list, you can turn off and on any of the options available. It allows you to select any range of numbers and automatically sum, average and count them. You see the results in this box without having to write any formulas.

>   26. Select all of **Column J**. *The* **AutoSum** *box should read* **Sum= 81060.7**.

Notice that the AutoSum box reads the formatting of the first cell in the range (in this case, Cell J1). To make the formatting of the AutoSum box be the same as the data, format all of Column J as Currency, zero decimal places.

>   27. *Save and close the file.*

The next exercise is to learn how to make reports pretty (or "purdy" as we say in Texas). Excel has provided a number of formatting icons that will help you with that. For this exercise, we will use the Net_Inc.xlsx file located in C:\ExcelCEO\Excel 2010 \Chapter2.

1. *Open the file located at* **C:\ExcelCEO\Excel 2010\Chapter2 \Net_Inc.xlsx**.

2. *Save the file* **C:\ExcelCEO\Excel 2010\Chapter2\ myNet_Inc.xlsx**

◢	A	B	C	D	E
1	Nitey-Nite Mattresses				
2					
3	Summary Net Income Statement				
4	As of 7/31/2011				
5	Store No. 1026				
6					
7		MTD	MTD		
8		1-Jul-11	1-Jul-10	$ Diff	% Diff
9	Revenue				
10	Mattresses				
11	Pillows				
12	Total Merchandise				
13	Services				
14	Discounts				
15	Total Revenue				
16					
17	Variable Expenses				
18	Cost of Merchandise				
19	% of Revenue				
20	Selling Expenses				
21	% of Revenue				
22	Variable Expenses Total				
23	% of Revenue				
24					
25	Fixed Expenses				
26	Salary Expense				

Figure 2.8

This workbook has only one sheet called Net_Inc_Stmt. It is a skeleton financial statement with no numbers in it. This is the general format in which upper management likes to see the Summary Income Statement for each store. Your job is to input the numbers and make it look nice by using the various formatting tools. You will populate the numbers, perform the calculations and then make it look "purdy". Let's get started.

3. *Resize* **Column A** *to be a little wider than* **General Admin Expenses** *on* **Row 28**.

4. *Select* **Cells B8** *and* **C8**.

Custom Formatting

Management likes to see headings above the numbers in the **Month Year** format, like "July 2011". If you look in the Date category of the Format Cells dialog box, there is no such format. Therefore, we need to create that format using the **Custom Format** feature.

5. *Open the* **Format Cells** *dialog box.*
6. *In the* **Category:** *field of the* **Number** *tab, select* **Custom**.
7. *In the* **Type:** *field, delete the existing text, type* **mmmm yyyy**   *and click* **OK**.
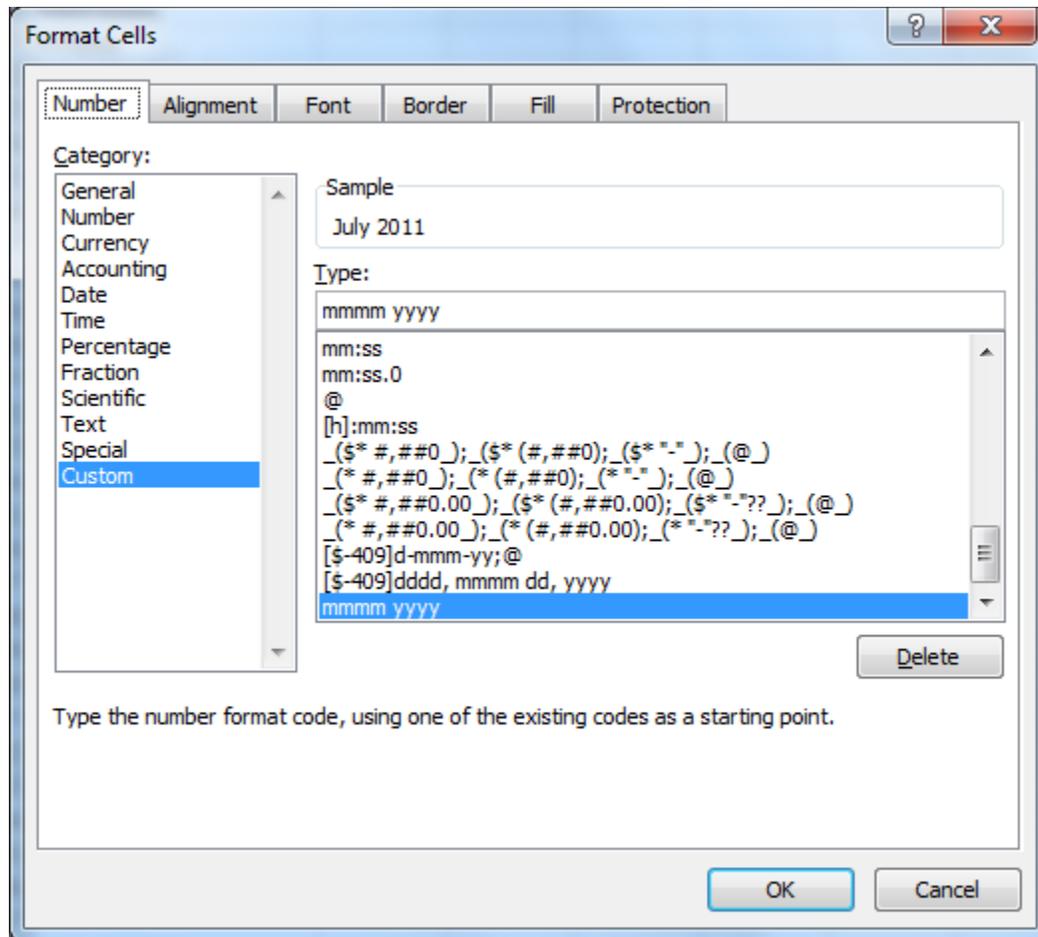
Figure 2.9

◢	A	B	C	D	E
1	Nitey-Nite Mattresses				
2					
3	Summary Net Income Statement				
4	As of 7/31/2011				
5	Store No. 1026				
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses				
11	Pillows				
12	Total Merchandise				
13	Services				
14	Discounts				
15	Total Revenue				
16					
17	Variable Expenses				
18	Cost of Merchandise				
19	% of Revenue				
20	Selling Expenses				
21	% of Revenue				
22	Variable Expenses Total				
23	% of Revenue				
24					
25	Fixed Expenses				

Figure 2.10

The cells change formatting to July 2011 and July 2010 respectively. When using the Custom formatting, four "m's" returns the full month name (January, February and so on). Three "m's" returns the abbreviated month (Jan, Feb), two "m's" returns the month number with the leading 0 (01, 02) and one "m" returns the simple month number without the leading 0 (1, 2). On the Year, one or two "y's" returns the two-digit year (07, 08) and three or four "y's" returns the four-digit year. You can also use the day ("d") format in the Custom type. One "d" returns the day number, two "d's" returns the day number with the leading 0, three "d's" returns the abbreviated day of the week (Mon, Tue, etc.) and four "d's" returns the full name of the day of the week (Monday, Tuesday, etc.).

> *Trick: Excel offers **special formatting** to format numbers as zip codes, phone numbers and US Social Security numbers. Try it. In and blank cell, type 7134816515 (the ExcelCEO phone number). Right-click on the cell, choose Format Cells, on the Number tab under Category choose Special, under Type choose Phone Number, and click OK. This is useful when you want to store the phone number as a number but make it appear in a phone number format.*

8. *Input the following values for each line item on the financial statement:*

	July 2011	July 2010
Revenue		
Mattresses:	80311	68585
Pillows:	3466	3554
Services:	3509	3421
Discounts:	-3689	-2137
Variable Expenses		
Cost of Merchandise:	21358	18543
Selling Expense:	10786	9287
Fixed Expenses		
Salary Expense:	8397	7864
General Admin Expense:	4838	5709
Building Expense:	1632	1712

◢	A	B	C	D	
1	Nitey-Nite Mattresses				
2					
3	Summary Net Income Statement				
4	As of 7/31/2011				
5	Store No. 1026				
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Di
9	Revenue				
10	Mattresses	80311	68585		
11	Pillows	3466	3554		
12	Total Merchandise				
13	Services	3509	3421		
14	Discounts	-3689	-2137		
15	Total Revenue				
16					
17	Variable Expenses				
18	Cost of Merchandise	21358	18543		
19	% of Revenue				
20	Selling Expenses	10786	9287		
21	% of Revenue				
22	Variable Expenses Total				
23	% of Revenue				
24					
25	Fixed Expenses				
26	Salary Expense	8397	7864		
27	% of Revenue				
28	General Admin Expenses	4838	5709		
29	% of Revenue				
30	Building Expense	1632	1712		
31	% of Revenue				
32	Fixed Expenses Total				

Figure 2.11

9. *Format all numbers below* **Cells B9** *and* **C9** *to be* **Number**, **zero decimal places,** *with the* **1000 separator**.
10. **Center** *the text on* **Rows 1, 3, 4** *and* **5** *over the entire report (Note: You can use the* **Merge and Center** *icon for only one row at a time).*
11. *Go to* **Cell B12** *and create a formula to sum the two cells above it.*
12. *Copy* **Cell B12** *over to* **Cell C12**.
13. *Create a formula to calculate* **Total Merchandise+Services+Discounts** *in* **Cell B15**.
14. *Copy that formula to* **Cell C15**.

As a check, the result in Cell B15 should be 83,597 and Cell C15 it should be 73,423.

Figure 2.12

> 15. Underline **Cells B8** *through* **E8, B11, C11, B14,** *and* **C14**.
> 16. *Bold* **Cells A9, A15, B15** *and* **C15.**

In Column D, we want to calculate the *dollar* difference in each Revenue line item, and we want to calculate the *percentage* difference in Column E.

> 17. *In* **Cell D10**, *calculate the dollar difference between the* **July 2011**
>   **Mattress** *revenue number and the* **July 2010 Mattress** *revenue number.*
> 18. *Copy that formula down for all revenue line items. Format the cells as in*
>   **Columns B** *and* **C.**
> 19. *In* **Cell E10**, *type* =B10/C10   (*which is* **B10** *divided by* **C10**)
> 20. *Format* **Cell E10** *as* **Percent**, **one decimal place** *and copy* **Cell E10** *down*
>   *to all revenue line items, using similar bold and underline formatting as in*
>   *the other columns.*

◢	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	**Revenue**				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	**Total Revenue**	83,597	73,423	10,174	113.9%
16					

Figure 2.13

Your file should look like Figure 2.13. In looking at the Revenue section of this statement, it looks like things are going well. Total Revenue at this store is up 13.9% over the previous year. The only revenue line item that is down is Pillow revenue, and it's only down by $88, or 2.5% from the previous year. Overall, it looks like this store is having a good year, in terms of revenue. Now let's work on the Expense section of the report.

21. In **Cell B22**, calculate the sum of **Cells B18** and **B20**. *(Note: Do NOT use the =SUM() function.)*
22. Copy the formula in **Cell B22** to **Cell C22**.
23. Calculate the appropriate formulas in **Columns D** and **E**.
24. Bold the cells on **Row 22**.

	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	**Revenue**				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	**Total Revenue**	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	% of Revenue				
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	% of Revenue				
22	**Variable Expenses Total**	32,144	27,830	4,314	115.5%
23	% of Revenue				
24					

Figure 2.14

> ***Review Questions***: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 2, Section 1 of 2** option and complete the review questions.

Now we'll get into a formula that's a little tricky. I'm going to walk you through a few steps and we'll calculate the wrong formula just so you can see why it's wrong. Then we'll do it the right way.

1. *In* **Cell B19***, type* **=B18/B15**
2. *Format it as* **Percent**, **one decimal place**.

Formatted as a percent, the result should be 25.5%. This number reflects the Cost of Merchandise as a percentage of Total Revenue. Now copy that formula down to Cell B21 and see what happens.

3. *Copy the formula in* **Cell B19** *to* **Cell B21**.

◢	A	B	C	D	E	
1		Nitey-Nite Mattresses				
2						
3		Summary Net Income Statement				
4		As of 7/31/2011				
5		Store No. 1026				
6						
7		MTD	MTD			
8		July 2011	July 2010	$ Diff	% Diff	
9	**Revenue**					
10	Mattresses	80,311	68,585	11,726	117.1%	
11	Pillows	3,466	3,554	-88	97.5%	
12	Total Merchandise	83,777	72,139	11,638	116.1%	
13	Services	3,509	3,421	88	102.6%	
14	Discounts	-3,689	-2,137	-1,552	172.6%	
15	**Total Revenue**	**83,597**	**73,423**	**10,174**	**113.9%**	
16						
17	Variable Expenses					
18	Cost of Merchandise	21,358	18,543	2,815	115.2%	
19	% of Revenue	25.5%				
20	Selling Expenses	10,786	9,287	1,499	116.1%	
21	% of Revenue ◇	#DIV/0!				
22	**Variable Expenses Total**	**32,144**	**27,830**	**4,314**	**115.5%**	
23	% of Revenue					

Figure 2.15

Handling Errors

You should get a **#DIV/0! (divide by zero) error**. This happens when you try to divide a number by zero, which is mathematically impossible. There are numerous kinds of errors you can get when developing an Excel file. The table below lists the most common types of errors and what they mean.

Error	Description
#####	The column isn't wide enough to show the entire number.
#VALUE!	There is an error in writing the formula (like you put a text string where a number is required)
#NAME?	The formula includes a function or range name that Excel doesn't recognize.
#REF!	The formula is referring to a cell that doesn't exist.
#DIV/0!	The formula is trying to divide a number by zero.

Absolute, Mixed, and Relative References

Let's take a closer look at the formula. If you click on Cell B21, you will see that the formula reads "=B20/B17". In our spreadsheet, we want to divide all of the expense

numbers by the Total Revenue line for each respective MTD number. You did that in the formula you wrote in Cell B19, but when you copied it to Cell B21, the denominator changed from B15 to B17. You need to make the denominator remain static, or fixed, and let the numerator (the number on top) move as you copy the formula. You do this by using **Absolute, Mixed** and **Relative references**. In our case, we want the formula in Cell B19 to always divide by Cell B15. An **Absolute reference** means that cell reference (both the row and column) will remain fixed no matter where you copy it to. This is done by placing a dollar sign ("$") in front of the Column and Row references. A **Mixed reference** is used when you want to allow the column OR row to remain fixed during the copy routine. A **Relative reference** is when there is no dollar on either the row or column reference.

Let's try it.

4. *Edit the formula in* **Cell B19** *to* **=B18/$B$15**
5. *Copy* **Cell B19** *to* **Cell B21**.

B21		▼	f_x	=B20/$B$15	
	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	Total Revenue	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	% of Revenue	25.5%			
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	% of Revenue	12.9%			
22	Variable Expenses Total	32,144	27,830	4,314	115.5%
23	% of Revenue				

Figure 2.16

The result in Cell B21 should be 12.9% and you will see the formula: =B20/$B$15. It now appears to be working. Now let's copy the formula to Column C.

6. *Copy* **Cell B19** *to* **Cell C19**.

C19		fx	=C18/$B$15	
	A	**B**	**C**	**D**	**E**

	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	Total Revenue	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	% of Revenue	25.5%	22.2%		
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	% of Revenue	12.9%			
22	Variable Expenses Total	32,144	27,830	4,314	115.5%
23	% of Revenue				

Figure 2.17

Is it working? Let's see. The formula in Cell C19 returns 22.2%. Is that the right number? Well, the calculation would be 18,543 divided by 73,423, which is 25.3%. Why did we get a different number? Take a look at the formula. When you copied it over, it is still using B15 as the denominator (because of the absolute reference) whereas it should be using C15. So in this case we need to make the *row* stay fixed and allow the *column* to change. This is a good lesson to learn – check and re-check your calculations to make **sure** they are working as expected.

7. *Edit the formula in* **Cell B19** *to be* **=B18/B$15**
8. *While on* **Cell B19***, press* **[Ctrl]+c** *(to copy the formula into memory), click on* **Cell B21***, hold down the* **[Ctrl] key***, click on* **Cells C19, C21, B23** *and* **C23***, release the* **[Ctrl]** *key and press* **[Enter]***.*

   Trick: *While typing a formula, you can toggle between an Absolute, Mixed and Relative references by typing the [F4] key. Try it. In a blank cell, type =A1, but don't press [Enter] yet. While in Edit mode with the blinking cursor at the end of A1, press the [F4] key a number of times and you will see it toggles between $A$1, A$1, $A1 and A1.*

C23		▼	◯	*fx*	=C22/C$15	

◢	A	B	C	D	E	
1		Nitey-Nite Mattresses				
2						
3		Summary Net Income Statement				
4		As of 7/31/2011				
5		Store No. 1026				
6						
7		MTD	MTD			
8		July 2011	July 2010	$ Diff	% Diff	
9	**Revenue**					
10	Mattresses	80,311	68,585	11,726	117.1%	
11	Pillows	3,466	3,554	-88	97.5%	
12	Total Merchandise	83,777	72,139	11,638	116.1%	
13	Services	3,509	3,421	88	102.6%	
14	Discounts	-3,689	-2,137	-1,552	172.6%	
15	**Total Revenue**	83,597	73,423	10,174	113.9%	
16						
17	Variable Expenses					
18	Cost of Merchandise	21,358	18,543	2,815	115.2%	
19	% of Revenue	25.5%	25.3%			
20	Selling Expenses	10,786	9,287	1,499	116.1%	
21	% of Revenue	12.9%	12.6%			
22	**Variable Expenses Total**	32,144	27,830	4,314	115.5%	
23	% of Revenue	38.5%	37.9%			

Figure 2.18

9. *Bold* **Cell A17**.
10. *Perform similar calculations in the* **Fixed Expense** *section of the* **Net Income Statement** *to calculate* **Fixed Expenses**.
11. *Calculate* **Total Expenses** *(***Variable Expenses** + **Fixed Expenses***) and* **Net Income** *(***Total Revenue** *less* **Total Expenses***) and the appropriate* **% of Revenue** *calculations.*
12. *Input the appropriate formulas in the* **$ Diff** *and* **% Diff** *columns.*
13. *Bold the rows for* **Fixed Expenses**, **Fixed Expenses Total**, **Total Expenses** *and* **Net Income**.
14. *Copy* **Cell B19** *to all of the* **% of Revenue** *cells.*
15. *Italicize all* **% of Revenue** *rows.*
16. *Center all of the* **% of Revenue** *calculations so they don't appear to be right-justified with the other numbers.*

	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	**Revenue**				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	**Total Revenue**	**83,597**	**73,423**	**10,174**	**113.9%**
16					
17	**Variable Expenses**				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	*% of Revenue*	*25.5%*	*25.3%*		
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	*% of Revenue*	*12.9%*	*12.6%*		
22	**Variable Expenses Total**	**32,144**	**27,830**	**4,314**	**115.5%**
23	*% of Revenue*	*38.5%*	*37.9%*		
24					
25	**Fixed Expenses**				
26	Salary Expense	8,397	7,864	533	106.8%
27	*% of Revenue*	*10.0%*	*10.7%*		
28	General Admin Expenses	4,838	5,709	-871	84.7%
29	*% of Revenue*	*5.8%*	*7.8%*		
30	Building Expense	1,632	1,712	-80	95.3%
31	*% of Revenue*	*2.0%*	*2.3%*		
32	**Fixed Expenses Total**	**14,867**	**15,285**	**-418**	**97.3%**
33	*% of Revenue*	*17.8%*	*20.8%*		
34					
35	**TOTAL EXPENSES**	**47,011**	**43,115**	**3,896**	**109.0%**
36	*% of Revenue*	*56.2%*	*58.7%*		
37					
38	**NET INCOME**	**36,586**	**30,308**	**6,278**	**120.7%**
39	*% of Revenue*	*43.8%*	*41.3%*		
40					

Figure 2.19

Indenting

Sometimes you will want to offset, or indent, text within a cell to make the report a little more readable. You do this by using the **Increase** and **Decrease Indent** icons.

1. *Click on* **Cell A19** *and click on the* **Increase Indent** *icon* .
2. *Indent all* **% of Revenue** *references in* **Column A**.
3. *Bold the* **Nitey-Nite Mattresses** *title and increase the* **font size** *to* **14**.

4.   *Italicize* **Cells A3** *and* **A4** *and increase the* **font size** *to* **12**.

	A	B	C	D	E
1		**Nitey-Nite Mattresses**			
2					
3		*Summary Net Income Statement*			
4		*As of 7/31/2011*			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	**Revenue**				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	**Total Revenue**	**83,597**	**73,423**	**10,174**	**113.9%**
16					
17	**Variable Expenses**				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	*% of Revenue*	*25.5%*	*25.3%*		
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	*% of Revenue*	*12.9%*	*12.6%*		
22	**Variable Expenses Total**	**32,144**	**27,830**	**4,314**	**115.5%**
23	*% of Revenue*	*38.5%*	*37.9%*		
24					
25	**Fixed Expenses**				
26	Salary Expense	8,397	7,864	533	106.8%
27	*% of Revenue*	*10.0%*	*10.7%*		
28	General Admin Expenses	4,838	5,709	-871	84.7%
29	*% of Revenue*	*5.8%*	*7.8%*		
30	Building Expense	1,632	1,712	-80	95.3%
31	*% of Revenue*	*2.0%*	*2.3%*		
32	**Fixed Expenses Total**	**14,867**	**15,285**	**-418**	**97.3%**
33	*% of Revenue*	*17.8%*	*20.8%*		
34					
35	**TOTAL EXPENSES**	**47,011**	**43,115**	**3,896**	**109.0%**
36	*% of Revenue*	*56.2%*	*58.7%*		
37					
38	**NET INCOME**	**36,586**	**30,308**	**6,278**	**120.7%**
39	*% of Revenue*	*43.8%*	*41.3%*		

Figure 2.20

Fill Color and Font Color

Let's pretty it up a little more by adding some color. With Excel, you can change the color of the font (the text) by using the **Font Color** icon or you can add color to the background of the cell by using the **Fill Color** icon.

1. *Select* **Cells A1** *through* **E5**.
2. *Click on the drop down button beside the* **Fill Color** *icon in the* **Font**
   group and *choose* **Yellow**.
3. *Click on the drop down menu beside the* **Font Color** *icon in the* **Font**
   group and *choose* **Dark Blue**.
4. *Select every even-numbered row starting at* **Row 10** *(***Rows 10, 12, 14** *and*
   so forth through **Row 38***)*.
5. *From the* **Fill Color** *icon, choose* **White, Background 1, Darker 15%**.

	A	B	C	D	E	
1		**Nitey-Nite Mattresses**				
2						
3		*Summary Net Income Statement*				
4		*As of 7/31/2011*				
5		Store No. 1026				
6						
7		MTD	MTD			
8		July 2011	July 2010	$ Diff	% Diff	
9	**Revenue**					
10	Mattresses	80,311	68,585	11,726	117.1%	
11	Pillows	3,466	3,554	-88	97.5%	
12	Total Merchandise	83,777	72,139	11,638	116.1%	
13	Services	3,509	3,421	88	102.6%	
14	Discounts	-3,689	-2,137	-1,552	172.6%	
15	**Total Revenue**	83,597	73,423	10,174	113.9%	
16						
17	**Variable Expenses**					
18	Cost of Merchandise	21,358	18,543	2,815	115.2%	
19	*% of Revenue*	*25.5%*	*25.3%*			
20	Selling Expenses	10,786	9,287	1,499	116.1%	
21	*% of Revenue*	*12.9%*	*12.6%*			
22	**Variable Expenses Total**	32,144	27,830	4,314	115.5%	
23	*% of Revenue*	*38.5%*	*37.9%*			
24						
25	**Fixed Expenses**					
26	Salary Expense	8,397	7,864	533	106.8%	
27	*% of Revenue*	*10.0%*	*10.7%*			
28	General Admin Expenses	4,838	5,709	-871	84.7%	
29	*% of Revenue*	*5.8%*	*7.8%*			

Figure 2.21

Borders

One feature of Excel that I really like and use a lot is the ability to draw lines or **borders** around or within a report.

1. *Select* **Cells A1** *through* **E39** *(the entire report)*.

2. *Click on the drop down arrow beside the* **Borders** *icon in the* **Font** *group and choose* **Outside Borders***.*

Notice that the Borders icon is now changed to be the last border type used, which is the Outside Border. The same holds true for the Fill Color and Font color icons (they have changed to be the last color you used). Using the Borders icon, you can draw all kinds of borders and lines around any cell you want.

3. *Select* **Cells A1** *through* **E5***.*
4. *Click on the* **Outside Borders** *icon.*
5. *Select* **Cells A7** *through* **E39***.*
6. *From the* **Borders** *drop down arrow, choose the* **All Borders** *icon.*

Undo and Redo Buttons

Now that I look at it, I really don't like the All Borders in the whole report. I believe the shading every other line is enough to break up the monotony of the report.

7. *Click the* **Undo** *icon* (*in the* **Quick Access Toolbar***, which we'll discuss later) to undo the* **All Borders***.*

I use **Undo** and **Redo** icons all the time. As implied, these icons will undo and redo the previous action(s) performed. Notice that there is a drop down arrow next to each of those icons. You can use this drop down arrow to go backward or forward to a specific action you performed. Note that if you choose a previous action from the menu, it will undo or redo **all** actions up to that point.

	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
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14	Discounts	-3,689	-2,137	-1,552	172.6%
15	Total Revenue	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	% of Revenue	25.5%	25.3%		
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	% of Revenue	12.9%	12.6%		
22	Variable Expenses Total	32,144	27,830	4,314	115.5%
23	% of Revenue	38.5%	37.9%		
24					
25	Fixed Expenses				
26	Salary Expense	8,397	7,864	533	106.8%
27	% of Revenue	10.0%	10.7%		
28	General Admin Expenses	4,838	5,709	-871	84.7%
29	% of Revenue	5.8%	7.8%		
30	Building Expense	1,632	1,712	-80	95.3%
31	% of Revenue	2.0%	2.3%		
32	Fixed Expenses Total	14,867	15,285	-418	97.3%
33	% of Revenue	17.8%	20.8%		
34					
35	TOTAL EXPENSES	47,011	43,115	3,896	109.0%
36	% of Revenue	56.2%	58.7%		
37					
38	NET INCOME	36,586	30,308	6,278	120.7%
39	% of Revenue	43.8%	41.3%		

Figure 2.22

Now we are ready to analyze this store's performance. Total Revenue is up 13.9% over the prior year, which is the right direction. Variable Expenses are also up, but at a slightly higher rate (15.5% over prior year). Both Cost of Merchandise and Selling Expenses have increased more than revenue, which may be an area of concern. Fixed Expenses, however, are lower than in the prior year, which may mean that fixed expenses are under control, or at least we are improving year over year. Store management may not have the ability to alter Cost of Merchandise, as that is something that is determined by the vendors or by management. In our case, retail prices are also mandated by the home office, so the primary means by which store management can affect business is

through increased sales and managing Fixed Expenses.   Total Expenses are up in comparison to the prior year, but they are not up in terms of percent as high as Total Revenue, which is good.   That leads to a favorable year over year Net Income amount. Net Income is up 20.7% over the prior year, and it now represents 43.8% of Revenue. Last year, Net Income represented 41.3% of Revenue, which seems to be reflective of improving financial management.

Working with Graphics

Another topic I want to review with you in this chapter is working with **graphics** and **images**. In Figure 2.22, you can see that we typed the name of the company, Nitey-Nite Mattresses, at the top of the spreadsheet. You can also import a graphic, like a logo, onto a spreadsheet. Once it's imported, you can move it to any position in the spreadsheet and resize it as well as change it in other ways. Let's import the Nitey-Nite logo (a jpeg file which you will actually create in a later chapter) to work with as an example.

1. *Place your cursor on* **Cell G1** *and click on the* **Insert** *tab.*
2. *In the* **Insert** *tab in the* **Illustrations** *group, click on the* **Picture** *icon*
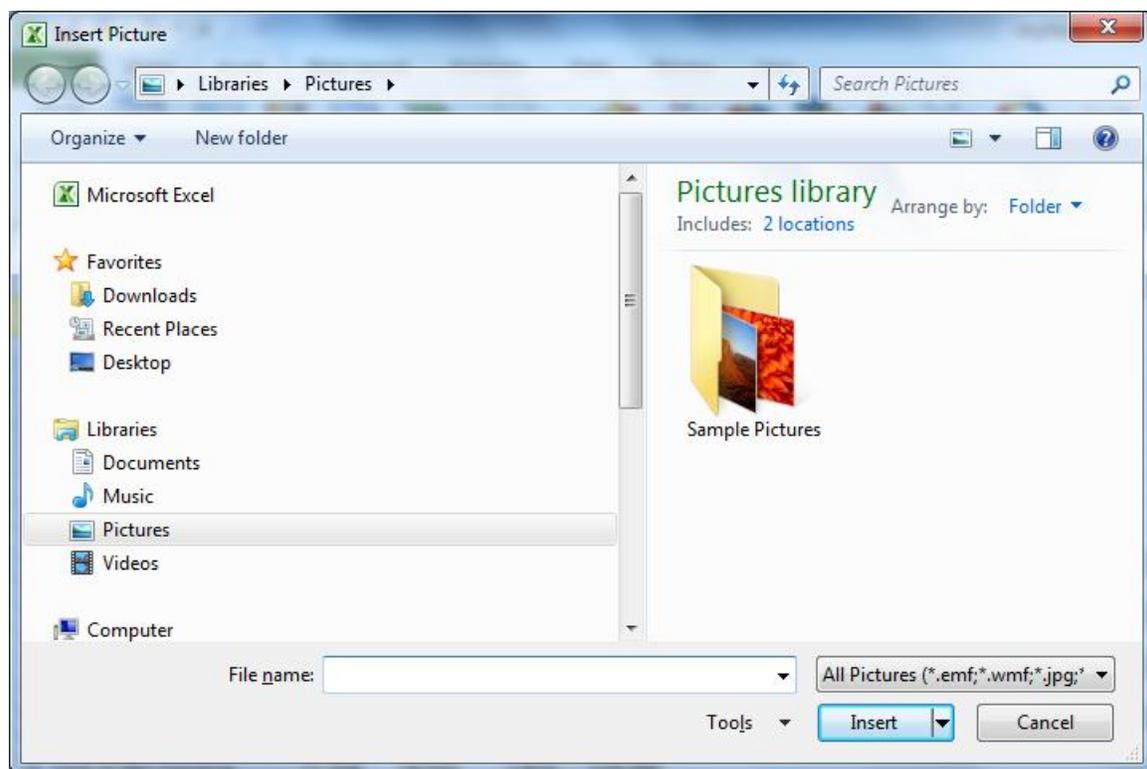

Figure 2.23

3. *Navigate to* **C:\ExcelCEO\Excel 2010\Chapter2**, *click on the* **logo.jpg** *file and click the* **Insert** *button.*

	A	B	C	D	E	F	G	H	I	J	K
1		**Nitey-Nite Mattresses**									
2											
3		*Summary Net Income Statement*									
4		*As of 7/31/2011*									
5		Store No. 1026									
6											
7		MTD	MTD								
8		July 2011	July 2010	$ Diff	% Diff						
9	**Revenue**										
10	Mattresses	80,311	68,585	11,726	117.1%						
11	Pillows	3,466	3,554	-88	97.5%						
12	Total Merchandise	83,777	72,139	11,638	116.1%						
13	Services	3,509	3,421	88	102.6%						
14	Discounts	-3,689	-2,137	-1,552	172.6%						
15	**Total Revenue**	83,597	73,423	10,174	113.9%						
16											
17	**Variable Expenses**										
18	Cost of Merchandise	21,358	18,543	2,815	115.2%						
19	*% of Revenue*	25.5%	25.3%								
20	Selling Expenses	10,786	9,287	1,499	116.1%						
21	*% of Revenue*	12.9%	12.6%								
22	Variable Expenses Total	32,144	27,830	4,314	115.5%						

Figure 2.24

The image should import as in Figure 2.24. When the image is imported, you will see a new contextual tab appear called **Picture Tools, Format**. A **contextual tab** appears when certain objects are selected that need a unique set of tools. The Picture Tools, Format contextual tab appears whenever an image is selected. It allows you to use special tools to work with images.

You can now drag the graphic to anywhere on the spreadsheet you want. You know the graphic is selected when the small circles appear around the graphic. The small circles are called **handles**. Let's drag the image over the Nitey-Nite Mattresses text.

4.   *Click and drag the image and position it over the blue* **Nitey-Nite Mattresses** *text.*

	A	B	C	D	E
1					
2	Nitey-Nite Mattresses				
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	Total Revenue	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				

Figure 2.25

As you can see, the graphic is real close to the "Summary Net Income Statement" text, but not to worry. We can resize the graphic to make it a little smaller by clicking the handles.

5. *Click the bottom right handle and drag the graphic to the left and up.*
6. *Resize it until it is big enough to fit over the* **Nitey-Nite Mattresses** *text but not too big to cover the text below it.*
7. *Reposition the image to where it is centered over the report.*
8. *Click anywhere outside the graphic to deselect it.*

	A	B	C	D	E
1		Nitey-Nite Mattresses			
2					
3		Summary Net Income Statement			
4		As of 7/31/2011			
5		Store No. 1026			
6					
7		MTD	MTD		
8		July 2011	July 2010	$ Diff	% Diff
9	Revenue				
10	Mattresses	80,311	68,585	11,726	117.1%
11	Pillows	3,466	3,554	-88	97.5%
12	Total Merchandise	83,777	72,139	11,638	116.1%
13	Services	3,509	3,421	88	102.6%
14	Discounts	-3,689	-2,137	-1,552	172.6%
15	Total Revenue	83,597	73,423	10,174	113.9%
16					
17	Variable Expenses				
18	Cost of Merchandise	21,358	18,543	2,815	115.2%
19	% of Revenue	25.5%	25.3%		
20	Selling Expenses	10,786	9,287	1,499	116.1%
21	% of Revenue	12.9%	12.6%		
22	Variable Expenses Total	32,144	27,830	4,314	115.5%
23	% of Revenue	38.5%	37.9%		
24					

Figure 2.26

9. Save the file.

Templates

You've spent a lot of time working on this file, haven't you? And I must admit, that's a pretty good looking report. Your manager also thinks it's a great report, and he decides that he wants to use this format for ALL the summary financial statements from here on out. You suggest to him that you save this file as the standard, or **template**, for all future financial statements. He thinks that is a great idea, and you proceed to do so.

A template is simply a pattern that is saved where you have all of the formatting and formulas designed just like you want them. A template should contain no data -- just the format and formulas. To save an existing file as a template, you should first delete all of the data (NOT the formulas) and save it as a file type of template. Let's use the myNet_Inc file as the base for the template.

1. *With the **myNet_Inc.xlsx** file open, take out the shading to the right of the statement (Hint: Select all cells to the right of Column E and choose No Fill from the Fill icon).*
2. *Delete all of the hard-coded numbers in the file (NOT the formulas).*
3. *Change **Cell A4** to be **As of ??/??/????***

> 4. *Change* **Cells B8** *and* **C8** *to be* **mm yy**.

The statement should now look like this:

Figure 2.27

The #DIV/0! error message will appear until there are numbers in the appropriate cells.

> 5. *Click on* **File**, **Save As**, *and in the* **Save As** *dialog box, click on the* **Save as type** *drop down menu and choose* **Excel Template (*.xltx).**
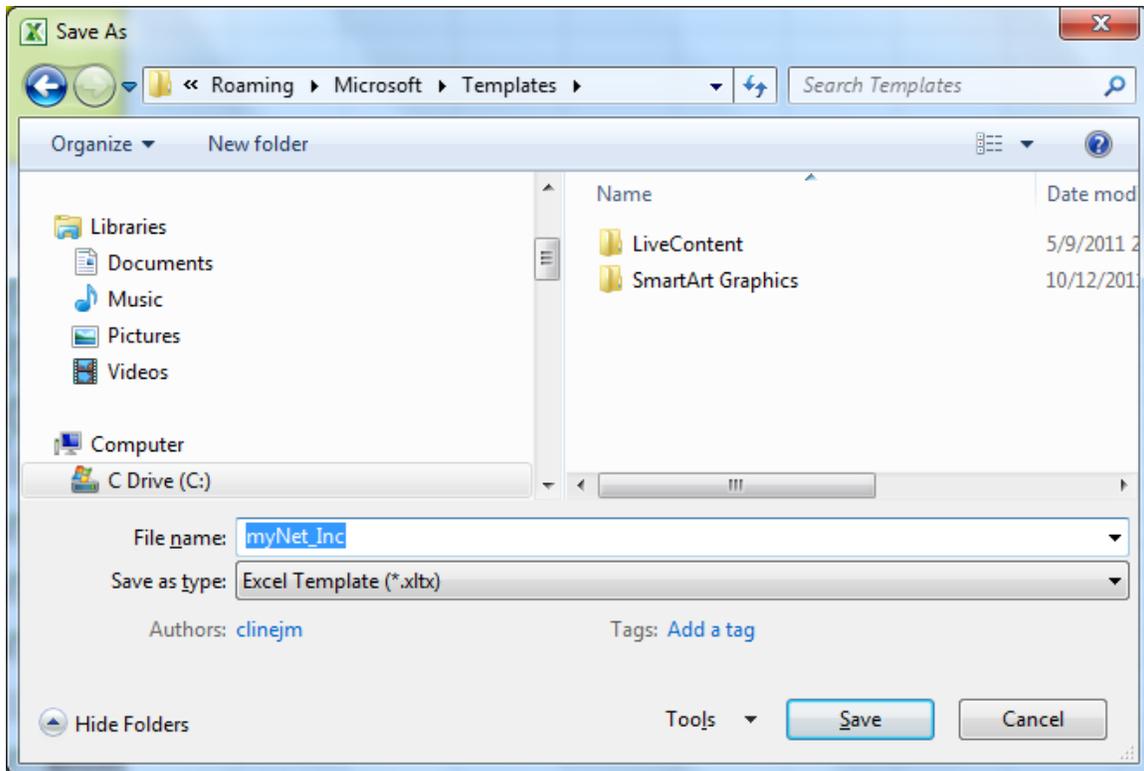
Figure 2.28

Notice that when you choose Excel Template (*.xltx), the directory is automatically changed to the default Roaming Microsoft Templates directory. It is a good idea to store templates in this directory so they will be available through the Templates dialog box.

6. *Change the name of the file to* **myNet_Inc_Tmpl** *and click* **Save**.
7. *Close the template file.*

After you closed the file, you realized that you still have Store No 1026 hard-coded. Changing a template is easy – just open it up and change it.

8. *Click on the* **File** *tab,* **Recent** *icon.*
9. *Under the* **Recent Workbooks** *section, click on* **myNet_Inc_Tmpl** *(it should be the first file in the list)*
10. *Change* **Cell A5** *to* **Store No. ????,** *save and close the* **myNet_Inc** *file.*

Your changes are now saved to the template.

> ***Review Questions***: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* ***Excel 2010 Review Questions, Chapter 2, Section 2 of 2*** *option and complete the review questions.*

Conclusion

In this chapter, you learned about the importance of the underscore character in field/column names. You learned more about formatting icons that are available in the Home tab. You used the Format Painter icon and different types of cell formats. You reviewed how to copy cells and performed a "mass" copy job. You learned how to use the AutoSum feature (many experienced Excel users don't even know about that one). You learned how to use Custom Formatting for special formats that aren't already available in the standard formatting choices. You learned about the various kinds of errors and what they mean. You saw how to use Absolute, Mixed, and Relative references in formulas. You learned how to indent text within a cell. You added color and lines to a report using the Fill Color, Font Color and Borders icons. You learned how to undo your mistakes and redo actions by using the Undo and Redo buttons. You used all of these tools to format an existing file to make it look much more presentable and you created an income statement almost from scratch. The end result was a report that you could be proud to present to any level of management. We even took a little time to analyze the final report. You ended the chapter by importing, moving and resizing a graphic and you created a template file.

Chapter Exam

You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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Chief Excel Officer

Excel 2010

Complete Self-study Course

CHAPTER THREE – SIMPLE GRAPHICS AND FLOWCHARTS

In this chapter, you will:

- Customize the Quick Access Toolbar.
- Create a new folder from the Open dialog box.
- Create Shapes and Objects.
- Create, resize, move, and format a Text Box.
- Use WordArt to create pictures and graphics.
- Create a Flowchart using Shapes.

Quick Access Toolbar

There are many useful icons available in Excel 2010. Most of the icons are the same as the ones in Excel 2007. You can also customize Excel 2010 to make it friendlier to the way you work. One of the customization features I like that makes things easier is the **Quick Access Toolbar**. The Quick Access Toolbar is located above the File and Home tabs and is where you can place the icons that you use most frequently. By default, the Quick Access Toolbar comes with the Save, Undo and Redo icons. A picture of the Quick Access Toolbar is illustrated in Figure 3.1.

Figure 3.1

If you hold your cursor over the drop down menu to the right of the Quick Access Toolbar, you will see a screen tip that reads Customize Quick Access Toolbar. In this next exercise, we will add icons to the Quick Access Toolbar using two different methods.

1. *Open a blank spreadsheet in* **Excel 2010** *(click on the* **File** *tab, then* **New**,
    Blank Workbook, **Create***).*
2. *Click on the drop down arrow to the right of the* **Quick Access Toolbar**.
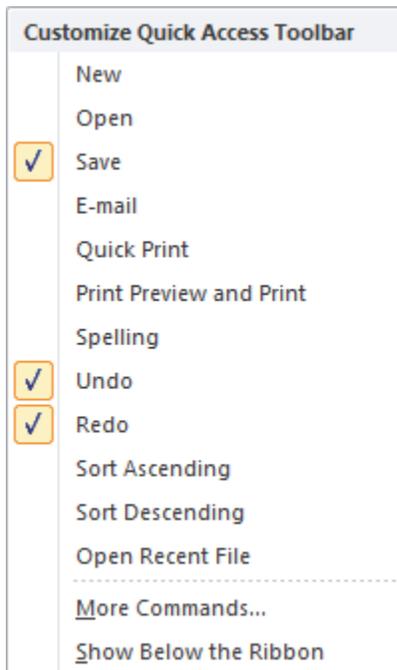
Figure 3.2

The Customize Quick Access Toolbar menu appears. Twelve options appear in the first section. These are the standard options that Excel allows you to add to the Quick Access Toolbar. Let's add a few icons that I use most frequently.

3.   *Click on the* **Open** *option.*

Figure 3.3

The menu disappears and the Open icon is displayed in the Quick Access Toolbar.

4.   *Using the same method, add the* **New** *icon.*

You can also add icons that don't appear as standard options in the first menu.

5.   *Click on the drop down arrow next to the* **Quick Access Toolbar***, and click on* **More Commands…**
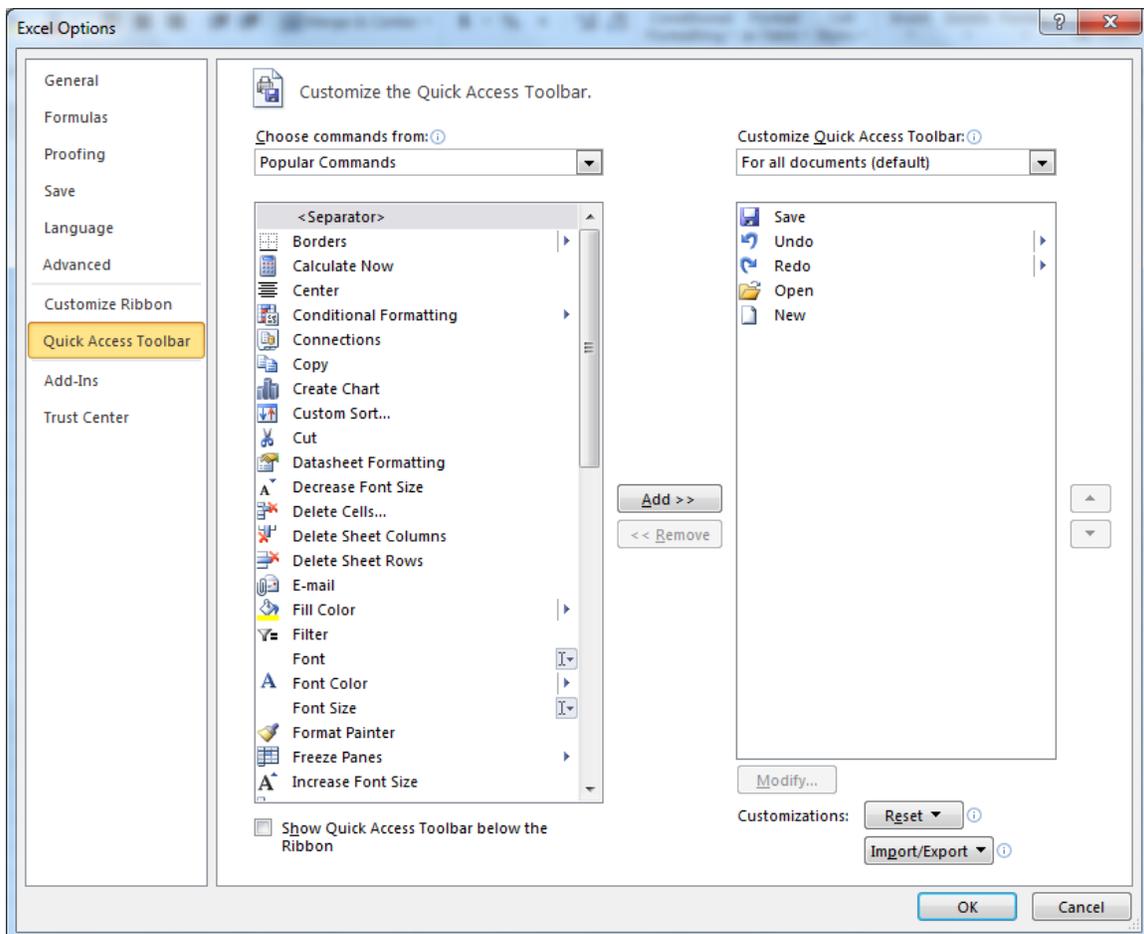
Figure 3.4

The Excel Options dialog box appears. This dialog box is also available by clicking on the File tab and choosing Options, and then by clicking on Quick Access Toolbar. On the right side of the dialog box, you see the icons you've already added. Let's add the Print Preview and Find icons. The Print Preview functionality will be discussed in more detail

in Chapter 5. The Find icon allows you to find a text string or value in the spreadsheet or selection.

6. *Click on the* **Print Preview and Print** *icon on the left section of the dialog box (you'll have to scroll down to find it), then click the* **Add>>** *button between the two sections.*
7. *Click on the drop down arrow that currently reads* **Popular Commands** *and choose* **Home Tab***.*
8. *Scroll about half way down the list of available icons and click on the* **Find…** *icon.*
9. *Move it over to the section on the right.*
10. *Click* **OK***.*

The Print Preview and Print and Find icons are now added to the Quick Access Toolbar. Notice the Move Up and Move Down arrows to the right-most section of the dialog box. These arrows allow you to reposition the icons in the Quick Access Toolbar. Take some time to explore this dialog box and discover some of the available options that could make your Excel life a little easier.

Create a Folder from the Open Dialog Box

To prepare for the next exercise, you need to create a folder. You can easily create a folder from the Open dialog box.

1. *Click on the* **Open** *icon on the* **Quick Access Toolbar** *and navigate to the* **C:\ClineSys\Excel 2010** *folder.*
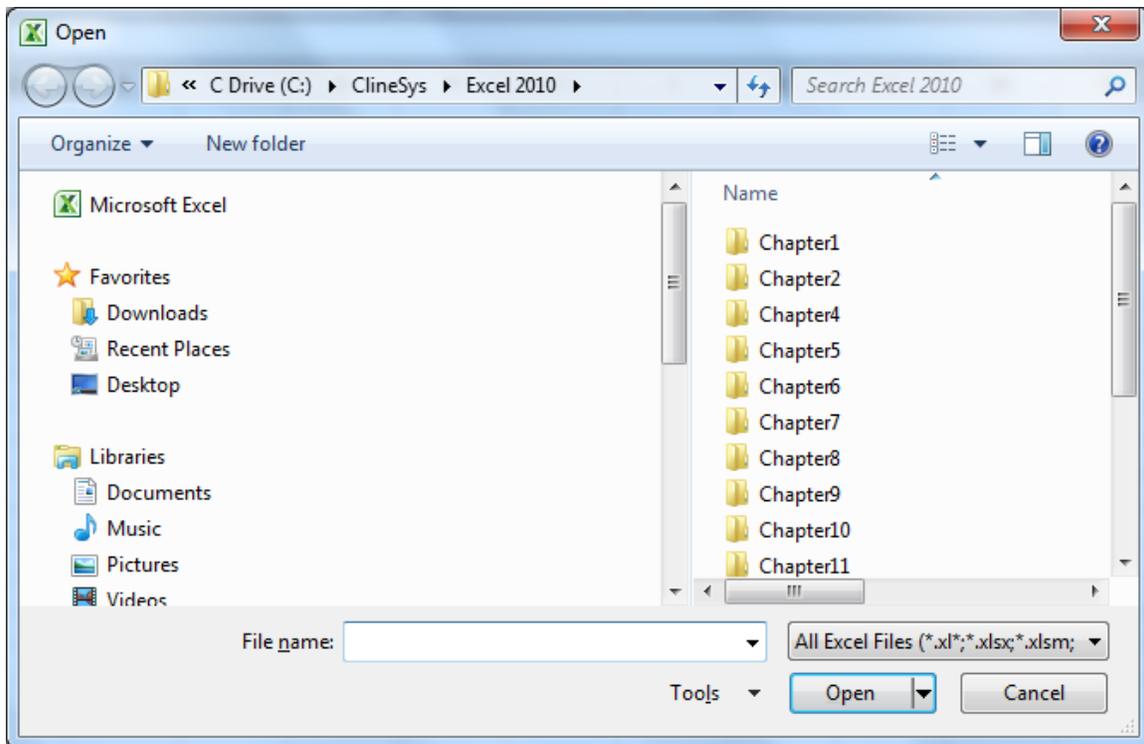
Figure 3.5

As you can see, there is no Chapter3 folder. To create the folder, simply click on the **New Folder** icon.

2. *In the* **Open** *dialog box, click on the* **New Folder** *icon, name the new folder* **Chapter3***, and click* **OK***.*
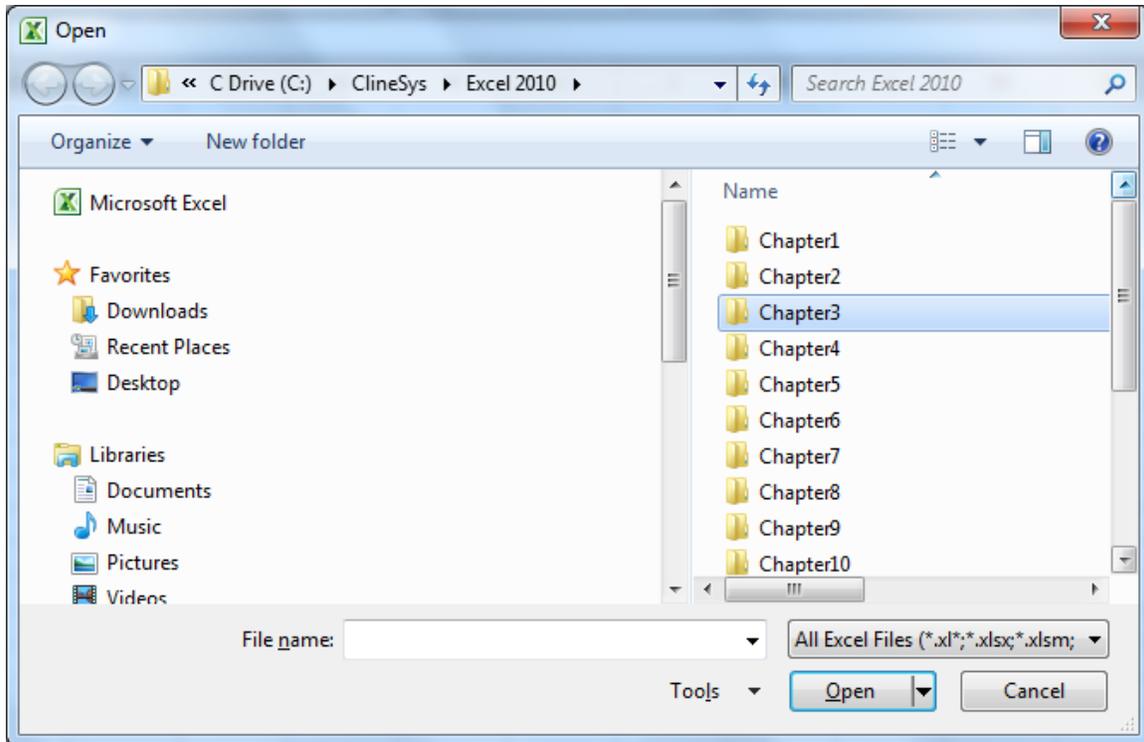
Figure 3.6

The Chapter3 folder is now created.

>   3. *Click **Cancel** in the **Open** dialog box.*

Creating Shapes and Objects

One toolbar that I really liked in Excel 2003 was the **Drawing toolbar**. In Excel 2010, the Drawing Toolbar functionalities are found in the Insert tab. There are many more icons available in Excel 2010 in the Insert tab than in the Excel 2003 Drawing toolbar. If you're an artsy kind of person (which I am definitely NOT) these icons can be a lot of fun to use. Even for people like me, having these icons can significantly compensate for my lack of artistic ability. Let's create a simple text box to show you how some of these functionalities work.

Text Boxes

Let's begin our experimentation of creating objects by drawing a **text box**.

>   1. *Click on the **Insert** tab on the **Office** ribbon.*
>   2. *In the **Text** group, click on the **Text Box** icon.*
>   3. *Move your cursor to bottom right corner of **Cell B2**, and click and drag to the bottom right corner of **Cell C4**. This action draws the text box.*

4. Release the mouse.
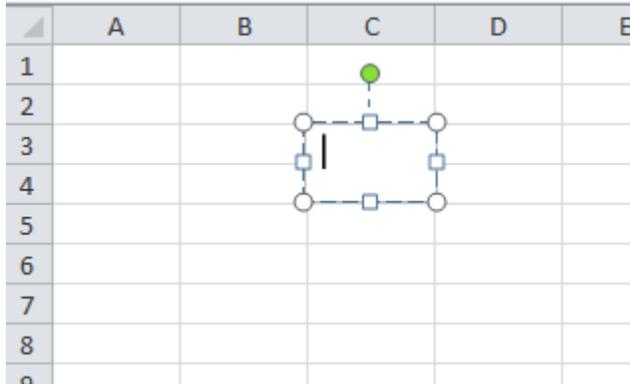
Figure 3.7

You are now in the Edit mode for a text box. The text box doesn't appear to be big enough for what we will do, but don't worry. Increasing the size of the text box is easy.

5. Place your cursor over the handle at the bottom right corner of the text box.

When you place your cursor over any corner handle, it will turn to a diagonal arrow. When you click and drag on the corner handles, you adjust the height AND width of the text box at the same time. If you use the handles in the middle of the text box's outside edges, your cursor will turn to horizontal or vertical arrows so you can adjust either the height OR the width.

6. Drag the bottom right handle to the bottom right corner of **Cell D5** *and release.*
7. Click inside the text box and type: **Nitey-Nite Mattresses**
8. To exit out of **Edit** *mode, press the* **[Esc]** *key twice.*
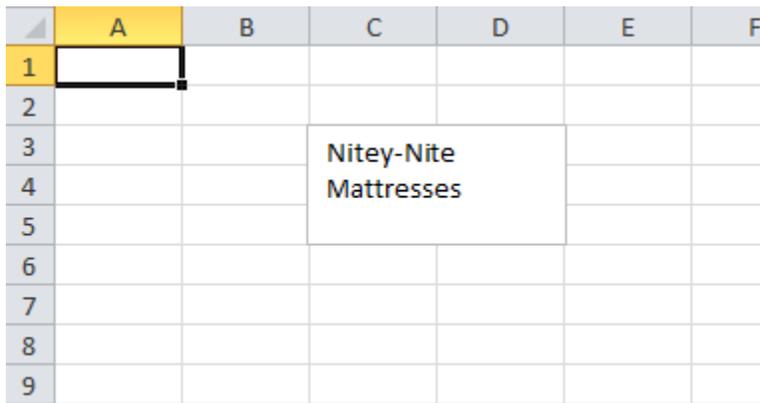
Figure 3.8

Let's format the text and move the text box up a little. You can use the icons on the Formatting toolbar to format the text and background of text boxes.

9.   *Click inside the text box (this puts the text box into* **Edit** *mode).*
10. *Select the text with your mouse.*
11. **Bold** *and* **italicize** *the text and change the size to a* **font 14**.
12. *Drag the right edge of the text box to the right until the text fits on one line.*
13. *Drag the bottom edge of the text box up to better align with the bottom of the text.*
14. *In the* **Home tab** *in the* **Font** *group, click on the down arrow on the* **Fill Color** *icon and choose* **Yellow**.
15. *Click anywhere on the line around the text box (but not on the handles) and drag the text box to the upper left portion of the spreadsheet, with the upper left corner of the text box somewhere in* **Cell A1**.
16. *Click on any cell outside of the text box (to exit out of* **Edit** *mode).*
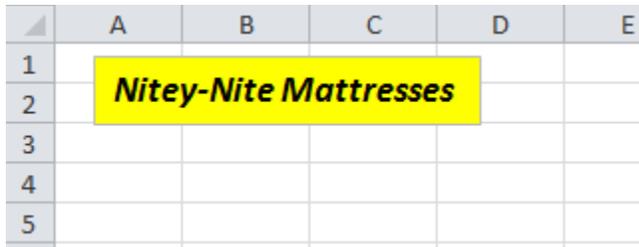
Figure 3.9

You can now move this text box to anywhere in your spreadsheet and it will maintain its same format. You can also copy this text box for use in other spreadsheets.

17. *Click anywhere in the text box to select it (it automatically put the text box in* **Edit** *mode), then click anywhere on the edge of the text box (this selects the text box without being in* **Edit** *mode).*
18. *Copy the text box (using the* **[Ctrl]**+**c** *key or use the* **Copy** *icon) and paste it (*[**Ctrl**]+**v**, *or the* **Paste** *icon) somewhere on* **Sheet2**.
19. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter3\myArt.xlsx**.

Review Questions: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 3, Section 1 of 2** *option and complete the review questions.*

WordArt

One of the things I like about writing courses like this is the opportunity I have to criticize Microsoft. **WordArt** is a fun tool to create more advanced graphics, but they changed it a little bit in Excel 2007 from Excel 2003. I was all ready to slam Microsoft on their "enhancement" of Excel 2007's version of WordArt, but I was disappointed in that effort. When I first looked at WordArt in Excel 2007, I didn't like it. But then when I started working with it, I liked it MUCH better than the WordArt in Excel 2003.

WordArt in Excel 2010 is identical to its 2007 version. WordArt in Excel 2003 and in some other Office 2007 programs like Word and Publisher displays the WordArt Gallery dialog box as in Figure 3.10.

Figure 3.10

When you click on the WordArt in the Text group of the Insert icon in Excel 2010, you get the following:
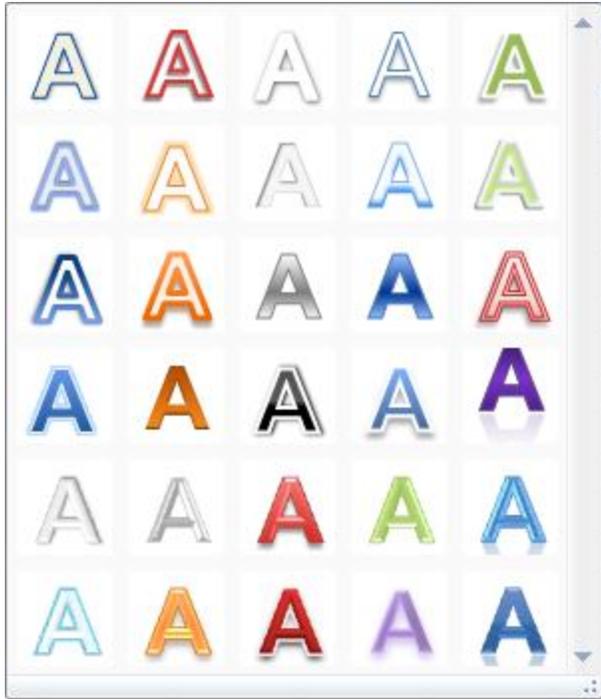
Figure 3.11

It doesn't automatically show you the cool kinds of styles available like in the previous versions. However, let's use it a little and explore some of the enhancements.

1. *Click on the* **Sheet3** *tab.*
2. *Click on the* **WordArt** *icon in the* **Text** *group of the* **Insert** *tab.*
3. *Click on the letter* **A** *in the third row, four letters from the left.*
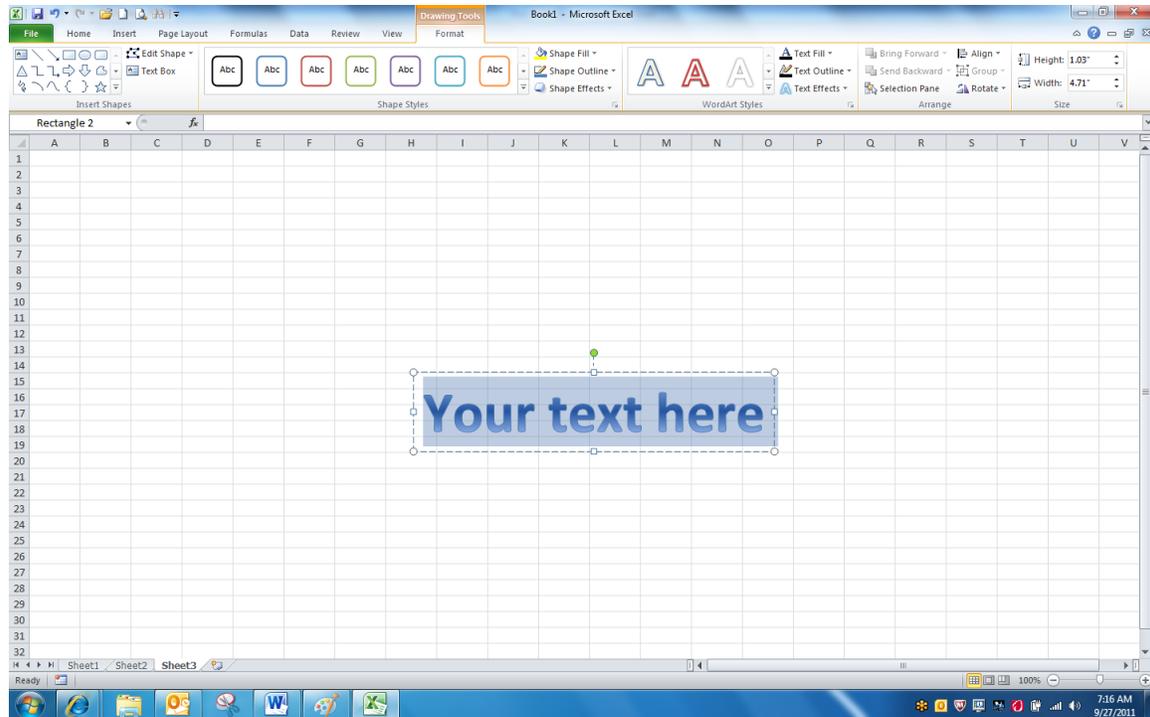
Figure 3.12

Once you click on the letter A, you see the beginning of an object with the text "Your Text Here". Additionally, the **Drawing Tools, Format** contextual tab appears in the Office Ribbon that contains a number of tools you can use to modify the WordArt graphic. We will use several of those tools just to show you how they work. You can explore other icons on your own.

>   4. *Replace* **Your Text Here** *with* **Nitey-Nite Mattresses**
>   5. *With your cursor, select the text* **Nitey-Nite Mattresses**
>   6. *When you finish selecting the text, release the mouse without moving it.*

When you finish selecting the text and release the mouse (without moving it after releasing it), you should see a faint image of miscellaneous controls as in Figure 3.13.

Figure 3.13

>   7. *Move your cursor over the faint image and it will become clearer.*
>   8. *In the* **Font Size** *box, replace the existing size with* **20***.*
>   9. **Italicize** *the selection.*
>   10. *Click anywhere outside the graphic to deselect it.*

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Nitey-Nite Mattresses

Figure 3.14

The floating graphic is now formatted and can be moved to any part of the spreadsheet by simply clicking on it and dragging it to its new location just like you did with text boxes. When you click on the graphic to place it in Edit mode, you will see round handles on the corners and square handles on its sides. When you click and drag the round handles, it adjusts the height **and** width of the graphic. The square handles adjust the height **or** the width, whichever one you choose. The green handle above the graphic controls its rotation. Click and drag these handles back and forth to see what they do. Click on the Text Effects button in the Format tab and click on the Transform button to give it some more pizzazz. Play around with it as much as you want. Feel free to explore this feature by using different WordArt styles, fonts and colors, as most of the selections in the Format tab are self-explanatory. But now we're going to explore one of my favorite utilities of using shapes, flowchart objects.

Flowcharts

There are many stand-alone **flowcharting** programs out there, but I have yet to see any of them that are easier to use as Excel. Excel flowcharting is basically putting a bunch of text boxes and other objects on a worksheet and connecting them with lines. You access the flowcharting tools from the Illustrations group of the Insert tab.

In this next exercise, we will document in a flowchart an accounting process for submitting a journal entry to the General Ledger. The process is as follows: 1) The Senior Accountant creates a journal entry, 2) The Senior Accountant emails the journal entry to the Accounting Supervisor, 3) The Accounting Supervisor reviews it and either sends it back to the Senior Accountant for rework or, if approved, emails it to the Accounting Clerk, 4) The Accounting Clerk uploads the journal entry into the General Ledger system. It's a straightforward process and easy to put into a flowchart. To start, we need to **insert a new worksheet**.

1. *Click on the* **Insert worksheet** *tab next to the* **Sheet3** *tab to insert a new worksheet.*
2. *Click on the* **Insert** *tab, and then click on the* **Shapes** *icon in the* **Illustrations** *group.*
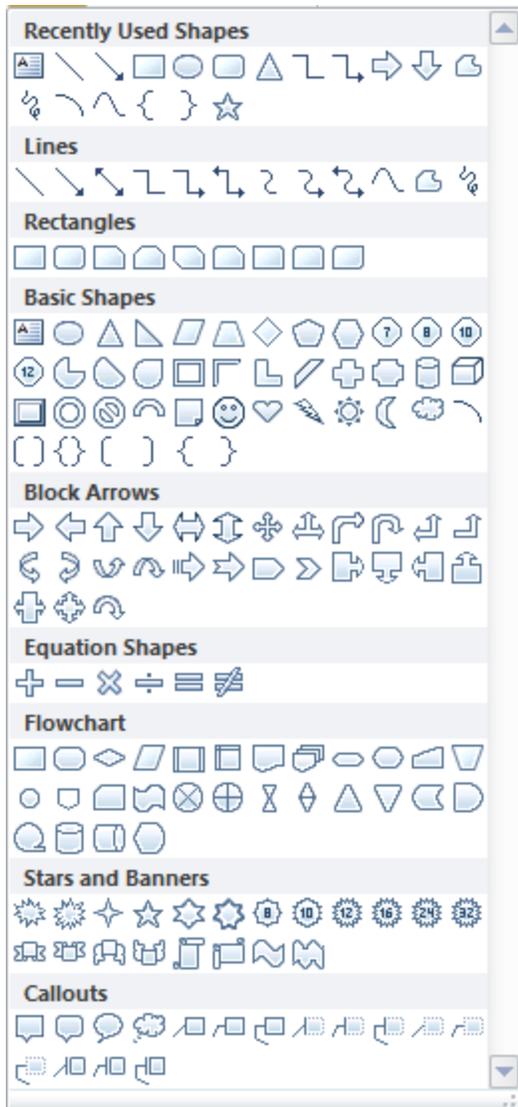
Figure 3.15

The Shapes dialog box appears with several choices from which to choose. You can try others later, but for now we'll concentrate on the Flowchart options.

3. *Click on the* **Flowchart: Preparation** *figure* ⬡.
4. *With your cursor appearing as a "+" sign, draw a rectangle from the upper left corner of* **Cell B4** *to half way through* **Cell D7**, *and release the cursor.*
5. *In the* **Preparation** *box, type:* **Senior Accountant creates/reworks journal entry.**
6. *While in* **Edit** *mode, click the* **Center** *icon on the* **Alignment** *group on the* **Home** *tab (to center the text) and click outside the* **Preparation** *box.*
7. *Resize the box using the handles if necessary to look like* **Figure 3.16**.
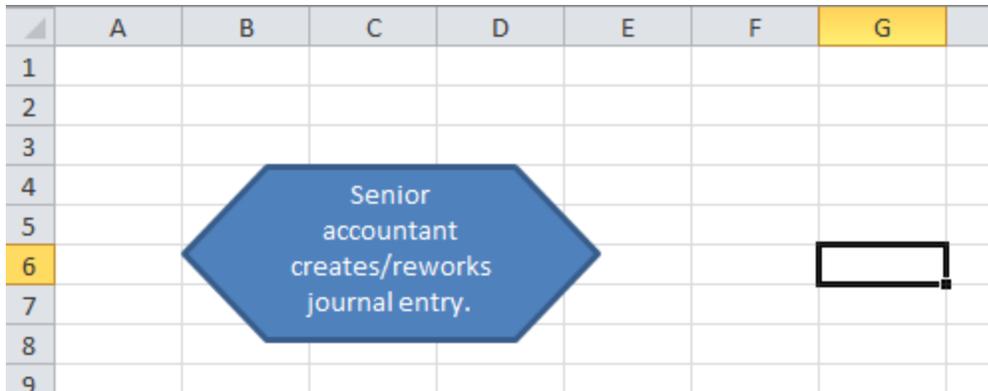
Figure 3.16

8. Choose the **Flowchart: Process** *graphic* ☐ *from the* **Shapes** *icon.*
9. Draw the **Process** *box to the right of the* **Preparation** *box, beginning at about* **Cell F4**.
10. In the **Process** *box, type:* **Senior Accountant emails journal entry to Accounting Supervisor.** *This is* **Process Box 1**.
11. *Make sure the text is centered, resized and or repositioned the box as necessary to appear as in* **Figure 3.17**, *and exit the box.*
12. From the **Shapes** *list, under the* **Lines** *section, choose* **Arrow** ↘.
13. *Move your cursor (now in the shape of a "plus" sign) over the* **Preparation** *box and all connection points will turn red. Position your cursor over the right-most red connection point on the* **Preparation** *box and click and hold.*
14. *Now move your cursor over* **Process Box 1** *and all connection points will turn red. Click on the left-most red connection point.*
15. *Click outside the flowchart.*
16. *Reposition* **Process Box 1** *where the connecting arrow is a straight line from the* **Preparation** *box to* **Process Box 1**. *The arrow will remain connected to* **Process Box 1** *as you move it.*
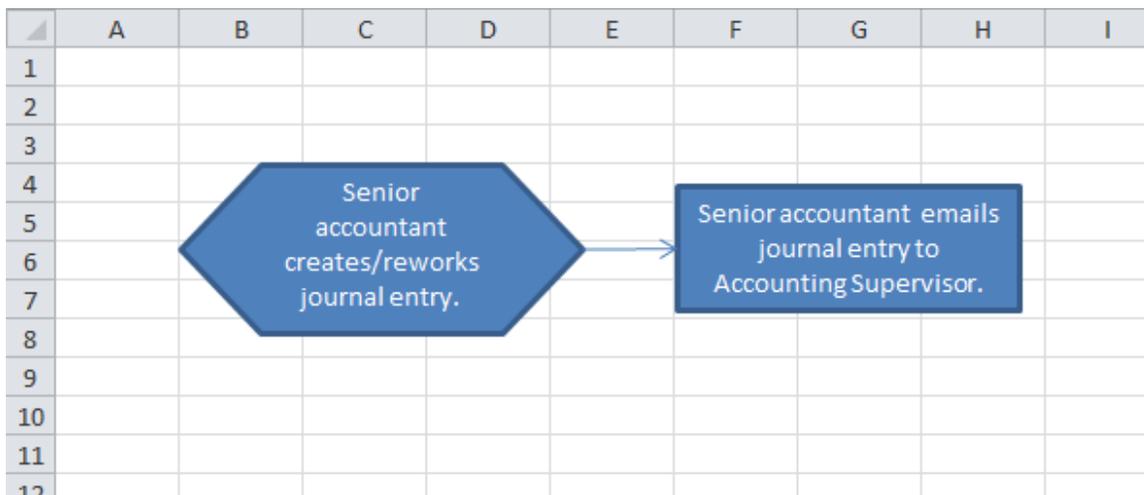
Figure 3.17

You can also move any of the objects with the arrow keys on your keyboard while the object is selected.

17. *Choose the* **Flowchart***: **Decision** icon* ⬭ *from the **Shapes** icon, and draw the box to the right of* **Process Box 1***.*
18. *In the **Decision** box, type:* **Approval?**
19. *Connect **Process Box 1** to the **Decision** box with an **Arrow***.
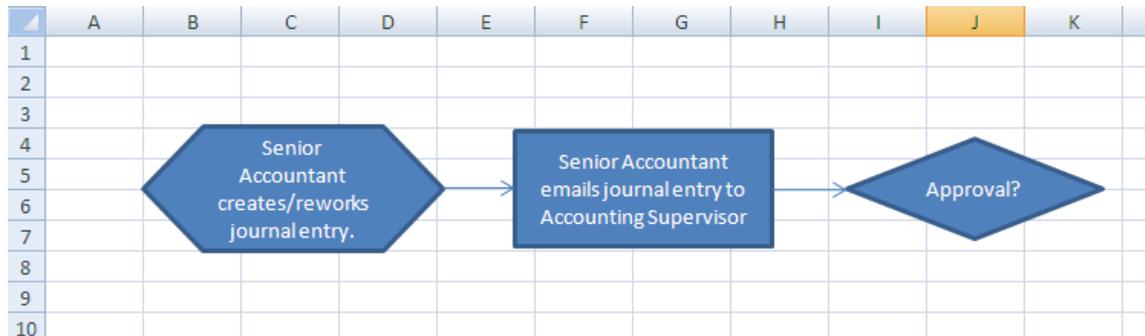
Figure 3.18

At this point, look at Figure 3.19. You should be able to create the rest of the flowchart on your own. You can create the Yes and No boxes by using a Text Box and taking out the border. Try it on your own and see how close you can get to the end product. If you need a little help, follow steps 20 – 32.

20. *Below* **Process Box 1***, create another* **Process** *box that reads:* **Accounting Supervisor emails journal entry back to Senior Accountant for rework***. This is* **Process Box 2***.*
21. *Connect the bottom connection point on the **Decision** box to the right side of* **Process Box 2** *by using an* **Elbow Arrow Connector** ⌐.
22. *Connect the **Process Box 2** to the bottom of the **Preparation** box by using an* **Elbow Arrow Connector***.*
23. *Below and slightly to the left of the **Decision** box, insert a text box with the word* **No** *in it.*
24. *Resize the text box to be small and take out the line around it (Right-click on the* **No** *text box and click on the drop down menu beside the* **line color** *icon and choose* **No Outline***).*
25. *Create another* **Process** *box to the right of the* **Decision** *box. In it, type:* **Senior Accountant emails journal entry to Accounting Clerk***. This is* **Process Box 3***.*
26. *Connect the **Decision** box to* **Process Box 3** *using an* **Arrow***.*
27. *Copy and paste the* **No** *text box. In the copied text box, change the text to* **Yes** *and move it to be positioned above the connecting line between the* **Decision** *box and* **Process Box 3***.*
28. *Below* **Process Box 3***, create another* **Process** *box that reads:* **Accounting clerk uploads journal entry to General Ledger***. This is* **Process Box 4***.*

29. *Connect the two using an* **Arrow**.
30. *Below* **Process Box 4***, create a* **Magnetic Disk** *object* ▯ *and label it:*
    General Ledger.
31. *Connect the two with an* **Arrow**.
32. *Make sure the text in all text boxes is centered.*

Your flowchart should look like Figure 3.19:
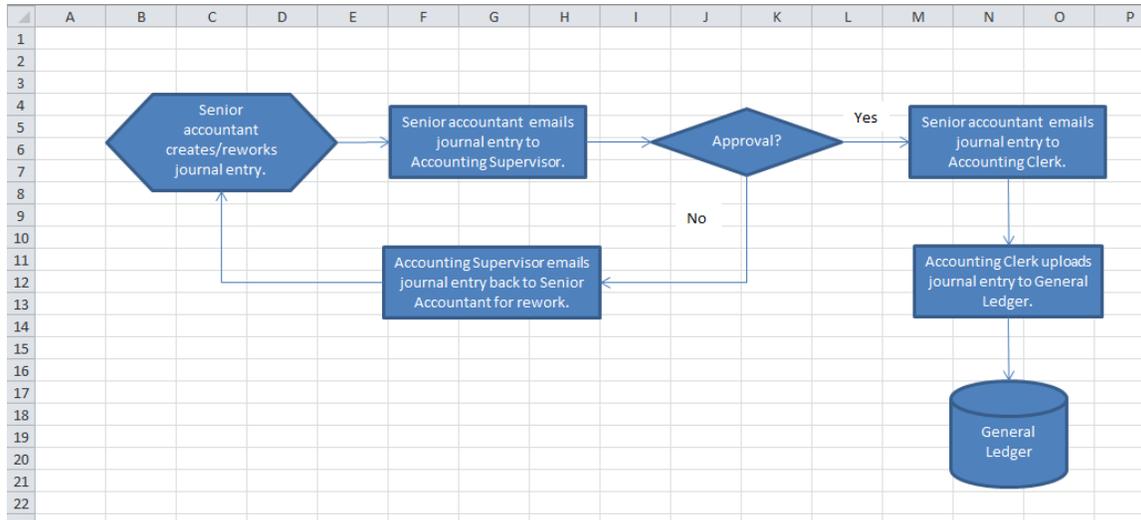
Figure 3.19

33. *Save and close the file*.

One note on using shapes – if you hold down the [Shift] key while drawing a shape, it will keep the shape's proportions constant. For example, if you click on the Oval shape and draw it with your mouse, you will almost always get an oval shape. But if you hold down the [Shift] key while drawing the oval, it will be a circle.

In this course, we will use many icons in most of the tabs.   The Shapes objects are just one example of the many functionalities available with Excel. I encourage you to explore other tools as you come across them.

> *Review Questions: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 3, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you learned how to create a folder from within the Open dialog box. You customized the Quick Access Toolbar by clicking on its drop down arrow and choosing icons to be included in it. Next, you learned how to create and format shapes and objects,

starting with text boxes. You discovered how to create graphics using WordArt. Finally, you created a Flow Chart by using the Flow Chart objects in the Shapes dialog box.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER FOUR - SORTING, SUBTOTALING AND FILTERING

In this chapter, you will:

- Open and work with multiple files.
- Use the Sort Ascending and Sort Descending icons.
- Perform Custom Sorts.
- Use the Subtotaling feature.
- Perform multiple subtotals.
- Use Filters.
- Customize a Filter.
- Use the Top Ten filter.
- Perform Advanced and Search Filtering.

Once I had an assignment to take over a report that someone else had developed. That employee had the responsibility of calculating incentive travel. She created reports showing who won the various trips the salespeople could earn. The top X number of salespeople who sold the most over their budget won an all expense paid trip, and EVERYONE wanted to win. My job was to see how this employee created the report, and take over the maintenance of the report. I was expecting to see sophisticated calculations, databases, and spreadsheets, as we were doing these calculations for literally thousands of sales people. I discovered she was simply taking a spreadsheet that someone in the Accounting department had given her, summing each sales person's sales and sorting it in descending order by the amount sold. The top producers were the first ones on the list, and they got to go on the trip. We spent a lot of money to take those people on the trip, and it was almost scary how easy it was to determine who got to go.

Excel provides many wonderful tools that allow you to sort, summarize and filter your data, without having to do ANY complex calculations. Sorting data is very useful, particularly if you need to rank the data from top to bottom, or if you want to identify some type of trends that may exist in the data. After you've sorted your data, you may want to calculate subtotals to see sums of certain groups of numbers. Then you can filter out what you don't need or display only what you want to see. All of this is done by a few simple clicks of the mouse. This chapter will teach you how to do all of this in just a few easy steps.

Working with Multiple Files

To begin this chapter, however, I'd like to talk about combining files. Often, you will not be able to control the format or manner in which files or data are sent to you. When people give you information, it is usually in the format that *they* are more comfortable with. Sometimes it comes to you in different files and you have to put it together. In the next exercise, you will open three files at once and combine them into one file.

   1. *Open* **Excel 2010**.
   2. *Click on the* **Open** *icon and navigate to* **C:\ExcelCEO\Excel 2010\Chapter4**.
   3. *Click on the* **Aug_Sales.xlsx** *file, hold down the* **[Ctrl]** *key and click on the* **Jul_Sales.xlsx** *and the* **Sep_Sales.xlsx** *files, release the* **[Ctrl]** *key and click* **Open**.
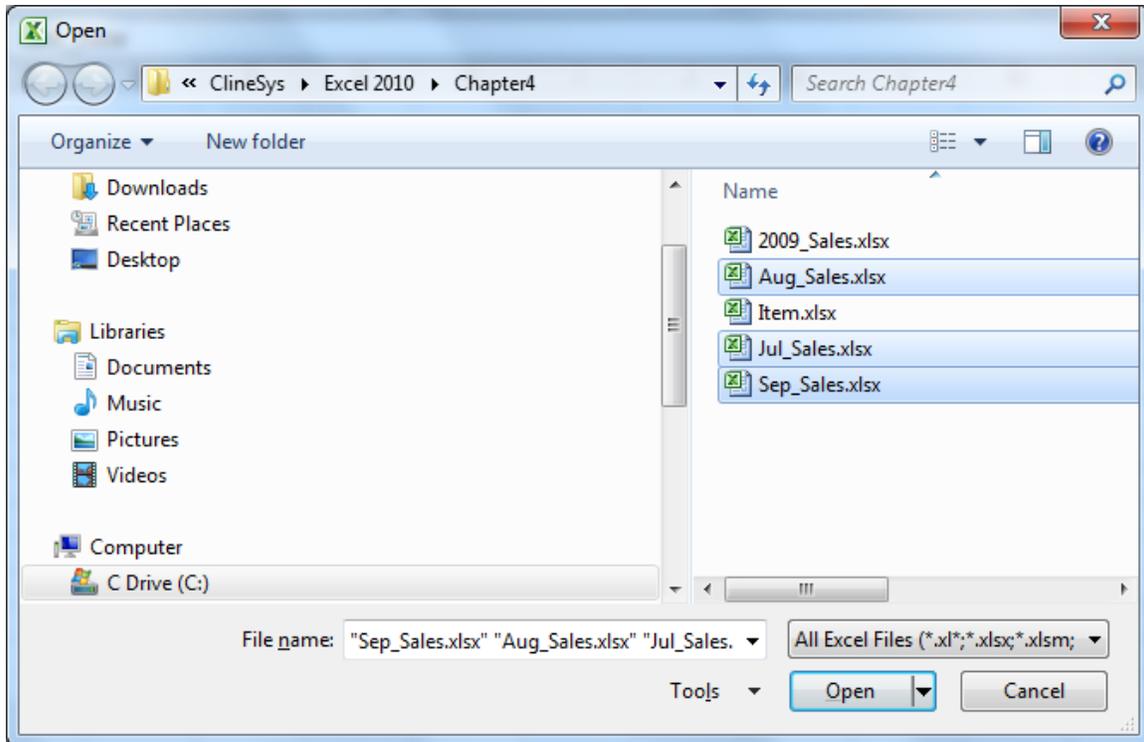
Figure 4.1

All three files open at once. You can see all files that are currently open by clicking on the View tab and choosing the Switch Windows icon.
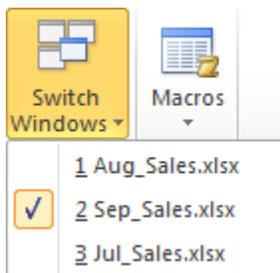
Figure 4.2

> 4. *If necessary, activate the* **Jul_Sales** *file.*
> 5. *Save the* **Jul_Sales.xlsx** *file as* **myQ3_Sales***.*

We will combine the data in each of the files into one file called myQ3_Sales.xlsx. Now that you have the files open, there are various options you have to better organize the view to help you work with them. Let's arrange them in a cascading order.

> 6. *Click on the* **Arrange All** *icon in the* **Window** *group of the* **View** *tab.*
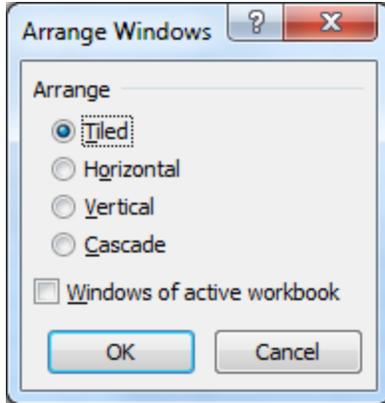
Figure 4.3

The Arrange Windows dialog box appears. In this box, you can tell Excel how to arrange the view of the files.

> 7. *Click on the* **Cascade** *radio button and click* **OK**.

Figure 4.4

You now see all of the open files in one screen. The July file does not appear because you saved it as myQ3_Sales.xlsx. To make a file active, just click on the name of the file.

> 8. *Click on the* **Aug_Sales** *file to make it active*.

Now we will copy the Aug_Sales tab into the myQ3_Sales file.

9. *In the* **Aug_Sales** *file, right-click on the* **Aug_Sales** *tab and choose* **Move or Copy…**
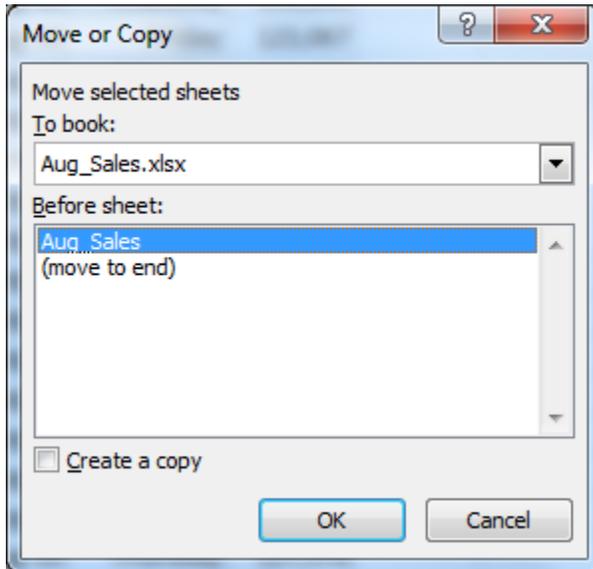
Figure 4.5

The Move or Copy dialog box appears.

10. *Click on the drop down menu under* **To book:** *and choose* **myQ3_Sales.xlsx.**
11. *Click on* **(move to end)** *in the* **Before sheet** *list, check the* **Create a copy** *checkbox and click* **OK**.

Now the myQ3_Sales file has two tabs: Jul_Sales and Aug_Sales.

12. *Copy the* **Sep_Sales** *tab in the* **Sep_Sales** *file over to the* **myQ3_Sales** *file***.**

The myQ3_Sales file should now contain three tabs of data: Jul_Sales, Aug_Sales and Sep_Sales.

13. *Click on the* **Maximize** *button on the* **myQ3_Sales** *file (to take off the* **Cascade** *view).*
14. *Save and close the three files***.**

Sorting

The next topic is sorting. Let's suppose that you want to see how many manufacturers you purchase products from. This is very easy to do, and you can do this by using the **Sort Ascending** and **Sort Descending** icons. In the next exercise, you will open the Item file and perform sorts on it.

1. Open the file at **C:\ExcelCEO\Excel 2010\Chapter4\Item.xlsx.**
2. Save the file as **C:\ExcelCEO\Excel 2010\Chapter4\myItem.xlsx.**

	A	B	C	D	E	F	G	H
1	Item_No	Manufact	Product	Size	Quality	Series	Retail_Pri	Cost
2	SMKB113	Sleepwell	Mattress	King	Best	Diamond	1,699.00	424.44
3	SMKE112	Sleepwell	Mattress	King	Excellent	Emerald	1,499.00	363.74
4	SMKG111	Sleepwell	Mattress	King	Good	Ruby	1,299.00	305.40
5	SMQB117	Sleepwell	Mattress	Queen	Best	Diamond	1,289.00	419.81
6	SMQE116	Sleepwell	Mattress	Queen	Excellent	Emerald	1,189.00	357.94
7	SMKF110	Sleepwell	Mattress	King	Fair	Saphire	1,149.00	249.81
8	SMQG115	Sleepwell	Mattress	Queen	Good	Ruby	1,039.00	328.81
9	DMKB129	Dream	Mattress	King	Best	Walnut	999.00	245.00
10	DMKE128	Dream	Mattress	King	Excellent	Oak	949.00	255.30
11	SMDE120	Sleepwell	Mattress	Double	Excellent	Emerald	939.00	278.52
12	SMQF114	Sleepwell	Mattress	Queen	Fair	Saphire	939.00	295.80
13	DMKG127	Dream	Mattress	King	Good	Maple	899.00	207.69
14	CMKB145	Cama	Mattress	King	Best	Platinum	869.00	212.21

Figure 4.6

This file is the master list of all items that Nitey-Nite Mattresses stocks in their inventory. You can see that there are 69 rows of data in the list, with the first row being the column names. That means there are 68 items in the list. The fields include Item_Number, Manufacturer, Product, Size, Quality, Series, Retail_Price and Cost.

3. Resize all columns so you can see the complete field name and contents of each cell.
4. Underline the cells in **Row 1.**
5. Click on the **Freeze Panes** *icon in the* **Window** *group of the* **View** *tab and click on* **Freeze Top Row.**

This is one minor functionality that I like better in Excel 2010 than in Excel 2003 – the ability to freeze the top row or left column without having to actually click on it. It's not a big deal, but it can be a time saver.

6. Right-click on **Cell B1,** *point to* **Sort** *and choose* **Sort A to Z**

> *Note: There are other ways you can sort data in an Excel 2010 table. One way is to click on the* **Data** *tab and use the* **Sort A to Z** *(ascending) and* **Sort Z to A** *(descending) icons in the* **Sort & Filter** *group. If you want to sort on multiple fields or on formatting options like cell color or font color, you can use the Sort icon in the Sort & Filter group.*

Pay attention to the various options available on the Sort option in the right click menu, like sorting by the Cell Color and Font Color options. Using those options are beyond

the scope of this chapter, but they come in handy when you need to sort on cells that contain conditional formatting (covered in Chapter 14).

This list is now sorted in ascending order by Manufacturer. As you scroll down the list, you can see that there are four manufacturers whose names are repeated on numerous lines: Cama, Dream, Leavan and Sleepwell. Now you want to see all of the items sorted by Retail Prices from highest to lowest.

7. Click on **Cell G1** (*In actuality, you can click on any cell in* **Column G**, *but* **DO NOT SELECT** *the entire column as doing so will sort the data* **only** *that column*).
8. Click on the **Sort Z to A** *icon* in the **Sort & Filter** *group of the* **Data** *tab.*

	A	B	C	D	E	F	G	H
1	Item_No	Manufacturer	Product	Size	Quality	Series	Retail_Price	Cost
2	SMKB113	Sleepwell	Mattress	King	Best	Diamond	1,699.00	424.44
3	SMKE112	Sleepwell	Mattress	King	Excellent	Emerald	1,499.00	363.74
4	SMKG111	Sleepwell	Mattress	King	Good	Ruby	1,299.00	305.40
5	SMQB117	Sleepwell	Mattress	Queen	Best	Diamond	1,289.00	419.81
6	SMQE116	Sleepwell	Mattress	Queen	Excellent	Emerald	1,189.00	357.94
7	SMKF110	Sleepwell	Mattress	King	Fair	Saphire	1,149.00	249.81
8	SMQG115	Sleepwell	Mattress	Queen	Good	Ruby	1,039.00	328.81
9	DMKB129	Dream	Mattress	King	Best	Walnut	999.00	245.00
10	DMKE128	Dream	Mattress	King	Excellent	Oak	949.00	255.30

Figure 4.7

The highest price item you have appears at the top of the list, which sells for $1,699.00. It is the King size Diamond series mattress from Sleepwell.

9. *Save and close the* **myItem.xlsx** *file.*

Custom Sorting

You can also **sort on custom** lists, like days of the week or months of the year.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter4\Aug_Sales.xlsx**.
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter4 \myAug_Sales.xlsx**.

⬦	A	B	C
1	Sale_Date	Weekday	Amt
2	01-Aug-10	Sunday	108,326
3	02-Aug-10	Monday	166,067
4	03-Aug-10	Tuesday	133,801
5	04-Aug-10	Wednesday	98,295
6	05-Aug-10	Thursday	127,618
7	06-Aug-10	Friday	141,070
8	07-Aug-10	Saturday	117,415
9	08-Aug-10	Sunday	128,387
10	09-Aug-10	Monday	135,677
11	10-Aug-10	Tuesday	126,109
12	11-Aug-10	Wednesday	95,289
13	12-Aug-10	Thursday	135,143
14	13-Aug-10	Friday	123,067
15	14-Aug-10	Saturday	111,025
16	15-Aug-10	Sunday	124,477
17	16-Aug-10	Monday	179,646

Figure 4.8

This is a listing of daily sales totals for all of Nitey-Nite's stores. It shows the date, the weekday and the total sale amount. Your job is to find out the best and worst sales days of the week. You can do this in a number of ways. For the purposes of this exercise, we will sort the list by weekday beginning with Sunday.

    3. *Freeze* **Row 1**.
    4. *Right-click on* **Cell B1**, *point to* **Sort** *and choose* **Custom Sort…**
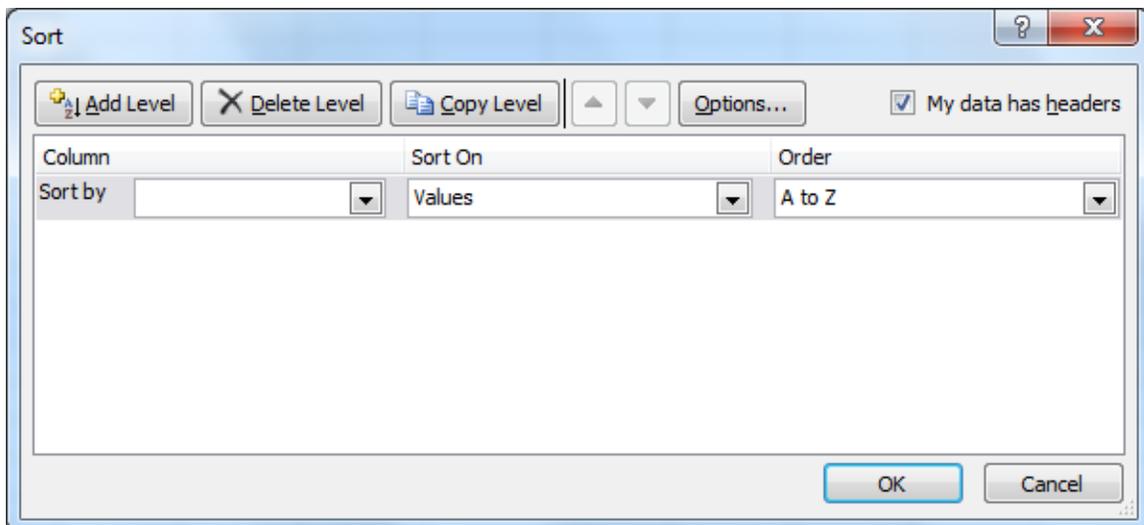
Figure 4.9

The Sort dialog box appears. In this dialog box (which differs significantly from the Excel 2003 Sort dialog box), you can sort on many levels. Excel 2003 offered only three sort levels, but in Excel 2007 and 2010 you can sort on as many fields as you have in the table, up to 64.

5. *Make sure the* **My data has headers** *checkbox is checked.*
6. *In the* **Sort by** *drop down menu, choose* **Weekday***.*
7. *Leave the* **Sort on** *option on* **Values***, and in the* **Order** *drop down menu, choose* **Custom List…**
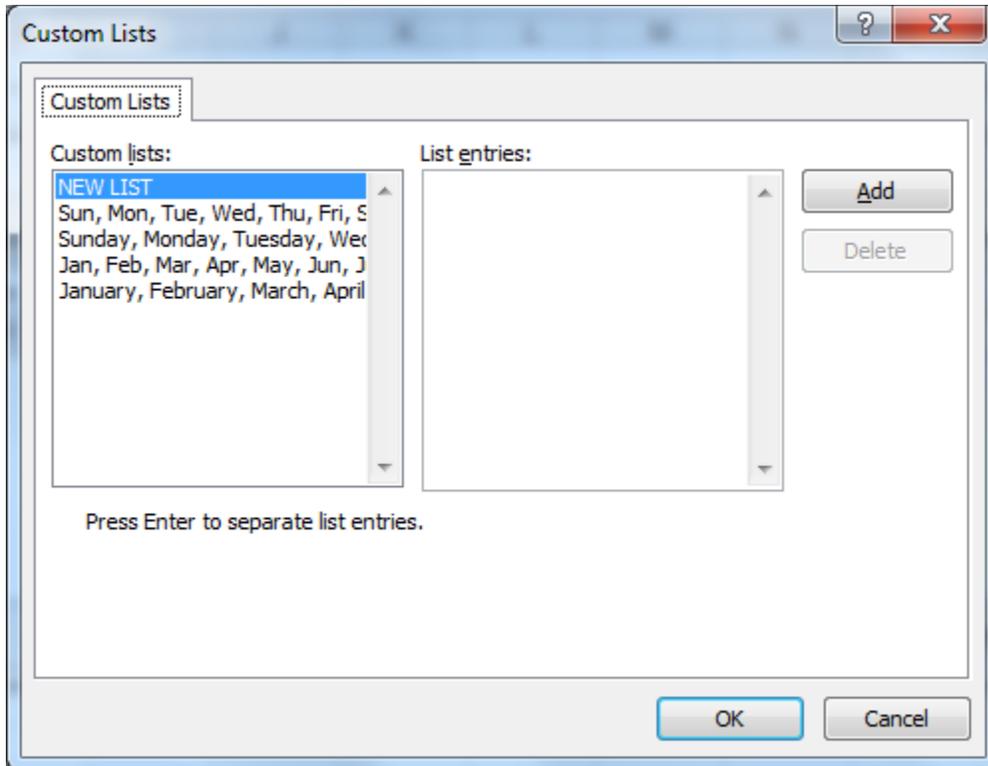
Figure 4.10

This is the dialog box that allows you to sort your data using various lists.

8. *In the* **Custom lists** *section, click on* **Sunday, Monday, Tuesday, Wed…** *and click* **OK.**
9. *Click* **OK** *in the* **Sort** *dialog box.*

Your data is now sorted by Weekday. To analyze the data, you could write some formulas, but you can also look at it on the fly. Scroll up and down the list and you can clearly see that Wednesdays have the lowest total sales. All Wednesday totals are less than $100,000, and all of the other days' totals are over $100,000 per day.

Subtotals

To find out what the totals for each day are, you typically have to do some type of calculation. In this case, I would usually use a PivotTable (discussed later in this course), but for now we'll use Excel's quick and clean **subtotaling** feature.

>   10. *With the data sorted by* **Weekday***, click on the* **Data** *tab, and click on the* **Subtotal** *icon in the* **Outline** *group.*
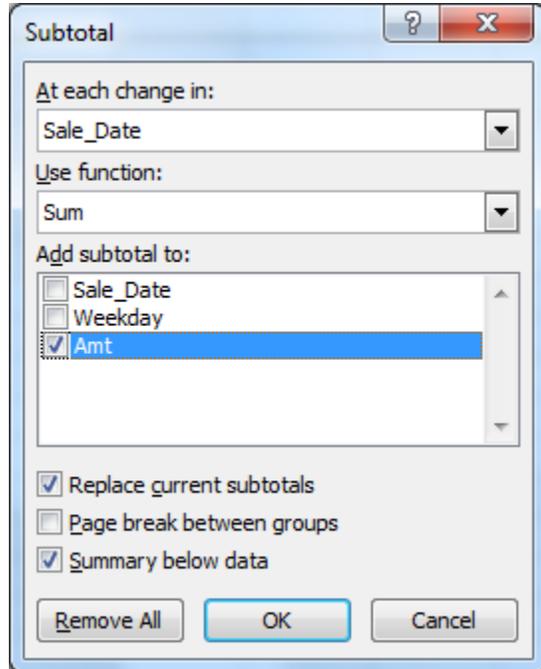
Figure 4.11

There are various sections included in the Subtotal dialog box. The **At each change in:** box allows you to specify the field you want to subtotal. In our case, we want a subtotal for each change in Weekday. You can choose Sum, Count, Average, Max, Min, and other functions in the **Use function:** box, depending on the type of subtotal you want. Typically, you perform calculations on numbers (sales, quantity, etc.) and you count non-numbers (weekdays, contracts, names, etc.). You check the fields you want to create subtotals for in the **Add subtotal to:** list. By default, Excel checks the last box. The next three check boxes allow you to replace subtotals that may currently be in the list, insert a page break between subtotal groups, and summarize groups below the data. Finally, you can remove all subtotals by clicking the **Remove All** button.

>   11. *Choose* **Weekday** *in the* **At each change in:** *list.*
>   12. *Make sure* **Sum** *is chosen in the* **Use function:** *list.*
>   13. *Make sure the* **Amt** *field in the* **Add subtotal to:** *list is checked.*
>   14. *Leave the* **Replace current subtotals** *and* **Summary below data** *boxes checked.*

Figure 4.12

15. Click **OK**.

Figure 4.13

16. Resize all columns if necessary.

Your data now contains subtotals after every change in weekday. With the Subtotaling tool, you can organize your data into levels. Look to the extreme left of the spreadsheet and you will see **grouping level boxes** 1 2 3 . You can change the view of the data by simply clicking on the desired level box.

*17. Click on **Level Box 1.***

1 2 3		A	B	C	D
	1	Sale Date	Weekday	Amt	
+	40		**Grand Total**	**4,085,193**	
	41				
	42				
	43				

Figure 4.14

The data is now summarized at a Grand Total level.

*18. Click on **Level 2**.*

1 2 3		A	B	C	
	1	Sale Date	Weekday	Amt	
+	7		**Sunday Total**	638,317	
+	13		**Monday Total**	837,964	
+	19		**Tuesday Total**	716,650	
+	24		**Wednesday Total**	371,808	
+	29		**Thursday Total**	518,424	
+	34		**Friday Total**	527,757	
+	39		**Saturday Total**	474,273	
−	40		**Grand Total**	4,085,193	
	41				

Figure 4.15

The data is now summarized at the weekday level. With the data summarized at the Weekday level (Level 2), you can easily see that Monday's total of $837,964 is clearly the highest sale day for the month of August. Sundays and Tuesdays appear to be the next highest days, but wait. August has 31 days and there are five Sundays, Mondays and Tuesdays in August. It would probably be better if we looked at the average daily sale instead of the total daily sales in August. Let's change up our subtotaling to do that.

*19. With any cell in the subtotals selected, click on the **Subtotal** icon.*
*20. In the **Subtotal** dialog box, change the **Use function** from **Sum** to **Average** and click **OK**.*

The Subtotal list expands out to show all data and the Total for each day changes to Average.

> *21. Click on the **Level 2** box.*
> *22. Expand the column widths if necessary to see all the data.*

1 2 3		A	B	C
	1	Sale Date	Weekday	Amt
+	7		**Sunday Average**	127,663
+	13		**Monday Average**	167,593
+	19		**Tuesday Average**	143,330
+	24		**Wednesday Average**	92,952
+	29		**Thursday Average**	129,606
+	34		**Friday Average**	131,939
+	39		**Saturday Average**	118,568
−	40		**Grand Average**	131,780
	41			

Figure 4.16

We see that Mondays is still the highest average sale day, followed by Tuesday and Friday. Wednesday and Saturday appear to be lackluster days, so you may want to suggest that Nitey-Nite Mattresses hold specials on Wednesdays and/or Saturdays to help boost sales on those days. You can display and hide further detail or subtotals by clicking on the **Show Detail** + or **Hide Detail** − buttons.

> *23. Click on the **Show Detail** icon + next to **Wednesday (Row 24).***

1 2 3		A	B	C
	1	Sale Date	Weekday	Amt
+	7		**Sunday Average**	127,663
+	13		**Monday Average**	167,593
+	19		**Tuesday Average**	143,330
·	20	04-Aug-10	Wednesday	98,295
·	21	11-Aug-10	Wednesday	95,289
·	22	18-Aug-10	Wednesday	95,022
·	23	25-Aug-10	Wednesday	83,202
−	24		**Wednesday Average**	92,952
+	29		**Thursday Average**	129,606
+	34		**Friday Average**	131,939
+	39		**Saturday Average**	118,568
−	40		**Grand Average**	131,780
	41			

Figure 4.17

Now you see the detail and aveage for Wednesday.

24. Click on the **Level 3** box.

1 2 3		A	B	C
	1	Sale Date	Weekday	Amt
·	2	01-Aug-10	Sunday	108,326
·	3	08-Aug-10	Sunday	128,387
·	4	15-Aug-10	Sunday	124,477
·	5	22-Aug-10	Sunday	162,180
·	6	29-Aug-10	Sunday	114,946
−	7		**Sunday Average**	127,663
·	8	02-Aug-10	Monday	166,067
·	9	09-Aug-10	Monday	135,677
·	10	16-Aug-10	Monday	179,646
·	11	23-Aug-10	Monday	211,325
·	12	30-Aug-10	Monday	145,249
−	13		**Monday Average**	167,593
·	14	03-Aug-10	Tuesday	133,801
·	15	10-Aug-10	Tuesday	126,109
·	16	17-Aug-10	Tuesday	125,866
·	17	24-Aug-10	Tuesday	138,216
·	18	31-Aug-10	Tuesday	192,657
−	19		**Tuesday Average**	143,330
·	20	04-Aug-10	Wednesday	98,295
·	21	11-Aug-10	Wednesday	95,289
·	22	18-Aug-10	Wednesday	95,022
·	23	25-Aug-10	Wednesday	83,202
−	24		**Wednesday Average**	92,952
·	25	05-Aug-10	Thursday	127,618

Figure 4.18

The data returns to showing the subtotals for all data.

25. Save and close the file.

Multiple Subtotals

The Subtotaling feature also allows you to perform subtotals on multiple levels of data.

1. Open the file at **C:\ExcelCEO\Excel 2010\Chapter4\2009_Sales.xlsx**.
2. Save the file as **C:\ExcelCEO\Excel 2010\Chapter4\my2009_Sales.xlsx**.

When using Subtotals, it is important to remember to FIRST sort the data in the same order you want to subtotal for, THEN perform the subtotals. In this spreadsheet, monthly sales for each store are listed. The fields we have to work with are Region, State, Store_No, Year, Month, Sales and Cost. We want to analyze Sales at ALL levels of the company, so we have to sort by Month, Store_No, State and Region. To perform a cumulative sort on multiple levels of data, you must first sort by the field that contains the *lowest* level of data and work your way up to the *highest*. In this example, the lowest level is by Month, and the highest level is by Region.

3. *Sort the table on the **Month** field in ascending order.*
4. *Continue to sort the data in ascending order in this order: **Store_No, State, Region**.*

	A	B	C	D	E	F	G
1	Region	State	Store_No	Year	Month	Sales	Cost
2	East	MA	1062	2009	1	63,378.92	20,646.69
3	East	MA	1062	2009	2	80,805.47	25,549.47
4	East	MA	1062	2009	3	126,557.54	39,153.18
5	East	MA	1062	2009	4	139,931.38	44,803.40
6	East	MA	1062	2009	5	130,075.06	42,547.21
7	East	MA	1062	2009	6	146,288.23	40,380.06
8	East	MA	1062	2009	7	87,695.83	22,032.07
9	East	MA	1062	2009	8	182,468.84	53,996.35
10	East	MA	1062	2009	9	176,032.98	57,833.36
11	East	MA	1062	2009	10	161,781.84	42,559.25
12	East	MA	1062	2009	11	144,721.27	38,852.53
13	East	MA	1062	2009	12	186,006.80	50,152.51
14	East	MA	1063	2009	1	59,092.03	20,252.75
15	East	MA	1063	2009	2	93,409.07	25,026.13
16	East	MA	1063	2009	3	148,016.63	41,920.08
17	East	MA	1063	2009	4	151,816.12	42,053.78
18	East	MA	1063	2009	5	125,018.69	32,219.38
19	East	MA	1063	2009	6	122,812.87	42,824.67

Figure 4.19

Now that the data is sorted appropriately, let's perform our multiple subtotals.

5. *With your cursor on only one cell on the spreadsheet, click on the **Subtotal** icon in the **Outline** group of the **Data** tab.*
6. *In the **Subtotal** dialog box, make sure that **Region** is chosen under **At each change in:**, **Sum** is selected under **Use function:**, **Sales** and **Cost** are both checked under **Add Subtotal to:**, and the **Replace current subtotals** and **Summary below data** boxes are checked.*
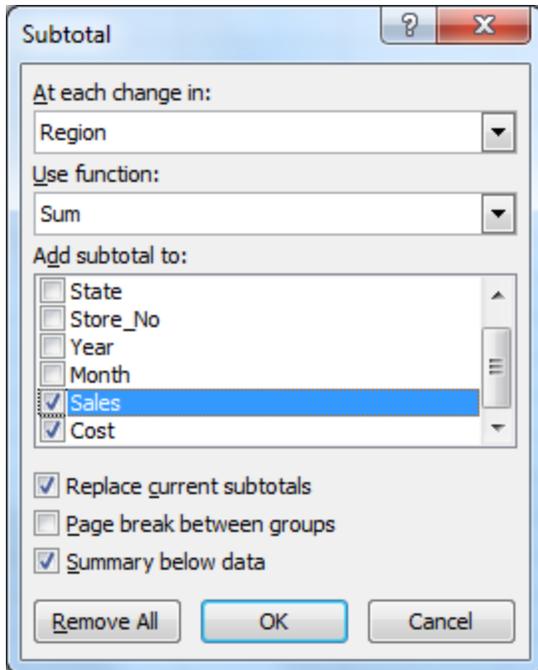
Figure 4.20

   7.   *Click* **OK***.*

Subtotals are now added at the Region level. Now we will add another level of subtotals at the State level. To do this, you will change the **At each change in:** box to State and uncheck the **Replace current subtotals** box.

   8.   *Resize the columns if necessary.*
   9.   *Click on the* **Subtotal** *icon.*
   10. *Under* **At each change in:** *change* **Region** *to* **State.**
   11. *Uncheck the* **Replace current subtotals** *box and click* **OK***.*

		A	B	C	D	E	F	G	H
	1	Region	State	Store_No	Year	Month	Sales	Cost	
•	2	East	MA	1062	2009	1	63,378.92	20,646.69	
•	3	East	MA	1062	2009	2	80,805.47	25,549.47	
•	4	East	MA	1062	2009	3	126,557.54	39,153.18	
•	5	East	MA	1062	2009	4	139,931.38	44,803.40	
•	6	East	MA	1062	2009	5	130,075.06	42,547.21	
•	7	East	MA	1062	2009	6	146,288.23	40,380.06	
•	8	East	MA	1062	2009	7	87,695.83	22,032.07	
•	9	East	MA	1062	2009	8	182,468.84	53,996.35	
•	10	East	MA	1062	2009	9	176,032.98	57,833.36	
•	11	East	MA	1062	2009	10	161,781.84	42,559.25	
•	12	East	MA	1062	2009	11	144,721.27	38,852.53	
•	13	East	MA	1062	2009	12	186,006.80	50,152.51	
•	14	East	MA	1063	2009	1	59,092.03	20,252.75	
•	15	East	MA	1063	2009	2	93,409.07	25,026.13	
•	16	East	MA	1063	2009	3	148,016.63	41,920.08	
•	17	East	MA	1063	2009	4	151,816.12	42,053.78	
•	18	East	MA	1063	2009	5	125,018.69	32,219.38	
•	19	East	MA	1063	2009	6	123,812.87	42,824.67	
•	20	East	MA	1063	2009	7	105,292.94	33,508.39	
•	21	East	MA	1063	2009	8	165,027.99	56,236.83	
•	22	East	MA	1063	2009	9	159,583.23	40,429.72	
•	23	East	MA	1063	2009	10	132,400.57	38,320.56	
•	24	East	MA	1063	2009	11	143,802.87	43,917.24	
•	25	East	MA	1063	2009	12	200,324.98	64,211.22	
−	26		MA				3,233,342.15	959,426.83	
•	27	East	NJ	1036	2009	1	30,907.72	10,514.18	
•	28	East	NJ	1036	2009	2	29,646.88	8,556.49	

Figure 4.21

Subtotals at the State level are added.

12. *Add another level of subtotals at the* **Store_No** *level.*

1 2 3 4 5		A	B	C	D	E	F	G
	1	Region	State	Store_No	Year	Month	Sales	Cost
	2	East	MA	1062	2009	1	63,378.92	20,646.69
	3	East	MA	1062	2009	2	80,805.47	25,549.47
	4	East	MA	1062	2009	3	126,557.54	39,153.18
	5	East	MA	1062	2009	4	139,931.38	44,803.40
	6	East	MA	1062	2009	5	130,075.06	42,547.21
	7	East	MA	1062	2009	6	146,288.23	40,380.06
	8	East	MA	1062	2009	7	87,695.83	22,032.07
	9	East	MA	1062	2009	8	182,468.84	53,996.35
	10	East	MA	1062	2009	9	176,032.98	57,833.36
	11	East	MA	1062	2009	10	161,781.84	42,559.25
	12	East	MA	1062	2009	11	144,721.27	38,852.53
	13	East	MA	1062	2009	12	186,006.80	50,152.51
	14			1062			1,625,744.16	478,506.08
	15	East	MA	1063	2009	1	59,092.03	20,252.75
	16	East	MA	1063	2009	2	93,409.07	25,026.13
	17	East	MA	1063	2009	3	148,016.63	41,920.08
	18	East	MA	1063	2009	4	151,816.12	42,053.78
	19	East	MA	1063	2009	5	125,018.69	32,219.38
	20	East	MA	1063	2009	6	123.812.87	42.824.67

Figure 4.22

Now you have five levels of subtotals.

13. *Click on the* **1, 2, 3, 4** *and* **5 level boxes** *and the* **Show Detail** **+** *and* **Hide Detail** **−** *buttons to see the* **detail** *or* **summary** *levels you want.*

Review Questions*: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 4, Section 1 of 2** option and complete the review questions.*

Filters

While subtotaling is a very useful feature, sometimes you just want to filter the data without subtotaling. One option to get that accomplished is to use the **Filter** functionality.

1. *Click on the* **Subtotal** *icon and click on* **Remove All***.*
2. *On the* **Data** *tab, click on the* **Filter** *icon.*

◢	A	B	C	D	E	F	G	H
1	Region ▾	Sta ▾	Store_▾	Ye ▾	Mon ▾	Sales ▾	Cost ▾	
2	East	MA	1062	2009	1	63,378.92	20,646.69	
3	East	MA	1062	2009	2	80,805.47	25,549.47	
4	East	MA	1062	2009	3	126,557.54	39,153.18	
5	East	MA	1062	2009	4	139,931.38	44,803.40	
6	East	MA	1062	2009	5	130,075.06	42,547.21	
7	East	MA	1062	2009	6	146,288.23	40,380.06	
8	East	MA	1062	2009	7	87,695.83	22,032.07	
9	East	MA	1062	2009	8	182,468.84	53,996.35	
10	East	MA	1062	2009	9	176,032.98	57,833.36	
11	East	MA	1062	2009	10	161,781.84	42,559.25	
12	East	MA	1062	2009	11	144,721.27	38,852.53	
13	East	MA	1062	2009	12	186,006.80	50,152.51	
14	East	MA	1063	2009	1	59,092.03	20,252.75	
15	East	MA	1063	2009	2	93,409.07	25,026.13	
16	East	MA	1063	2009	3	148,016.63	41,920.08	
17	East	MA	1063	2009	4	151,816.12	42,053.78	
18	East	MA	1063	2009	5	125,018.69	32,219.38	

Figure 4.23

Drop-down arrows, or the filter arrows, appear to the right of each field in the table.

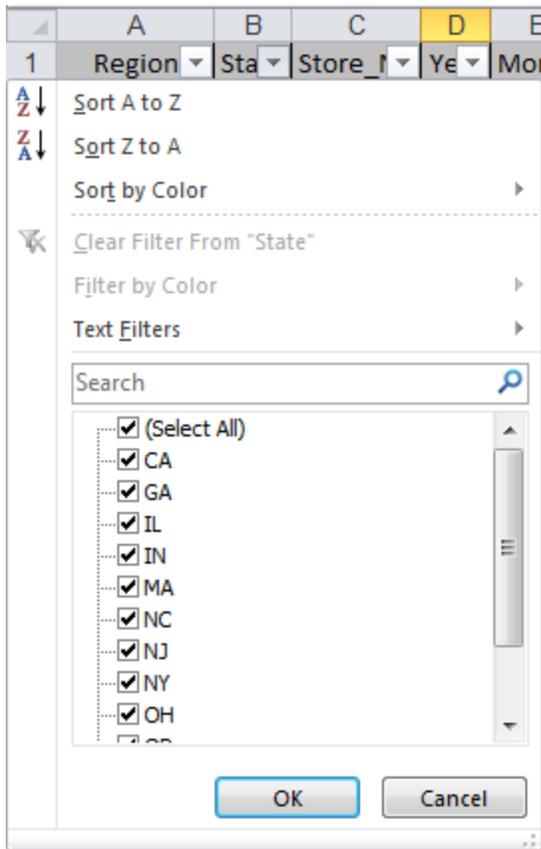3. *Click on the* **State** *drop-down arrow.*

Figure 4.24

A list of all the states available in the State field appears. In this list, you can choose as many or as few options as you want.

4. *Uncheck the* **(Select All)** *box (all options are deselected), check the* **IN** *box and click the* **OK** *button.*

	A	B	C	D	E	F	G	H
1	Region ▾	Sta ⊥▾	Store_I ▾	Ye ▾	Mon ▾	Sales ▾	Cost ▾	
122	North	IN	1055	2009	1	67,132.75	21,021.83	
123	North	IN	1055	2009	2	90,467.47	26,458.67	
124	North	IN	1055	2009	3	121,300.43	35,017.91	
125	North	IN	1055	2009	4	93,805.61	29,020.94	
126	North	IN	1055	2009	5	132,438.41	36,192.24	
127	North	IN	1055	2009	6	88,528.27	22,095.20	
128	North	IN	1055	2009	7	95,676.46	26,537.57	
129	North	IN	1055	2009	8	150,971.39	43,452.76	
130	North	IN	1055	2009	9	121,617.53	33,044.46	
131	North	IN	1055	2009	10	105,001.45	31,657.25	
132	North	IN	1055	2009	11	118,115.39	32,959.41	
133	North	IN	1055	2009	12	172,797.11	56,670.92	
350								

Figure 4.25

The table is now filtered for only the data where State = "IN". Notice that the Row numbers turned to blue (indicating they are filtered rows) and the State drop down arrow has a small filter icon in it.

5. Click on the **Region** *drop-down menu.*

You see that only the North region appears. When you choose one filter, the remaining fields are also filtered for that selection, so when you picked State = "IN", which is in the North Region, only North appears under Region.

6. *Click* **Cancel** *in the* **Region** *filter list.*
7. *Click on the* **State** *filter and choose* **GA** *in addition to* **IN**, *and click* **OK**.

Now you have a filtered list containing all records where the state is either IN (Indiana) or GA (Georgia).

Number Filters

You can custom filter a list based on a number of criteria. If you click on any filter, you will see different options based on the data type in the field. For example, if you click on the State field filter, you'll see the Sort A to Z, Sort Z to A and Text filters options. If you click on the Sales field filter, you'll see a different set of filter options, as the Sales field contains numbers, not text. In this next exercise, we'll filter the entire list to see the top 20 stores in terms of sales per month.

8. *On the* **State** *drop-down menu, choose* **(Select All)** *(to take off the custom* **IN** *and* **GA** *filter) and click* **OK**.

9. *On the* **Sales** *drop-down menu, point to* **Number Filters** *and choose* **Top 10**…
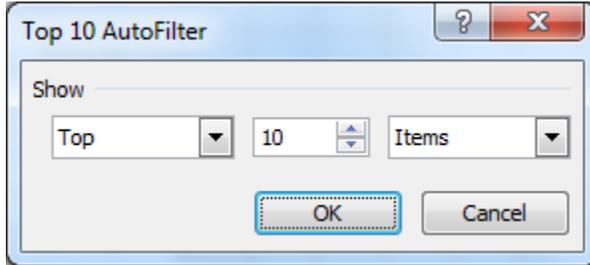
Figure 4.26

The Top 10 AutoFilter dialog box appears. In this box, you don't have to choose only the Top 10. You can choose Top or Bottom, and you can use the spinner button in the box that reads 10 to change the number.

10. *Click on the up arrow in the box that reads* **10** *and scroll up until it shows*
    20 *(or you can just type* **20** *in the box).*
11. *Click* **OK***.*

	A	B	C	D	E	F	G
1	Region ▾	Sta ▾	Store_▾	Ye ▾	Mon ▾	Sales ▾	Cost ▾
13	East	MA	1062	2009	12	186,006.80	50,152.51
25	East	MA	1063	2009	12	200,324.98	64,211.22
46	East	NJ	1040	2009	9	187,403.09	59,533.26
49	East	NJ	1040	2009	12	223,902.09	70,691.18
81	East	NY	1027	2009	8	213,136.45	55,326.37
82	East	NY	1027	2009	9	198,863.99	57,484.52
85	East	NY	1027	2009	12	261,006.27	65,569.75
97	East	NY	1032	2009	12	196,572.95	52,421.96
109	North	IL	1005	2009	12	212,116.69	68,535.02
112	North	IL	1018	2009	3	185,604.55	62,175.25
117	North	IL	1018	2009	8	197,599.83	61,116.87
118	North	IL	1018	2009	9	194,023.81	50,663.32
121	North	IL	1018	2009	12	259,374.12	66,412.43
141	North	OH	1019	2009	8	183,012.34	52,491.79
153	North	OH	1034	2009	8	188,951.72	54,982.34
157	North	OH	1034	2009	12	257,578.95	78,068.14
169	North	OH	1051	2009	12	233,311.31	73,670.33
229	South	NC	1012	2009	12	188,458.35	64,136.92
285	West	CA	1024	2009	8	208,798.56	57,632.79
289	West	CA	1024	2009	12	227,762.76	62,745.95

Figure 4.27

You now have a list of all the top 20 stores and the months when they were in the top 20. Notice it doesn't sort the data, but it simply chooses the top 20.

   12. *Click on the* **Sales** *drop down menu and choose* **(Select All)** *(to take off the* **Top 20** *filter) and click* **OK**.

Search Filters

Excel 2010 added a new feature called Search filters. When you click on a filter drop down arrow, a Search box appears. As you start to type the characters of the string or number you're looking for, Excel filters the items displayed in the filter list for those characters. This comes in very handy especially when you have a list with hundreds or thousands of items. Let's try an example using the Items file.

   1. *With the* **my2009_Sales.xlsx** *file still open, open the* **Item.xlsx** *file.*
   2. *Resize all columns so you can read the headings and the data.*
   3. *Click on the* **Filter** *icon to apply an* **AutoFilter** *to the data.*
   4. *Click on the* **AutoFilter** *for* **Series**.

Figure 4.28

Notice that a Search box appears under the Text Filters option. You use this Search box to further filter the list.

> 5. *In the **Search** box, type the letter **o** (upper or lower case – it doesn't matter), but don't click **OK** yet.*

Figure 4.29

The list is filtered for all items that contain the letter "o". As you type more characters, the list is further filtered. This same feature exists when we explore PivotTables in Chapters 11 and 12. I'm not going to spend any more time on the Search filter, but it is a cool thing to know.

> 6. *Click **Cancel**.*
> 7. *Close the **Item.xlsx** file without saving it.*

Advanced Filtering

Another nifty function is **Advanced Filtering**. With Advanced Filtering, you can set up a criteria range and query data that meets that criteria. Let's try an example.

1. *On the* **my2009_Sales.xlsx** *file, click on the* **Filter** *icon to turn off the* **AutoFilter**.
2. *Select* **Rows 1 through 5** *and then click on the* **Insert** *icon (not the drop down arrow next to it) in the* **Cells** *group of the* **Home** *tab.*
3. *Copy* **Cells A6 through G6** *and paste the range to* **Cell A1**.

The range A1 through G1 will be the headings for your criteria range.

4. *In* **Cell E2***, type* **5***.*

	A	B	C	D	E	F	G	H
1	Region	State	Store_No	Year	Month	Sales	Cost	
2					5			
3								
4								
5								
6	Region	State	Store_No	Year	Month	Sales	Cost	
7	East	MA	1062	2009	1	63,378.92	20,646.69	
8	East	MA	1062	2009	2	80,805.47	25,549.47	
9	East	MA	1062	2009	3	126,557.54	39,153.18	
10	East	MA	1062	2009	4	139,931.38	44,803.40	
11	East	MA	1062	2009	5	130,075.06	42,547.21	
12	East	MA	1062	2009	6	146,288.23	40,380.06	
13	East	MA	1062	2009	7	87,695.83	22,032.07	
14	East	MA	1062	2009	8	182,468.84	53,996.35	
15	East	MA	1062	2009	9	176,032.98	57,833.36	
16	East	MA	1062	2009	10	161,781.84	42,559.25	
17	East	MA	1062	2009	11	144,721.27	38,852.53	
18	East	MA	1062	2009	12	186,006.80	50,152.51	
19	East	MA	1063	2009	1	59,092.03	20,252.75	
20	East	MA	1063	2009	2	93.409.07	25.026.13	

Figure 4.28

This setup will query all sales in the table where the month is equal to 5.

5. *Click on the* **Advanced** *icon in the* **Sort & Filter** *group of the* **Data** *tab.*
6. *Make sure the* **Filter the list, in place** *option under* **Action** *is selected.*
7. *In the* **List range** *box, type or select* **$A$6:$G$354** *(if it's not already there)*
8. *In the* **Criteria range** *box, type or select* **$A$1:$G$2***.*

Figure 4.29

> 9. Click **OK**.

Figure 4.30

The records below the criteria range are now filtered for all sales in Month 5. You can also query on multiple criteria and use wildcard characters in your criteria. When you do this, however, you must be careful. Remember that when you input criteria on more than one line, Excel will filter records that match EITHER criteria. Let's suppose you want to filter for all records in May **or** June where the sales are greater than or equal to $100,000.

*10. In **Cell E3**, type **6**.*
*11. In **Cells F2** and **F3**, type **>=100000**.*
*12. Click on the **Advanced** button in the **Sort and Filter group**.*
*13. In the **Advanced Filter** dialog box, change the **Criteria range** to*
   ***$A$1:$G$3** (to add one more row in the criteria).*
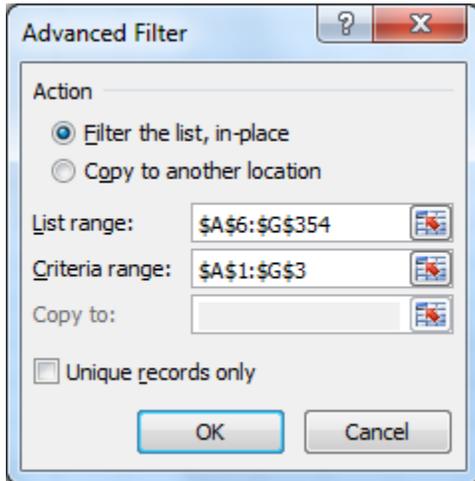
Figure 4.31

*14. Click **OK**.*

	A	B	C	D	E	F	G	
1	Region	State	Store_No	Year	Month	Sales	Cost	
2						5 >=100000		
3						6 >=100000		
4								
5								
6	Region	State	Store_No	Year	Month	Sales	Cost	
11	East	MA	1062	2009	5	130,075.06	42,547.21	
12	East	MA	1062	2009	6	146,288.23	40,380.06	
23	East	MA	1063	2009	5	125,018.69	32,219.38	
24	East	MA	1063	2009	6	123,812.87	42,824.67	
47	East	NJ	1040	2009	5	115,510.95	36,630.49	
48	East	NJ	1040	2009	6	138,124.47	39,724.65	
59	East	NJ	1060	2009	5	142,098.45	45,197.83	
83	East	NY	1027	2009	5	155,336.90	50,154.47	
84	East	NY	1027	2009	6	122,189.20	40,543.91	
95	East	NY	1032	2009	5	145,043.97	49,934.60	
96	East	NY	1032	2009	6	121,012.96	38,199.65	
107	North	IL	1005	2009	5	134,570.80	38,564.48	
108	North	IL	1005	2009	6	112,248.11	33,932.84	
119	North	IL	1018	2009	5	148,881.91	46,021.99	
120	North	IL	1018	2009	6	115,648.95	33,811.88	
131	North	IN	1055	2009	5	132,438.41	36,192.24	
143	North	OH	1019	2009	5	100,780.57	29,368.45	
155	North	OH	1024	2009	5	127,811.32	46,328.04	

Figure 4.32

The list is now filtered for sales equal to or greater than $100,000 in May or June.

Filtering for Unique Values

With the Advanced Filter dialog box, you can query a table and extract a dataset of unique values. Let's suppose you want to extract a list of unique store numbers from the 2009_Sales table. In that table, the store numbers are repeated 12 times, one time for each month. All we want is a simple list of all the store numbers (we may need those numbers in another analysis we are doing). With Advanced Filtering, it's a snap.

1. Click on the **Clear** icon in the **Sort & Filter** group of the **Data** tab to turn off the **Advanced Filter**.
2. Click on the **Advanced** icon.
3. In the **Advanced Filter** dialog box, choose the **Copy to another location** radio button.
4. Edit the **List range**: to read **$C$6:$C$354** (Column C contains the store numbers).

5. *Delete the range in the* **Criteria range** *box.*
6. *In the* **Copy to** *box, type* **I1** *(This is where we want to put the filtered list.).*
7. *Check the* **Unique records only** *box.*
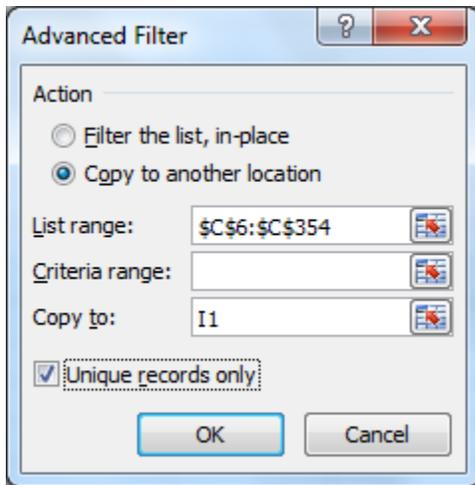
Figure 4.33

8. *Click* **OK**.

	A	B	C	D	E	F	G	H	I
1	Region	State	Store_No	Year	Month	Sales	Cost		Store_No
2					5	>=100000			1062
3					6	>=100000			1063
4									1036
5									1040
6	Region	State	Store_No	Year	Month	Sales	Cost		1060
7	East	MA	1062	2006	1	58,282.15	19,143.18		1001
8	East	MA	1062	2006	2	74,307.30	23,688.94		1027
9	East	MA	1062	2006	3	116,380.10	36,302.02		1032
10	East	MA	1062	2006	4	128,678.45	41,540.79		1005
11	East	MA	1062	2006	5	119,614.75	39,448.89		1018
12	East	MA	1062	2006	6	134,524.10	37,439.56		1055
13	East	MA	1062	2006	7	80,643.55	20,427.68		1019
14	East	MA	1062	2006	8	167,795.15	50,064.30		1034
15	East	MA	1062	2006	9	161,876.85	53,621.90		1051
16	East	MA	1062	2006	10	148,771.75	39,460.06		1057
17	East	MA	1062	2006	11	133,083.15	36,023.26		1059
18	East	MA	1062	2006	12	171,048.60	46,500.37		1009
19	East	MA	1063	2006	1	54,340.00	18,777.93		1011
20	East	MA	1063	2006	2	85,897.35	23,203.71		1012
21	East	MA	1063	2006	3	136,113.50	38,867.43		1047
22	East	MA	1063	2006	4	139,607.45	38,991.40		1050

Figure 4.34

You now have a list of unique store numbers in Column I. Pretty easy, huh?

9. *Save and close the file.*

__Review Questions__: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the __Excel 2010 Review Questions, Chapter 4, Section 2 of 2__ option and complete the review questions.

Conclusion

In this chapter, you opened and worked with multiple files, arranged them in Cascading order and copied tabs from one file to another. You learned how to use the Sort A-Z (Ascending) and Sort Z-A (Descending) icons. To re-emphasize, when using these icons, click on only ONE CELL in the column you want to sort. DO NOT SELECT THE ENTIRE COLUMN. You also learned how to perform custom sorts on the data. You worked a few examples using the Subtotal feature, which comes in handy when analyzing tables with many rows of data. You performed multiple subtotals on various levels of data. You also learned how to filter data on a spreadsheet including using Filter, custom filtering, Top 10 filtering, Search filters and explored Advanced Filters.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER FIVE - PRINTING

In this chapter, you will:

- Use the Print and Print Preview dialog boxes.
- Print a multiple page report.
- Work with Page Breaks and Margins.
- Insert Headers and Footers.
- Print using Non-Contiguous Ranges.
- Hide Rows and Columns.
- Group columns of data.
- Use the Page to Fit Functionality.
- Save a file as a PDF document.

Printing

"The paperless office will never exist." At least in my lifetime it won't. You can quote me on that one. Excel gives you a wide variety of tools to create, organize, manipulate, slice and dice your data, but many people will want to see a printed report or presentation. It will always be necessary to share information with others, and printing a report, graph, or table is essential in a working office environment, and more particularly in an accounting environment.

When considering how you want your report to look, it's best to begin with the end in mind. By that I mean think about how you want your report to look. How far from the edges (top, bottom, right, left) do you want the report? Do you want it on one page or multiple pages? Landscape or portrait? Large or small font? Color or black and white? If you can picture in your mind how you want the report to look, you're half-way there. Let's start off with designing a simple one-page report.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter5\Inc_Stmt.xlsx**.
2. *Save it as* **C:\ExcelCEO\Excel 2010\Chapter5\myInc_Stmt.xlsx**.

	A	B	C	D	E
1	Nitey-Nite Mattresses				
2					
3	Summary Net Income Statement				
4	As of 5/31/2010				
5	Store No. 1026				
6					
7		MTD	MTD		
8		May 2010	May 2009	$ Diff	% Diff
9	**Revenue**				
10	Mattresses	$73,010	$62,350	$10,660	117.1%
11	Pillows	3,151	3,231	-80	97.5%
12	Total Merchandise	76,161	65,581	10,580	116.1%
13	Services	3,190	3,110	80	102.6%
14	Discounts	-3,354	-1,943	-1,411	172.6%
15	**Total Revenue**	75,997	66,748	9,249	113.9%
16					
17	**Variable Expenses**				
18	Cost of Merchandise	19,416	16,857	2,559	115.2%
19	% of Revenue	25.5%	25.3%		
20	Selling Expenses	9,805	8,443	1,362	116.1%
21	% of Revenue	12.9%	12.6%		
22	**Variable Expenses Total**	29,221	25,300	3,921	115.5%
23	% of Revenue	38.5%	37.9%		
24					
25	**Fixed Expenses**				
26	Salary Expense	7,634	7,149	485	106.8%
27	% of Revenue	10.0%	10.7%		

Figure 5.1

The file is similar to the financial statement you created in Chapter 1.

Print Preview

In Excel 2010, there are a number of ways to display the various print features. We'll explore those methods in the next few exercises. To **preview** how the report will look when it is printed, you first need to set the print range.

3. *Select the area of the report (***Cells A1*** through ***E39***).*
4. *Click on the **Page Layout** tab, click on the **Print Area** icon in the **Page Setup** group, and select **Set Print Area**.*

The print area is now set, so you can now preview the report by clicking on the **Print Preview** icon. If you don't set the print area, Excel 2010 usually does a good job of figuring out what your print area should be, unless there are a lot of blank rows and/or columns, so most of the time you don't even need to set the print area. I do a lot of non-contiguous ranges, so I use the Set Print Range functionality quite a bit. On my computer, I have the Set Print Area icon as one of the icons in my Quick Access Toolbar. Another icon we placed in the Quick Access Toolbar in Chapter 3 is the Print Preview icon. Print Preview allows you to look at a graphic of the report as it will print

5. *Click on the* **Print Preview** *icon* 🔍 *in the* **Quick Access Toolbar***.*
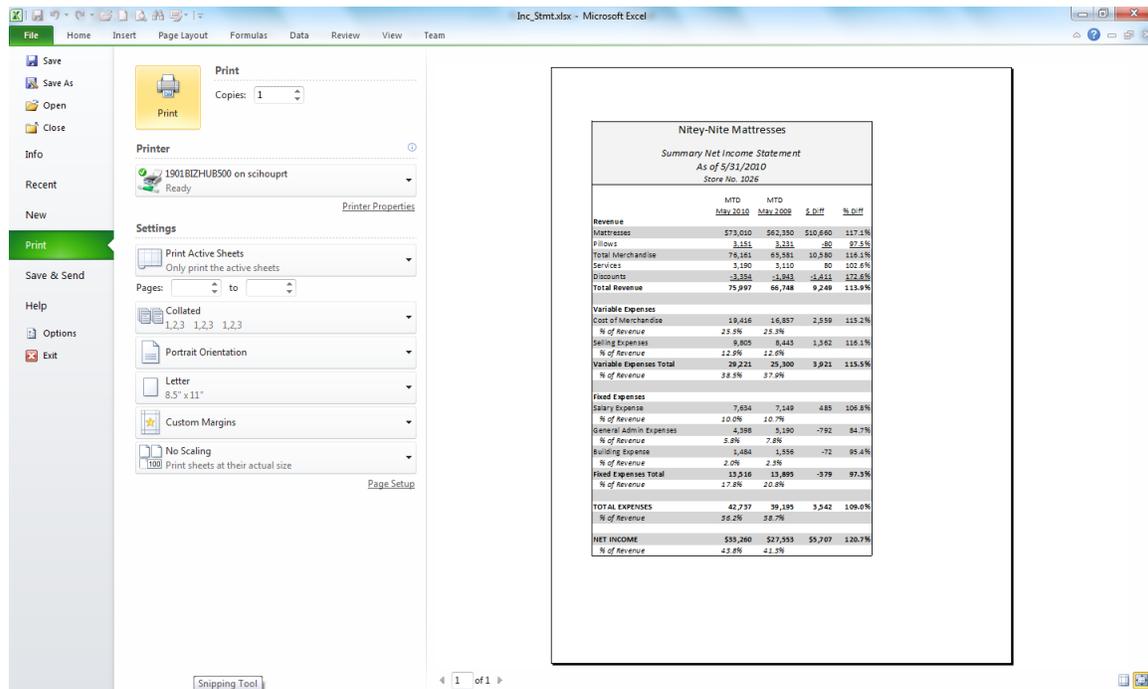
Figure 5.2

Since we haven't set any of the margins or centered the report yet, it appears at the top of the page and over to the left.

In Print Preview mode, there are a number of buttons at the top of the screen. Some of them are not activated if they do not apply. The **Print** button prints the document. The **Printer** status button allows the user to choose a different printer. Under the Settings section are several icons that allow the user to change various settings, such as print area selections, page orientation, paper size, margins, and scaling. The **Page Setup** link below the Settings section is a link to the old Page Setup dialog box that many people used in previous versions of Excel. In the lower right corner of Print Preview view are two icons: **Show Margins** and **Zoom to Page**. You use the **Show Margins** button to see the lines where the margins are set. The **Zoom to Page** button allows you to see a larger and smaller view of the page as it will print out. In the lower center section of Print Preview mode are navigation buttons that allow you to scroll to the previous page or next page in multiple page reports. To close out of Print Preview view, just click on the Home tab (or

any of the tabs along the top of the Office Ribbon). In the past, I used the **Page Setup** dialog box to perform all of my printing functions, and there are some functionalities in the Page Setup dialog box that are necessary to use, so let's explore using that dialog box.

> 6. *Click on the* **Page Setup** *link and the* **Page Setup** *dialog box opens.*
> 7. *Make sure the* **Page** *tab is selected.*
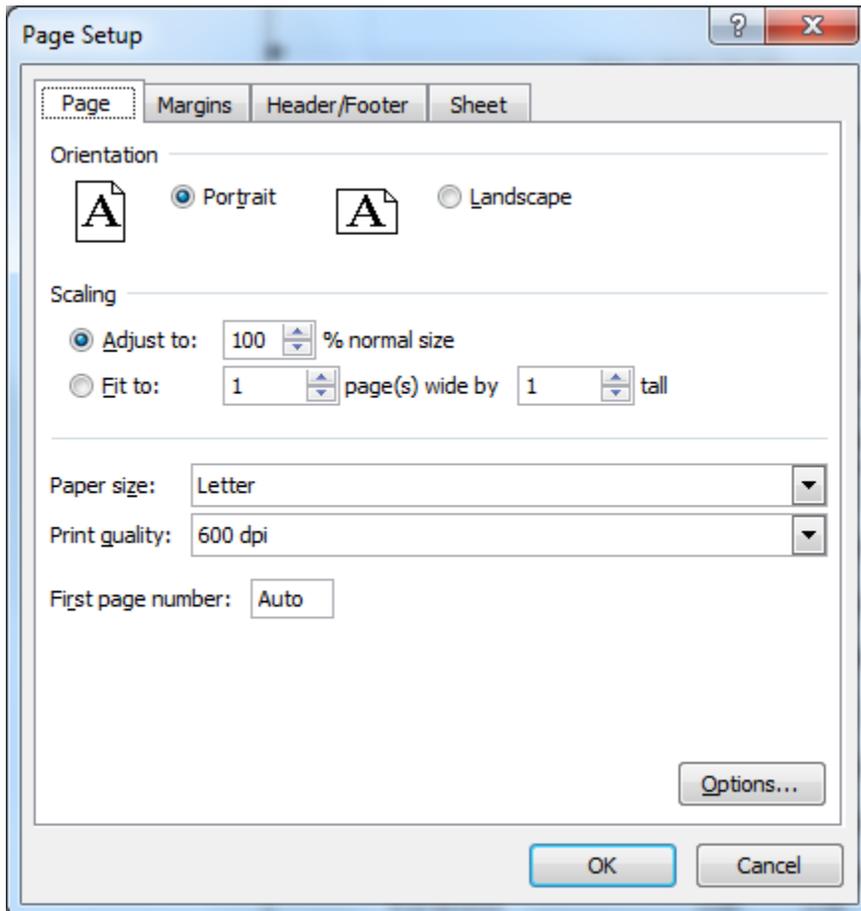
Figure 5.3

On the Page tab, you can do things like change the **orientation** of the page (make it Portrait or Landscape) reduce or enlarge it, make it fit within a specified number of pages, and change the paper size. For now, we will accept the default values (Portrait, 100% of normal size, using Letter size paper).

> 8. *Click on the* **Margins** *tab.*
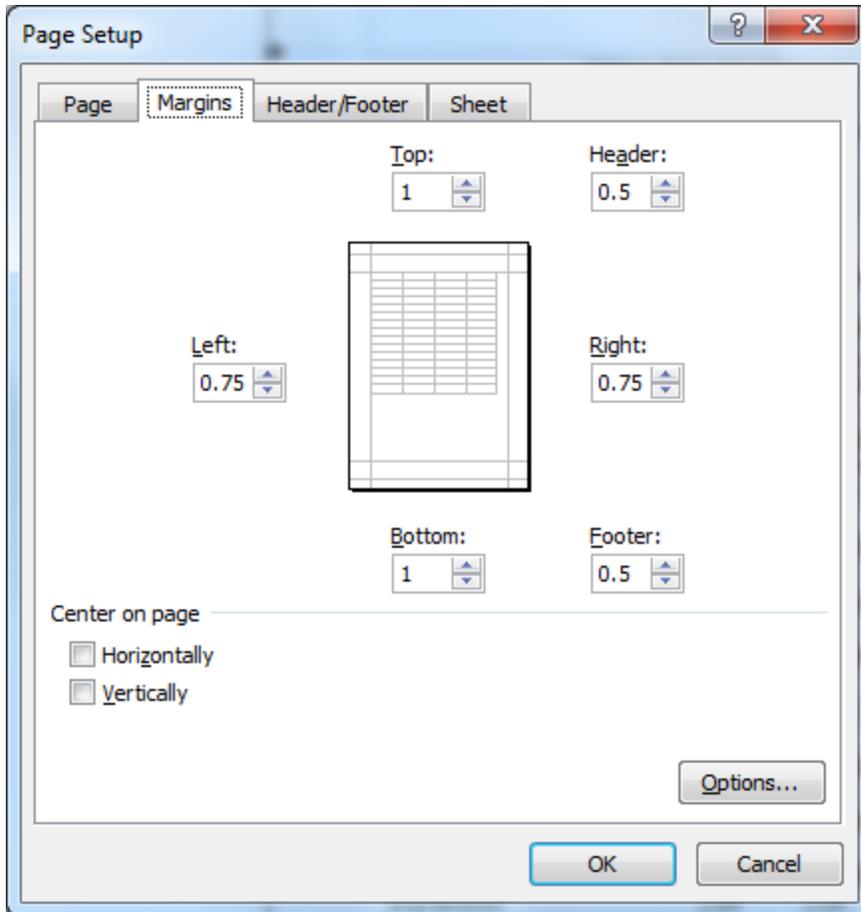
Figure 5.4

In this tab, you can set the left, right, top, bottom, header, and footer margins. You can also center the report horizontally and/or vertically.

   9. *Check the* **Horizontally** *and* **Vertically** *boxes and click* **OK**.

You should now see a full page preview of how your document should appear before it is printed, centered horizontally and vertically.

   10. *Click the* **Zoom to Page** *icon.*
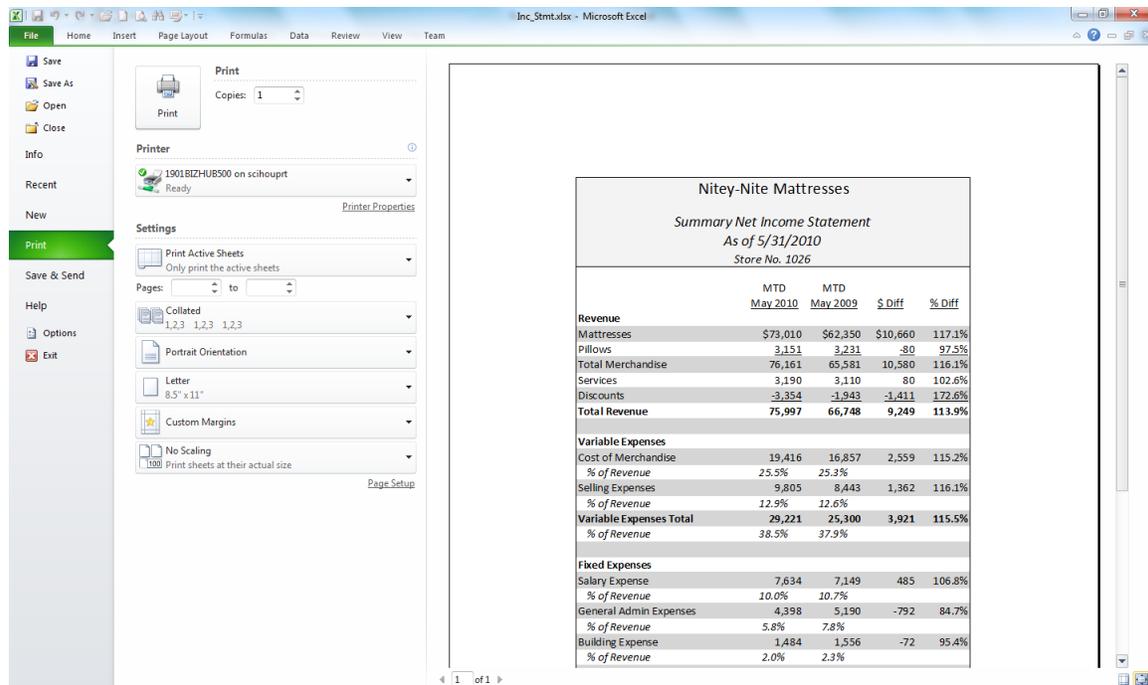
Figure 5.5

The document increases in size (i.e., it zooms in). Click the Zoom to Page icon again to return the print preview to it full size.

> *11. Click the **Zoom to Page** icon again.*
> *12. Click the **Home** tab (to get out of **Print Preview** view and return to the worksheet).*
> *13. Save and close the file.*

Multiple Page Reports

Let's open another report for a more complex printing exercise. In this example, you will set up a report to **print on multiple pages**.

> 1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter5\ Top_Ten_May_10.xlsx**.
> 2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter5\ myTop_Ten_May_10.xlsx**.

This file is similar to the Top Ten file you completed in Chapter 1. We will work with it to prepare a printed report.

> 3. *Open the report in* **Print Preview**.

Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike
March							
3/1/2010	0	0	2,688	0	0	0	2,346
3/2/2010	3,354	2,586	2,526	3,047	2,223	3,031	2,853
3/3/2010	3,472	0	0	3,011	0	0	3,714
3/4/2010	0	2,031	2,927	0	3,728	2,465	3,887
3/5/2010	2,091	3,450	3,039	2,697	3,832	3,038	2,468
3/6/2010	3,510	0	0	2,456	3,430	2,588	3,817
3/7/2010	0	2,306	0	2,648	0	0	2,511
3/8/2010	2,874	3,836	2,639	0	2,487	3,822	0
3/9/2010	3,011	3,610	2,459	0	0	0	0
3/10/2010	0	3,478	2,472	0	3,602	3,388	0
3/11/2010	0	2,131	0	3,039	3,008	0	2,164
3/12/2010	3,039	2,960	0	2,234	2,106	2,792	3,369
3/13/2010	3,421	2,284	2,876	3,675	3,290	2,947	3,632
3/14/2010	0	3,412	3,338	3,454	2,759	2,228	2,430
3/15/2010	3,687	2,076	3,238	2,494	0	0	3,585
3/16/2010	2,138	3,612	3,406	3,396	3,182	3,079	0
3/17/2010	0	2,520	3,649	2,346	3,038	2,632	2,820
3/18/2010	3,862	2,869	0	3,874	3,687	2,260	3,727
3/19/2010	3,624	2,143	0	0	2,134	3,550	2,790
3/20/2010	3,664	2,944	3,868	0	2,955	0	3,126
3/21/2010	0	3,155	2,560	2,873	2,282	3,230	3,263
3/22/2010	3,309	3,804	0	0	2,850	2,597	2,116
3/23/2010	2,272	3,539	2,654	3,001	0	2,883	0
3/24/2010	0	2,476	2,527	3,743	2,388	3,813	3,152
3/25/2010	3,422	2,713	0	2,422	3,235	2,208	2,587
3/26/2010	3,238	2,384	3,107	2,623	3,884	0	0
3/27/2010	2,860	2,868	2,259	3,511	0	2,445	3,382
3/28/2010	3,765	3,281	0	2,963	0	3,233	3,282
3/29/2010	1,961	3,093	2,178	0	3,839	2,235	2,181
3/30/2010	3,364	3,370	2,892	0	0	3,271	3,139
3/31/2010	2,794	2,252	0	2,867	3,005	2,207	3,059
TOTALS	68,732	81,184	57,301	62,372	66,944	65,942	75,402
April							
4/1/2010	0	0	0	3,632	0	2,596	0

Figure 5.6

By default, Excel sets up your report in a **Portrait** format. In our report, we have 11 columns of data, consisting of one column of dates and 10 columns of people, and it doesn't appear to all fit in a Portrait mode, as there are only eight fields of data that appear in this first page of the report. If you click on the Next Page button a few times, you'll see that the column headings don't repeat and that there is partial data on some of the pages. One option to make it fit appropriately is to make the report appear with a **Landscape** orientation.

4. *Click on the* **Orientation** *button in the center section of the screen and change it to* **Landscape Orientation**.

Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike	Lee Underwood	Thomas Maker
March									
3/1/2010	0	0	2,688	0	0	0	2,346	3,270	3,826
3/2/2010	3,354	2,586	2,526	3,047	2,223	3,031	2,853	2,911	2,360
3/3/2010	3,472	0	0	3,011	0	0	3,714	2,198	3,873
3/4/2010	0	2,031	2,927	0	3,728	2,465	3,887	3,439	3,802
3/5/2010	2,091	3,450	3,039	2,697	3,832	3,038	2,468	3,074	3,853
3/6/2010	3,510	0	0	2,456	3,430	2,588	3,817	0	0
3/7/2010	0	2,306	0	2,648	0	0	2,511	2,016	2,583
3/8/2010	2,874	3,836	2,639	0	2,487	3,822	0	0	0
3/9/2010	3,011	3,610	2,459	0	0	0	0	2,115	3,546
3/10/2010	0	3,478	2,472	0	3,602	3,388	0	3,658	0
3/11/2010	0	2,131	0	3,039	3,008	0	2,164	3,155	2,596
3/12/2010	3,039	2,960	0	2,234	2,106	2,792	3,369	2,684	2,295
3/13/2010	3,421	2,284	2,876	3,675	3,290	2,947	3,632	0	0
3/14/2010	0	3,412	3,338	3,454	2,759	2,228	2,430	3,780	3,443
3/15/2010	3,687	2,076	3,238	2,494	0	0	3,585	3,842	2,634
3/16/2010	2,138	3,612	3,406	3,396	3,182	3,079	0	2,330	3,167
3/17/2010	0	2,520	3,649	2,346	3,038	2,632	2,820	2,662	2,539
3/18/2010	3,862	2,869	0	3,874	3,687	2,260	3,727	1,961	0
3/19/2010	3,624	2,143	0	0	2,134	3,550	2,790	2,985	2,531

Figure 5.7

The report looks better, but still needs some work. If you click the Next button a few times, you will see that the report is now eight pages long (we want it to be three pages long – one page for each month) and that the last person, Evan Thurston, is on a page by himself. To make Evan Thurston fit on the same page as the other people, we need to adjust the margins of the report.

5. *Click on the* **Page Setup** *link and choose the* **Margins** *tab.*
6. *Reduce the* **Left:** *and* **Right:** *boxes down to* **.25***, and the* **Top** *and* **Bottom** *margins down to* **.50***, check the* **Horizontally** *and* **Vertically** *boxes and click* **OK***.*

Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike	Lee Underwood	Thomas Maker	Evan Thurston
March										
3/1/2010	0	0	2,688	0	0	0	2,346	3,270	3,826	3,482
3/2/2010	3,354	2,586	2,526	3,047	2,223	3,031	2,853	2,911	2,360	2,521
3/3/2010	3,472	0	0	3,011	0	0	3,714	2,198	3,873	2,966
3/4/2010	0	2,031	2,927	0	3,728	2,465	3,887	3,439	3,802	0
3/5/2010	2,091	3,450	3,039	2,697	3,832	3,038	2,468	3,074	3,853	0
3/6/2010	3,510	0	0	2,456	3,430	2,588	3,817	0	0	3,683
3/7/2010	0	2,306	0	2,648	0	0	2,511	2,016	2,583	2,367
3/8/2010	2,874	3,836	2,639	0	2,487	3,822	0	0	0	3,217
3/9/2010	3,011	3,610	2,459	0	0	0	0	2,115	3,546	0
3/10/2010	0	3,478	2,472	0	3,602	3,388	0	3,658	0	2,097
3/11/2010	0	2,131	0	3,039	3,008	0	2,164	3,155	2,596	0
3/12/2010	3,039	2,960	0	2,234	2,106	2,792	3,369	2,684	2,295	1,989
3/13/2010	3,421	2,284	2,876	3,675	3,290	2,947	3,632	0	0	2,983
3/14/2010	0	3,412	3,338	3,454	2,759	2,228	2,430	3,780	3,443	3,873
3/15/2010	3,687	2,076	3,238	2,494	0	0	3,585	3,842	2,634	2,874
3/16/2010	2,138	3,612	3,406	3,396	3,182	3,079	0	2,330	3,167	3,845
3/17/2010	0	2,520	3,649	2,346	3,038	2,632	2,820	2,662	2,539	0
3/18/2010	3,862	2,869	0	3,874	3,687	2,260	3,727	1,961	0	0
3/19/2010	3,624	2,143	0	0	2,134	3,550	2,790	2,985	2,531	1,968

Figure 5.8

Page Breaks

The report is now down to three pages, but there is some data from April that is still on the first page. We want to display only one month on each page. One option is to play with the Top and Bottom margins until the months all fit on one page each, but in this example we will use a **Page Break**.

1. *Click on the* **Page Layout** *tab.*
2. *Click on* **Cell A36** *(where the date changes from* **March** *to* **April***).*
3. *On the* **Page Layout** *tab in the* **Page Layout** *group, click on* **Breaks** *and choose* **Insert Page Break***.*
4. *Insert another* **Page Break** *on* **Cell A69** *(where the date changes from April to May).*
5. *View the report in* **Print Preview** *mode.*

Print Titles

As you scroll through the report in Print Preview mode, notice how the titles do not repeat on the second or third pages. You will now format the report where those titles repeat on every page. In Excel 2010, you set the titles for each page from the Page Layout tab.

1. *Click on the* **Page Layout** *tab*
2. *Click on the* **Print Titles** *icon in the* **Page Setup** *group of the* **Page Layout** *tab.*

This opens the Page Setup dialog box with the Sheet tab selected.

3. *Click in the* **Rows to repeat at top:** *box.*
4. *With your cursor, choose* **Row 1** *on the spreadsheet and click* **OK***.*
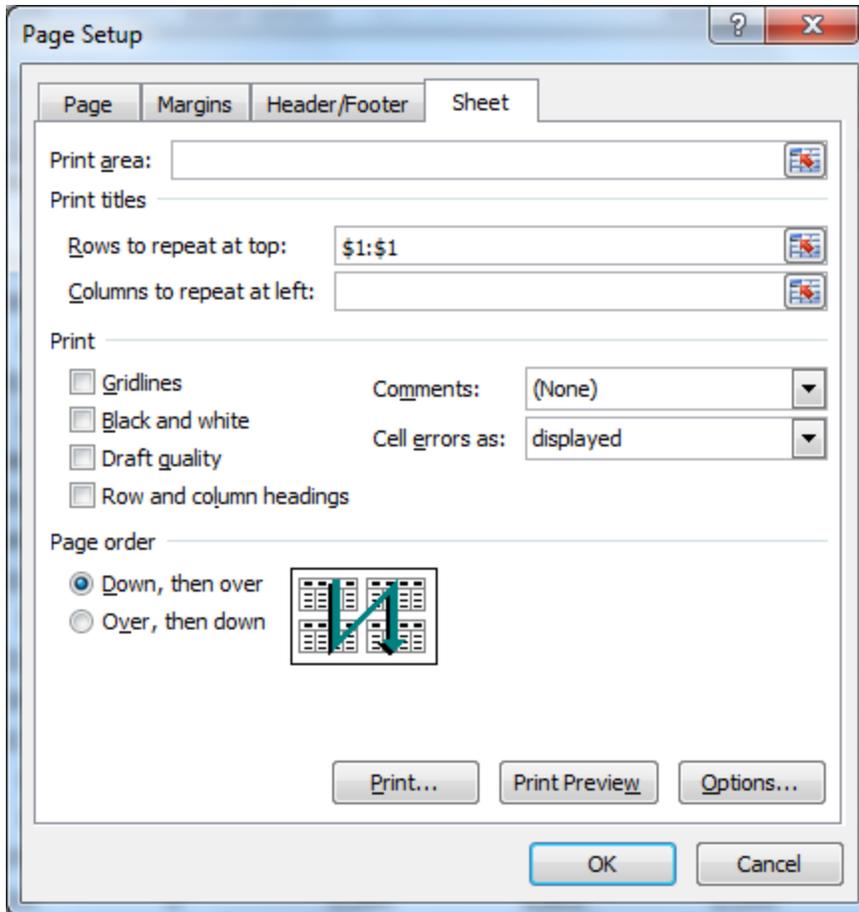
Figure 5.9

In this dialog box, you can also make columns to the left repeat on subsequent pages by clicking in the Columns to repeat at left: box and then choose on the columns you want to repeat. Now if you click on Print Preview, you will see the three pages on the report with the title row repeating on each page.

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 5, Section 1 of 2** option and complete the review questions.*

Headers and Footers

Let's add a header and footer to the report. In Headers and Footers, you can make text, dates, numbers and even images appear at the top or bottom, respectively, on every page of the report.

1. *Click on* **Print Preview,** *review the report, and click on the* **Page Setup** *link.*
2. *Click on the* **Header/Footer** *tab.*

3. *Click on the* **Custom Header…** *button.*
4. *Click in the* **Center section** *and type:* **TOP TEN REPORT** *and press* **[Enter]**.
5. *On the second line, type:* **As of May 31, 2010**
6. *With your cursor, select the* **TOP TEN REPORT** *text.*
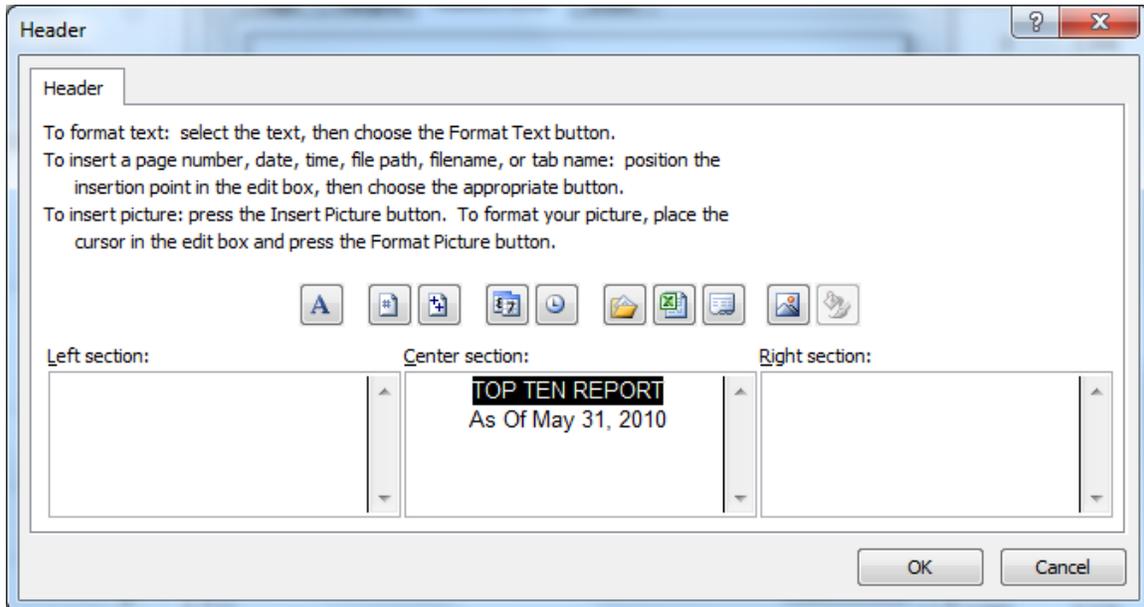
Figure 5.10

You can change the font in a header or footer section just like you can on a spreadsheet.

7. *Click on the* **Format Text** *button* *in the* **Header** *dialog box (the* **Font** *dialog box appears).*
8. *Under* **Font style:** *choose* **Bold**.
9. *Under* **Size:** *choose* **16** *and click* **OK**.
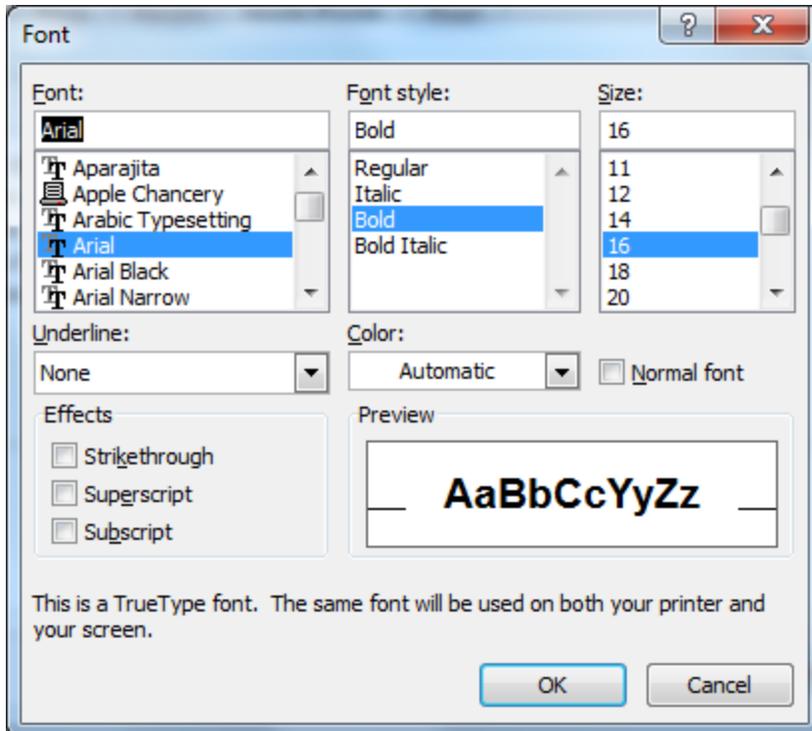
Figure 5.11

Now that I see it, I don't want for the header to be that big, so let's change it a little.

10. *In the* **Header** *dialog box, select* **TOP TEN REPORT** *and click the* **Format Text** *button.*
11. *Under* **Font style***, choose* **Bold Italic***, choose* **12** *under* **Size** *and click* **OK** *twice.*
12. *In the* **Page Setup** *dialog box, click on the* **Custom Footer…** *button.*
13. *Click in the* **Right section** *box.*
14. *Type* **Page** *and click the* **Page Number** *button* [#] *.*
15. *Type* **of** *and click the* **Total Pages** *button* [+] *and type* **Pages** *and click* **OK** *in each dialog box as you exit* **Page Setup.**

   Note*: You will have to type a space after "Page", before and after "of" and before "Pages".*

Figure 5.12

Figure 5.13

Hmmmmmm.   What happened there? On the Margins tab of the Page Setup dialog box, the Header and Footer margins are set to .50 and the Top and Bottom margins are also set to .50. One way to rectify this is to reduce the Header and Footer a bit until they appear above the titles.

16. Click on the **Page Setup** link and click on the **Margins** tab.
17. Reduce the **Header** and **Footer** margins to **0.25**, make the **Top** margin **0.75** and click **OK**.

Figure 5.14

Figure 5.15

Now you can click on the Next and Previous buttons in Page Preview mode to see how the report will print. I encourage you to click on the other buttons in the Header and Footer dialog boxes to see what they do. Note that in these dialog boxes you can insert and format a picture (or image).

> **Tip**: You can insert a header or footer without opening up the Page Setup dialog box. To do this, click on the **Header & Footer** icon in the **Text** group of the **Insert** tab. This opens the worksheet in **Page Layout** view and creates the **Header & Footer Tools Design** contextual tab. Note that if there frozen panes in the worksheet, the Page Setup dialog box will open.

Non-Contiguous Ranges

Sometimes you want to print sections of a report that are not located next to each other. These are **non-contiguous ranges**. There are a few ways to handle this. One way is to **hide the row**s and/or **columns** you don't want to print. Hiding a row or column is just that – hiding. It does not delete the data. Another way is to select only the range you want to print. Let's try both methods. Let's suppose that you want to print the report only for the months of March and May.

Hide Rows

1. *Click on the* **Home** *tab.*
2. *With your cursor, select* **Rows 36** *through* **68**.
3. *On the* **Home** *tab, click on the* **Format** *button in the* **Cells** *group.*
4. *Point to* **Hide & Unhide** *and choose* **Hide Rows**.

	A	B	C	D	E	F	G	H	I	J	K
1	Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike	Lee Underwood	Thomas Maker	Evan Thurston
23	3/21/2010	0	3,155	2,560	2,873	2,282	3,230	3,263	0	2,360	3,224
24	3/22/2010	3,309	3,804	0	0	2,850	2,597	2,116	3,589	0	0
25	3/23/2010	2,272	3,539	2,654	3,001	0	2,883	0	3,177	2,589	2,828
26	3/24/2010	0	2,476	2,527	3,743	2,388	3,813	3,152	3,679	3,587	2,877
27	3/25/2010	3,422	2,713	0	2,422	3,235	2,208	2,587	0	2,382	2,189
28	3/26/2010	3,238	2,384	3,107	2,623	3,884	0	0	2,361	3,411	3,540
29	3/27/2010	2,860	2,868	2,259	3,511	0	2,445	3,382	3,250	2,931	0
30	3/28/2010	3,765	3,281	0	2,963	0	3,233	3,282	1,956	2,359	0
31	3/29/2010	1,961	3,093	2,178	0	3,839	2,235	2,181	0	3,494	0
32	3/30/2010	3,364	3,370	2,892	0	0	3,271	3,139	3,772	2,483	2,213
33	3/31/2010	2,794	2,252	0	2,867	3,005	2,207	3,059	0	2,052	2,614
34	TOTALS	68,732	81,184	57,301	62,372	66,944	65,942	75,402	67,863	73,540	59,901
35											
69	May										
70	5/1/2010	0	3,974	0	2,985	3,773	0	2,589	0	2,557	0
71	5/2/2010	2,656	0	3,817	3,902	2,187	3,233	2,132	0	2,839	2,919
72	5/3/2010	3,107	3,557	0	2,022	2,229	0	0	2,677	3,902	0

Figure 5.16

Rows 36 through 68 are now hidden. If you click on Print Preview, you will see the rows are also hidden in that view of the report. However, it's kind of ugly because Page 2 appears with just the column names and no data.

5. Click the **Print Preview** button and click the **Next** button (to see that the rows are hidden).
6. Click on the **Home** tab.
7. Click the **Undo** icon to bring back the hidden rows back into view.
8. With your cursor, select **Cells A2** through **K35**, release the mouse, hold the **[Ctrl]** key down and select **Cells A69** through **K101**, and release the **[Ctrl]** key and mouse.
9. Set that range as the print area (by clicking on the **Page Layout** tab, **Print Area** icon, **Set Print Area**) and click **Print Preview**.

Now only those selections appear in Print Preview.

Hide Columns

You can also hide columns. Let's suppose that you don't want to show the data for Lee Underwood.

10. Click on the **Home** tab.
11. Select **Column I**.
12. On the **Home** tab, click the **Format** icon in the **Cells** group, point to **Hide & Unhide**, and choose **Hide Columns**.
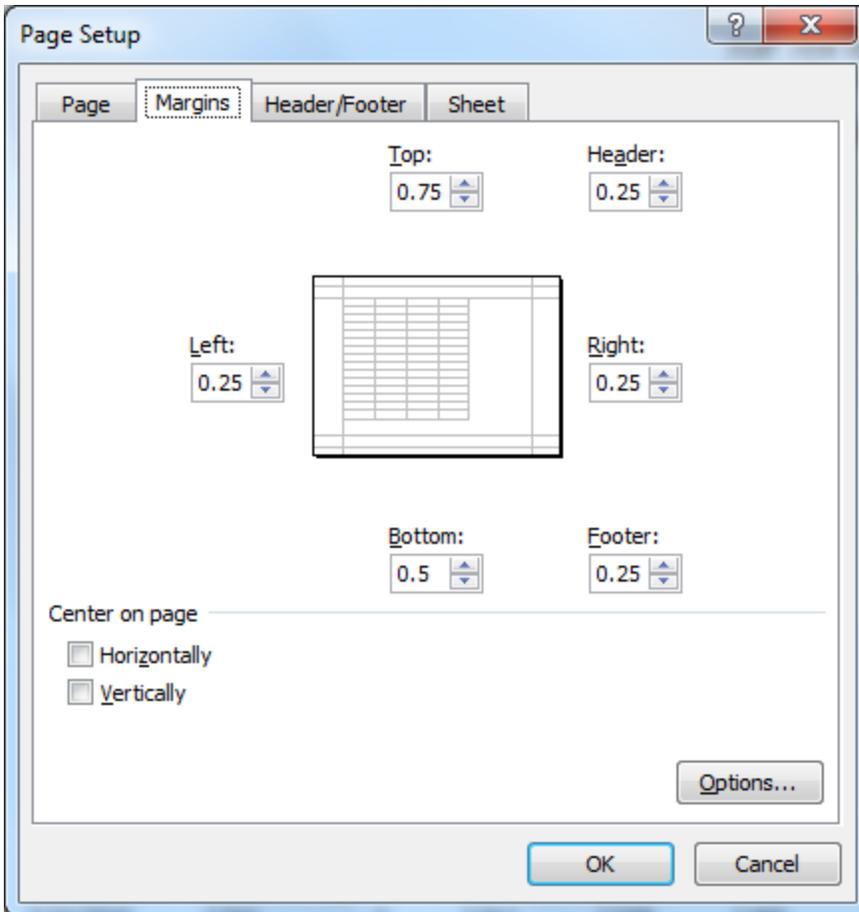13. Click **Print Preview**.

TOP TEN REPORT
As Of May 31, 2010

Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike	Thomas Maker	Evan Thurston
March									
3/1/2010	0	0	2,688	0	0	0	2,346	3,826	3,482
3/2/2010	3,354	2,586	2,526	3,047	2,223	3,031	2,853	2,360	2,521
3/3/2010	3,472	0	0	3,011	0	0	3,714	3,873	2,966
3/4/2010	0	2,031	2,927	0	3,728	2,465	3,887	3,802	0
3/5/2010	2,091	3,450	3,039	2,697	3,832	3,038	2,468	3,853	0
3/6/2010	3,510	0	0	2,456	3,430	2,588	3,817	0	3,683
3/7/2010	0	2,306	0	2,648	0	0	2,511	2,583	2,367
3/8/2010	2,874	3,836	2,639	0	2,487	3,822	0	0	3,217
3/9/2010	3,011	3,610	2,459	0	0	0	0	3,546	0
3/10/2010	0	3,478	2,472	0	3,602	3,388	0	0	2,097
3/11/2010	0	2,131	0	3,039	3,008	0	2,164	2,596	0
3/12/2010	3,039	2,960	0	2,234	2,106	2,792	3,369	2,295	1,989
3/13/2010	3,421	2,284	2,876	3,675	3,290	2,947	3,632	0	2,983
3/14/2010	0	3,412	3,338	3,454	2,759	2,228	2,430	3,443	3,873
3/15/2010	3,687	2,076	3,238	2,494	0	0	3,585	2,634	2,874
3/16/2010	2,138	3,612	3,406	3,396	3,182	3,079	0	3,167	3,845
3/17/2010	0	2,520	3,649	2,346	3,038	2,632	2,820	2,539	0
3/18/2010	3,862	2,869	0	3,874	3,687	2,260	3,727	0	0
3/19/2010	3,624	2,143	0	0	2,134	3,550	2,790	2,531	1,968

Figure 5.17

Lee Underwood's data is now hidden. But since we took out one individual, it is really now the Top Nine report.

14. Click on the **Home** *tab and unhide* **Column I** (*you use the same procedure to unhide as to hide*).

Grouping

Another way to hide and unhide rows is to group the data. Grouping is similar to subtotals, which you already learned in Chapter 4, but Grouping does not calculate subtotals. It simply groups the data. Using Grouping is a great alternative when you want the user to be able to easily hide and unhide rows and/or columns. Let's take a minute to revise the spreadsheet before we do grouping.

1. *In* **Cell L1** *type* **Total**.
2. *Calculate the total sales for each day of sales for each row, as well as the monthly totals.*
3. *Include* **Column L** *in the print range.*
4. *Select* **Columns B** *through* **K**.
5. *On the* **Data** *tab, click on the* **Group** *icon (not the dropdown arrow) in the* **Outline** *group.*

	A	B	C	D	E	F	G	H	I	J	K	L
1	Date	Jim Wilcox	Henry Sosa	Jerry Banks	Vivian Tong	Terry Smith	Richard Lewis	Susan Pike	Lee Underwood	Thomas Maker	Evan Thurston	Total
2	March											
3	3/1/2010	0	0	2,688	0	0	0	2,346	3,270	3,826	3,482	15,612
4	3/2/2010	3,354	2,586	2,526	3,047	2,223	3,031	2,853	2,911	2,360	2,521	27,412
5	3/3/2010	3,472	0	0	3,011	0	0	3,714	2,198	3,873	2,966	19,234
6	3/4/2010	0	2,031	2,927	0	3,728	2,465	3,887	3,439	3,802	0	22,280
7	3/5/2010	2,091	3,450	3,039	2,697	3,832	3,038	2,468	3,074	3,853	0	27,542
8	3/6/2010	3,510	0	0	2,456	3,430	2,588	3,817	0	0	3,683	19,484
9	3/7/2010	0	2,306	0	2,648	0	0	2,511	2,016	2,583	2,367	14,431
10	3/8/2010	2,874	3,836	2,639	0	2,487	3,822	0	0	0	3,217	18,875
11	3/9/2010	3,011	3,610	2,459	0	0	0	0	2,115	3,546	0	14,741
12	3/10/2010	0	3,478	2,472	0	3,602	3,388	0	3,658	0	2,097	18,694
13	3/11/2010	0	2,131	0	3,039	3,008	0	2,164	3,155	2,596	0	16,092
14	3/12/2010	3,039	2,960	0	2,234	2,106	2,792	3,369	2,684	2,295	1,989	23,470
15	3/13/2010	3,421	2,284	2,876	3,675	3,290	2,947	3,632	0	0	2,983	25,108
16	3/14/2010	0	3,412	3,338	3,454	2,759	2,228	2,430	3,780	3,443	3,873	28,718
17	3/15/2010	3,687	2,076	3,238	2,494	0	0	3,585	3,842	2,634	2,874	24,429
18	3/16/2010	2,138	3,612	3,406	3,396	3,182	3,079	0	2,330	3,167	3,845	28,154
19	3/17/2010	0	2,520	3,649	2,346	3,038	2,632	2,820	2,662	2,539	0	22,206
20	3/18/2010	3,862	2,869	0	3,874	3,687	2,260	3,727	1,961	0	0	22,238

Figure 5.18

The Level boxes (like you saw when you used subtotals) appear in the upper left corner of the spreadsheet with a long line centered over Columns B through K, and a Hide Detail button over Column L.

6. *Click the* **Hide Detail** *button.*

Figure 5.19

The columns are now hidden and can be easily unhidden or expanded by clicking the Show Detail (+) button. You can also click on the Level boxes (1 and 2) to hide the detail (Level Box 1) or show the detail (Level Box 2). You can group and ungroup **rows** of data using the same methodology.

7. Click the **Show Detail** *button to expand out the columns.*

Page to Fit

Excel also has a **Page to Fit** feature that I find very useful. Typically I use this feature when I don't want to mess around with the margins and font sizes trying to get a report to print on just one or a few pages. Let's explore that feature.

8. *Click on the* **Print Preview** *button.*

You see that there are now six pages in the report. By clicking the Next Page button a few times, you will see that pages 4, 5, and 6 contain only one column of data, the Total column. We want the report to be contained to three pages.

9. *Click on the* **Page Setup** *link.*
10. *Click on the* **Page** *tab.*
11. *In the* **Scaling** *section, click on the* **Fit to:** *radio button, and change the options to* **one** *page wide by* **three** *pages tall, and click* **OK***.*
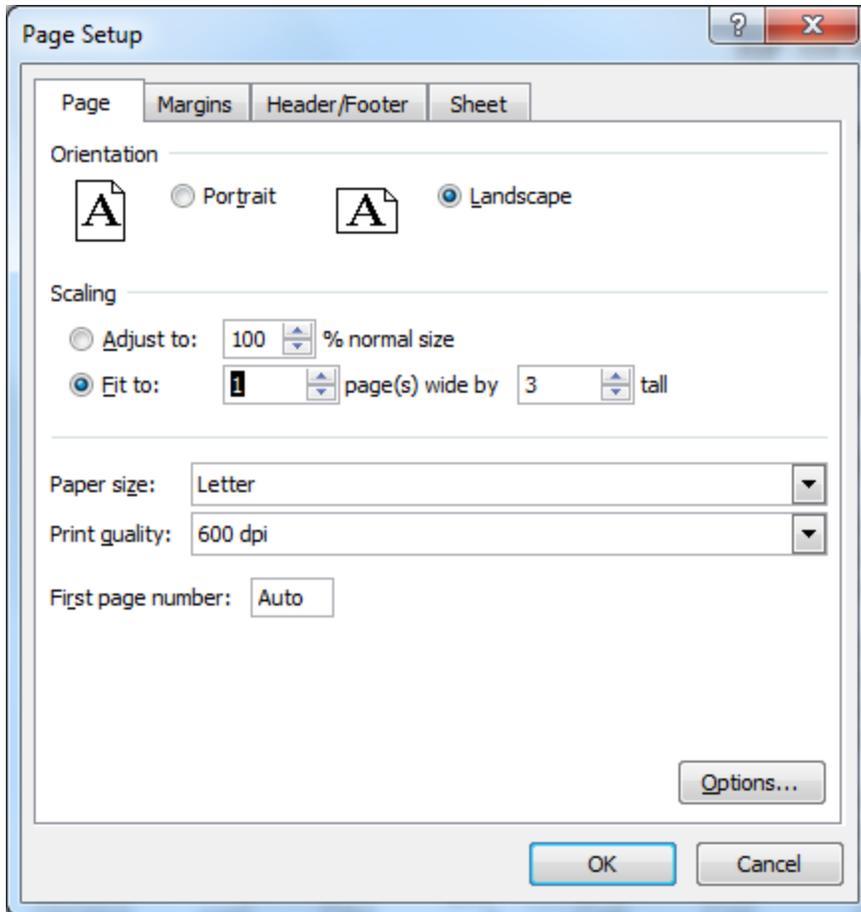
Figure 15.20

The report is now contained to three pages, with a bit smaller font. Excel needed to reduce the font in Print Preview to fit the report to only three pages. Notice that the page breaks do not work when using the Page to Fit feature. To get the report to appear correctly, we need to play around with it a bit.

> *12. Click on the* **Page Setup** *link.*
> *13. In* **Page Setup***, change the* **Top margin** *to* **1** *and click* **OK.**
> *14. Click on the* **Home** *tab.*
> *15. In the spreadsheet, insert a row at* **Row 68***.*
> *16. Click* **Print Preview***.*

Now that the report is formatted correctly, you can let other people see it.

Save as PDF

Sometimes, you want to send a file to someone who just wants to print it out. Other times, you'll want to save an Excel report out on the Internet. There is a way to save an Excel report to another format where everyone can see it, whether or not they have Excel.

It is called a PDF file. PDF stands for Portable Document Format, and is a non-proprietary file format, meaning all you need to have to read it is a viewer. The Adobe Corporation has a free PDF reader that is downloadable for free and is called Adobe Acrobat Reader. It is also the most common reader of PDF files. To create a PDF file from Excel, simply save the workbook in a PDF format. Before you create the PDF file, however, you need to make sure the worksheet is formatted exactly as you would if the report were to be printed out, as that is how it will appear in the PDF file.

17. Click on **Save As.**
18. Click on the **Save as type** *drop down menu, and choose* **PDF (*.pdf).**
19. Make sure the **Open file after publishing** *checkbox is checked and click* **Save***.*

After a second or two, the PDF file will appear. It is saved in the C:\ExcelCEO \Excel 2010\Chapter5 folder. If need be, you can save the PDF file on any drive that you can navigate to in the Save As dialog box.

20. Close the **PDF** *file and save and close the* **myMay_Sales.xlsx** *file.*

> ***Review Questions***: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 5, Section 2 of 2** *option and complete the review questions.*

Conclusion

Printing a report and setting up the print properties is probably one of the easiest things to do with Excel, and it is something that could get you brownie points or big time black marks (if it's not done properly). It is good practice to always set a print range and make the report look presentable **before** you send the file to anyone, particularly inexperienced Excel users. Lots of management personnel like to open a file and automatically click Print. You could look bad if they print a report when the print properties are not formatted correctly. It is such an easy thing to do, so why not format ALL of your reports BEFORE you send them out? If you don't do it, it could result in others having less confidence in your abilities. Trust me – been there, done that, and I've got the battle scars to prove it.

In this chapter, you learned how to use the Print dialog box. You used the Print Preview icon numerous times. You set up a report to print on one page and another report to print on multiple pages. You worked with page breaks to begin a new page at certain places in the spreadsheet. You worked with margins, inserted headers and footers, and printed non-contiguous ranges. You learned how to hide rows and columns without deleting the data. You worked an exercise where you grouped and ungrouped columns of data. You also used the Page to Fit feature, which allows you to automatically fit the text of a spreadsheet within certain page parameters without having to adjust margins. Finally, you saved your report as a PDF file.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

SECTION II: INTERMEDIATE EXCEL

I believe writing formulas is the **lost art of Excel**, as many Excel users have become overly dependent on the nifty buttons and icons. Writing formulas is the foundation of Excel, so we will spend a significant amount of time in this course writing formulas and using functions.   The entire intermediate section is therefore dedicated to writing formulas and understanding how to use functions. A function is a predefined word in Excel that performs a task or calculates a number based on one or more criteria or arguments. A function is always followed by an opening parenthesis, typically with a series of arguments and ends with a closing parenthesis. In many years of working with Excel, I have used numerous functions, and I have compiled in this section a list of the ones that I use most frequently. In the following chapters, we will explore each of these functions individually and you will work many examples to better familiarize yourself with these powerhouses of analysis tools.

We start off in Chapter Six by learning the basics of operators (Arithmetic, Comparison and Text), and learning how to write simple IF statements. You will review all of the major categories of functions in Chapter Seven, as well as learning about Text functions. Chapter Eight is the longest chapter in the course, and in that chapter you will learn about Financial and Math functions. Additionally, you will learn about methods of estimating value and use the Find and Replace functionality. In Chapter Nine, you will learn about Date, Statistical and Lookup functions. You will take also a brief tour of database functions. Chapter Nine ends with a discussion of Data Validation and using the Text to Columns functionality. Chapter Ten is an expansion of Chapter Nine, where you will learn some of the advanced uses of Lookup functions. In this chapter, you will also learn about Logical functions, and you'll finish the chapter by building a complex spreadsheet that calculates bonuses based on numerous criteria.

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CHAPTER SIX - INTRO TO FORMULAS AND FUNCTIONS

In this chapter, you will:

- Write basic formulas.
- Use Arithmetic, Comparison and Text Operators.
- Write formulas using the IF() Function.
- Use the Insert Function dialog box.
- Nest IF() Functions.
- Develop an Assumptions Page that contains variables used in your analysis.
- Create formulas without hard-coding values.
- Create a Named Range.
- Concatenate a calculated and formatted number within a text string.
- Use the TEXT() Function.

Introducing Formulas and Functions

Soon after graduation from college in the 1980s, I began working at a Big 8 accounting firm. I quickly became the spreadsheet guy in the office. There weren't too many people at the time that had significant spreadsheet experience, and I was very lucky to be one of the few who knew my way around a computer. Many people asked me to put their data into a spreadsheet. Most of the time was spent just inputting their data in Lotus 1-2-3 and summing it up, and maybe a few sorts. One day a manager came to me with a fun project. He had mailed out surveys to some clients and the completed surveys were coming back in. He wanted a program written where a clerk could enter the data from the survey onto a spreadsheet and press a button that would copy the data into a database and refresh the screen to be ready to enter a new survey. It sounded real interesting, so I took it on.

I spent about a day programming it and came up with the greatest spreadsheet ever created! It took about 180 keystrokes to enter in all of the information from one survey. I was so proud of that program! I took the 5 ¼" floppy disk to him (which tells you how long ago that was) and proudly gave it to him. I felt like I had really accomplished something great that day. After about an hour, he came back, gave me the diskette and said, "*I made some changes to it. You may want to look them over.*" My first thought was "*YOU made changes to MY spreadsheet? How dare you mess with perfection!*" I slapped in the floppy diskette to see what he had done and got the education of a lifetime. He had completely torn apart my spreadsheet and built it back up again, and it was SO much more efficient. Instead of 180 keystrokes, it now took only about 90. He had formulas and functions that I had never heard of before. Truly, this man was the spreadsheet god!

In the following chapters, I will introduce you to many functions – and how to use them in writing some very useful formulas.   A formula is an equation that performs calculations on the spreadsheet. A formula always begins with an equal sign (=), and may or may not include one or more functions. But before we get into a in-depth discussion of functions, let's talk about operators. Operators are critical in writing formulas, and it is imperative that you understand them. Operators are special characters that specify the type of calculations performed in formulas. Excel offers three types of operators: Arithmetic, Comparison, and Text.

Arithmetic Operators

Arithmetic operators perform basic mathematical operations, such as addition, subtraction, multiplication, division and exponentiation.

Arithmetic Operators	**Definition (Example)**
+ (plus sign)	**Addition** (3+3, 3 plus 3)
- (minus sign)	**Subtraction** (3-1, 3 minus 1) or **Negation** (-5, negative 5)
* (asterisk)	**Multiplication** (3*5, 3 times 5)
/ (back slash)	**Division** (6/3, 6 divided by 3)
^ (caret)	**Exponentiation** (3^2, or 3 squared)

In formulas, the precedence of arithmetic operators (or the order in which they work) work just like you learned in high school algebra:

1. ^, Exponentiation
2. * and /, Multiplication and Division
3. + and -, Addition and Subtraction

Let's try an example.

1. *Open* **Excel** *to a blank worksheet.*
2. *Input the following numbers in the corresponding cells:*
   A1: 5; A2: 3; A3: 4; A4: 8; A5: 2; A6: 2
3. *Write the following formula in* **Cell B1: =A1+A2*A3-A4/A5^A6**

	B1			*fx*	=A1+A2*A3-A4/A5^A6	
	A	B	C	D	E	F
1	5	15				
2	3					
3	4					
4	8					
5	2					
6	2					

Figure 6.1

The result of this formula is 15. You can change the order of precedence by putting parentheses () around the part of the formula you want calculated first:

4. *Edit the formula in* **Cell B1** *to include parentheses around* **A1+A2**.

Figure 6.2

The result changes to 30. In some formulas, parentheses aren't necessary, but sometimes it helps to include them to help you organize your logic, particularly in long, complex formulas.

    5. *Close the file (no need to save it).*

Comparison Operators

Now let's talk about **Comparison operators**. Comparison operators are used to compare two values to each other.

Comparison Operators	**Definition (Example)**
= (equal sign)	**Equal to** (A1=B1, A1 is equal to B1)
> (greater than sign)	**Greater than** (A1>B1, A1 is greater than B1)
< (less than sign)	**Less than** (A1<B1, A1 is less than B1)
>= (greater than or equal to)	**Greater than or equal to** (A1>=B1, A1 is greater than or equal to B1)
<= (less than or equal to)	**Less than or equal to** (A1<=B1, A1 is less than or equal to B1)
<> (not equal to)	**Not equal to** (A1<>B1, A1 is not equal to B1)

The IF() Function

When using comparison operators, it is helpful to understand how to use the **IF() function**. In my opinion, Excel is the best "what-if" tool available, and the IF() function is central to "what-if" scenarios. In this and later chapters, you will see **many** examples using the IF() function. According to Microsoft Excel Help, the IF statement "*Returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE. Use IF() to conduct conditional tests on values and formulas*". The IF() function is a statement that is written to check whether or not a condition is met, and has one condition and two arguments. First is the condition. Next is the argument if the condition is true, followed by the result if the condition is false. Arguments and

conditions in all functions are separated by commas (,). Let's work some examples of how to use the IF() function and comparison operators.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter6\June_Sales.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter6\myJune_Sales.xlsx.**

	A	B	C	D	E	F	G
1	Region	State	Store_No	Year	Month	Sales	Budget
2	East	NY	1001	2010	6	65,705	70,000
3	West	CA	1002	2010	6	103,652	100,000
4	North	IL	1005	2010	6	103,221	100,000
5	South	NC	1009	2010	6	62,971	50,000
6	South	NC	1011	2010	6	88,138	70,000
7	South	NC	1012	2010	6	95,628	70,000
8	North	IL	1018	2010	6	106,349	100,000
9	North	OH	1019	2010	6	80,806	70,000
10	West	CA	1021	2010	6	21,082	50,000
11	West	CA	1024	2010	6	119,429	100,000
12	West	CA	1026	2010	6	78,593	70,000
13	East	NY	1027	2010	6	112,363	100,000
14	West	OR	1029	2010	6	18,149	0
15	East	NY	1032	2010	6	111,281	100,000
16	North	OH	1034	2010	6	119,628	100,000

Figure 6.3

This file contains the sales by store for the month of June 2010. It includes fields for Region, State, Store_No, Year, Month, Sales and Budget. The Budget is the amount of sales that each store is supposed to sell. If the store reaches or surpasses 100% of Budget, the store manager gets a bonus of 1% of the sales for that store. Stores are categorized by small, medium and large stores. Management calls these levels Paper (small), Scissors (medium) and Rock (large) stores. Your job is to create a schedule using this data that identifies:

- The percent of Budget the store attained (call this column *%_Budget*, calculated as the Sales divided by the Budget, formatted as percent, one decimal place),
- An indication if the manager receives a bonus (call this column *Qual_Bonus*, calculated as "Yes" if the store is at least 100% of Budget and "No" if it is not),
- The amount of bonus the store manager receives (call this column *Bonus_Amt*, calculated as 1% of Sales if the previous column is "Yes", otherwise 0, formatted as number with two decimal places), and
- The type of store it is: **Paper**, **Scissors**, or **Rock** (call this column *Store_Type*, calculated as: **Paper** if the Budget is less than or equal to

$50,000, **Scissors** if the Budget is $70,000, **Rock** if the Budget is $100,000).

3. *In* **Cell H1***, type:* **%_Budget**
4. *In* **Cell I1***, type:* **Qual_Bonus**
5. *In* **Cell J1***, type:* **Bonus_Amt**
6. *In* **Cell K1***, type:* **Store_Type**
7. *Underline all titles and resize all columns as necessary.*
8. *In* **Cell H2***, type the formula:* **=F2/G2**

This formula tells Excel to divide the Sales (Cell F2) by the Budget (Cell G2).

9. *Format* **Cell H2** *as* **Percent** *with* **one decimal place***, and copy the formula down to all cells below.*

	A	B	C	D	E	F	G	H	I	J	K
1	Region	State	Store No	Year	Month	Sales	Budget	% Budget	Qual Bonus	Bonus Amt	Store Type
2	East	NY	1001	2010	6	65,705	70,000	93.9%			
3	West	CA	1002	2010	6	103,652	100,000	103.7%			
4	North	IL	1005	2010	6	103,221	100,000	103.2%			
5	South	NC	1009	2010	6	62,971	50,000	125.9%			
6	South	NC	1011	2010	6	88,138	70,000	125.9%			
7	South	NC	1012	2010	6	95,628	70,000	136.6%			
8	North	IL	1018	2010	6	106,349	100,000	106.3%			
9	North	OH	1019	2010	6	80,806	70,000	115.4%			
10	West	CA	1021	2010	6	21,082	50,000	42.2%			
11	West	CA	1024	2010	6	119,429	100,000	119.4%			
12	West	CA	1026	2010	6	78,593	70,000	112.3%			
13	East	NY	1027	2010	6	112,363	100,000	112.4%			
14	West	OR	1029	2010	6	18,149	0	#DIV/0!			
15	East	NY	1032	2010	6	111,281	100,000	111.3%			
16	North	OH	1034	2010	6	119,628	100,000	119.6%			

Figure 6.4

It worked very well, at least most of it. In Cell H14, the formula returned **#DIV/0!**, which is the **divide by zero error** message. This error occurs when you try to divide a number by zero, which is mathematically impossible. To correct this, you need to edit the formula to reflect the following logic: if the Budget (or the number on the bottom) is zero, return a zero, otherwise divide Sales by the Budget. We can do that by using an IF() function.

Insert Function Dialog Box

There are basically two ways to write an IF() statement: 1) Type the formula directly into the Formula Bar, and 2) Use the Insert Function dialog box. In this course, you will be writing a lot of formulas directly into the Formula Bar, but sometimes it helps to use the

Insert Function dialog box, particularly when using complex functions. In the next exercise, you will write an IF() statement using the Insert Function dialog box.

1. *Delete the formula in* **Cell H2**.
2. *Click on the* **Insert Function** *button* *fx* *to the left of the* **Formula Bar**.
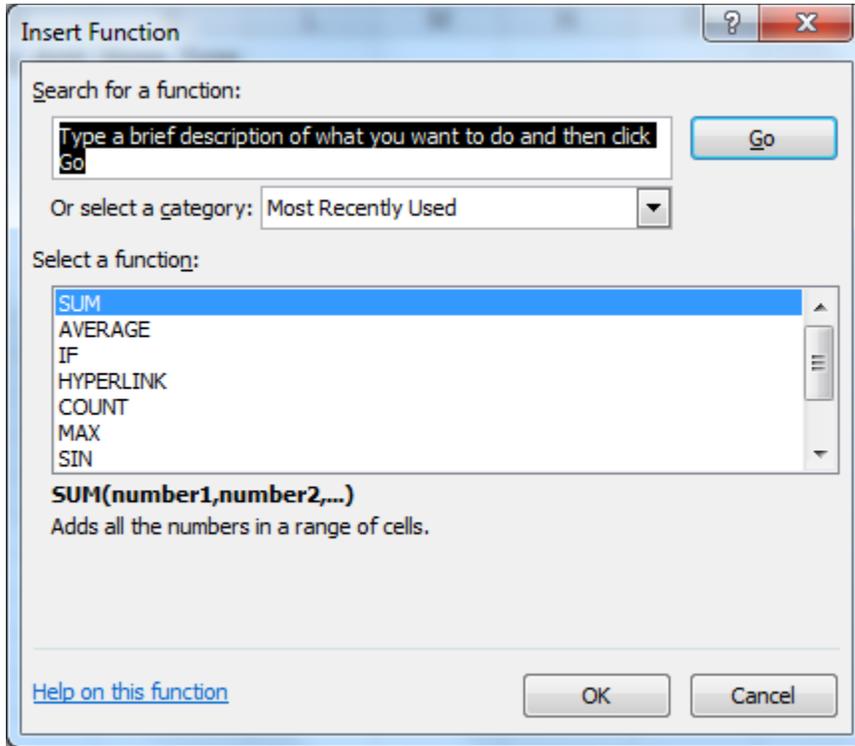
Figure 6.5

The **Insert Function dialog box** appears.

3. *In the* **Search for a function box**, *replace the existing text with* **IF** *and click* **GO**.
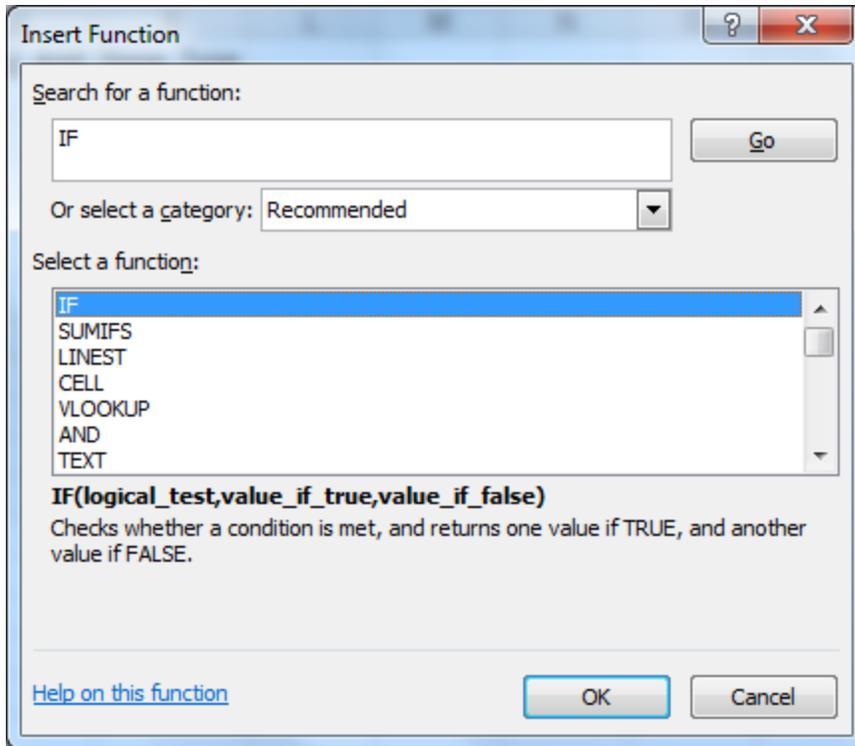
Figure 6.6

The **Select a function** box below is now filtered for all functions that are similar to an IF() function, including lots of logical functions.

4. *Make sure* **IF** *is selected in the* **Select a function** *box and click* **OK**.
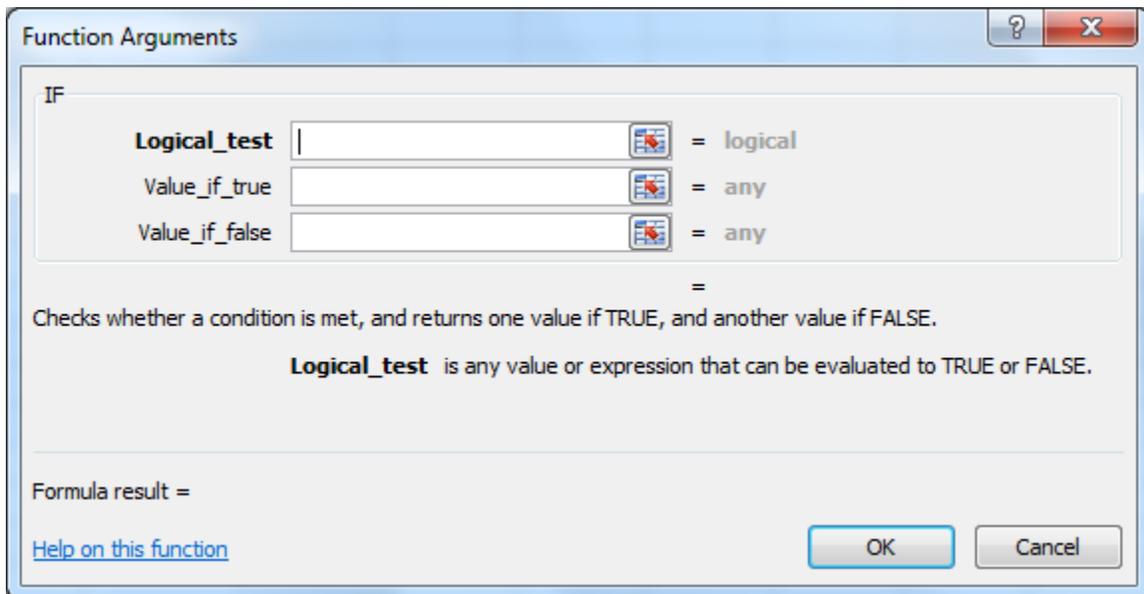
Figure 6.7

At this point, the Function Arguments dialog box appears. In this box, you can type in the arguments, conditions and criteria for the function to work. The text boxes in the Function Arguments box change according to the function you chose, as the arguments, conditions and criteria are different for most every function. In our case, we're using the IF() function.

5. *In the* **Logical_test** *box, type (or click on)* **G2=0***.*
6. *Press the* **[Tab]** *key to move to the next box.*
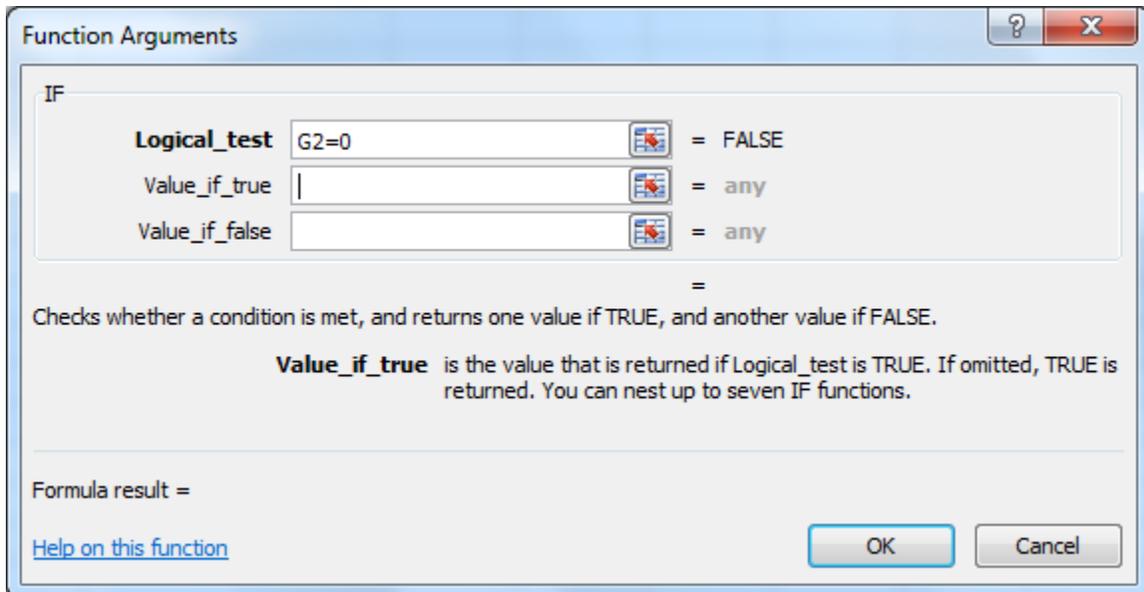
Figure 6.8

The first logical test sees if the value in Cell G2 is equal to zero. In the case of Cell G2, it's not zero (the value in Cell G2 is 70,000), so the condition tested FALSE, hence the FALSE reference to the right of the Logical_test box. The next two boxes return the value if the condition is TRUE or FALSE, respectively.

7. *In the* **Value_if_true** *box, type* **0** *(as we want the formula to return a zero if the Budget or denominator is* **0***) and press* **[Tab]** *to move to the next box.*
8. *In the* **Value_if_false** *box type* **F2/G2** *and press the* **[Tab]** *key.*
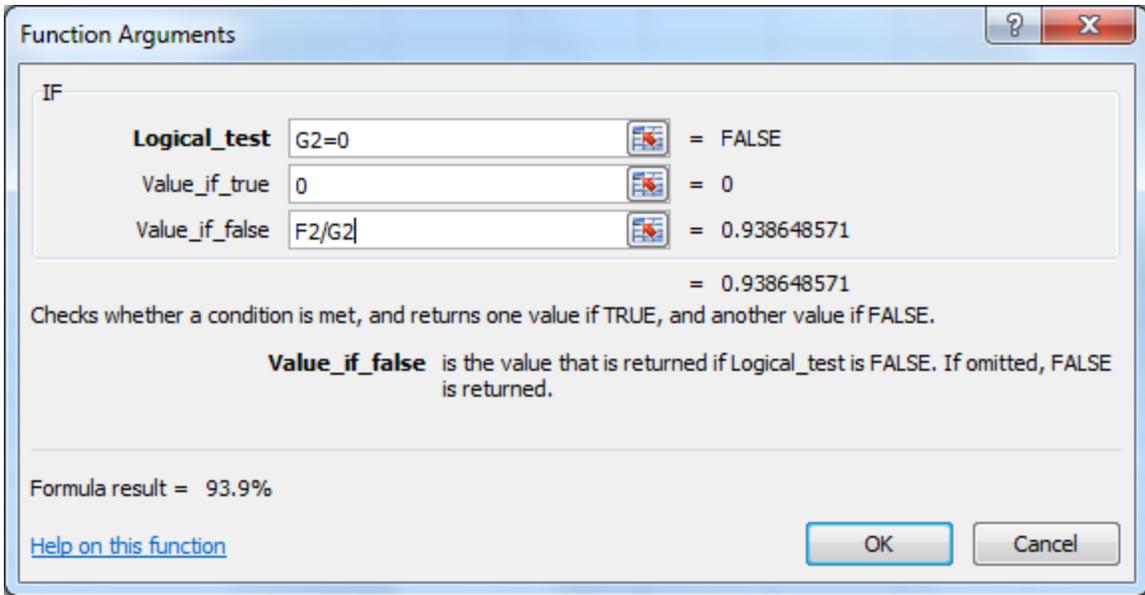
Figure 6.9

Now the dialog box returns the right answer for the formula at the bottom left of the dialog box where it reads "**Formula result =   93.9%**".

9. Click **OK**.

Review Questions: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the Excel 2010 Review Questions, Chapter 6, Section 1 of 2 option and complete the review questions.*

Figure 6.10

You now return to the spreadsheet where the formula in Cell H2 reads **"=IF(G2=0,0,F2/G2)"**. The formula says if the denominator (Cell G2) is zero, then return a zero as the result. If the denominator is not zero, then perform the calculation **F2/G2**. That is exactly what we want, so you can copy the formula to the cells below.

> 10. *Copy the formula down for all cells below.*

The result in Cell H14 now reads 0.0%, which is correct.

Now that we have all of the %_Budget numbers calculated correctly, we can write a formula in Column I that will calculate if the manager of that store receives a bonus or not.

> *Note: For the remainder of the course, you will type the formulas into the cell or* **Formula Bar** *without using the* **Insert Function dialog box**. *I want you to do this to get used to typing the formulas and functions as it is important for your future programming experience. If you think you need to use* **Insert Function** *dialog box to help you better understand the function, feel free to use it.*

> 11. *In* **Cell I2**, *type the following formula:* **=IF(H2>=1,"Yes","No")**

This formula says that if the result in Cell H2 is greater than 1 (meaning if the sales was more than 100% of budget), return the word "Yes", indicating the store manager qualified for a bonus. Otherwise, return "No".

> 12. *Copy the formula down to all cells below.*

I2					fx	=IF(H2>=1,"Yes","No")				
A	B	C	D	E	F	G	H	I	J	K
1 Region	State	Store_No	Year	Month	Sales	Budget	% Budget	Qual Bonus	Bonus Amt	Store Type
2 East	NY	1001	2010	6	65,705	70,000	93.9%	No		
3 West	CA	1002	2010	6	103,652	100,000	103.7%	Yes		
4 North	IL	1005	2010	6	103,221	100,000	103.2%	Yes		
5 South	NC	1009	2010	6	62,971	50,000	125.9%	Yes		
6 South	NC	1011	2010	6	88,138	70,000	125.9%	Yes		
7 South	NC	1012	2010	6	95,628	70,000	136.6%	Yes		
8 North	IL	1018	2010	6	106,349	100,000	106.3%	Yes		
9 North	OH	1019	2010	6	80,806	70,000	115.4%	Yes		
10 West	CA	1021	2010	6	21,082	50,000	42.2%	No		
11 West	CA	1024	2010	6	119,429	100,000	119.4%	Yes		
12 West	CA	1026	2010	6	78,593	70,000	112.3%	Yes		
13 East	NY	1027	2010	6	112,363	100,000	112.4%	Yes		
14 West	OR	1029	2010	6	18,149	0	0.0%	No		
15 East	NY	1032	2010	6	111,281	100,000	111.3%	Yes		
16 North	OH	1034	2010	6	119,628	100,000	119.6%	Yes		

Figure 6.11

As shown in this example, an IF() function can return text strings as well as numbers. Whenever you want to type a text string like "Yes", "No", "Gold", "Blue", or "01ABC" within a formula or function, you must put that string between quotes. Now let's calculate the bonus.

> *13. In* **Cell J2***, write the following formula:* **=IF(I2="Yes",F2*0.01,0)**

This formula means that if the store qualifies for a bonus, take the amount in the Sales column and multiply it by 0.01, or 1%. Otherwise, return a zero. Alternatively, you could have written a formula like **=IF(H2>=1,F2*0.01,0).** Either one would work.

> *14. Format* **Cell J2** *for* **Number, two decimal places, with 1000
> Separator(,)** *and copy down.*

	J2				f_x	=IF(I2="Yes",F2*0.01,0)				
	A	B	C	D	E	F	G	H	I	J	K
1	Region	State	Store No	Year	Month	Sales	Budget	% Budget	Qual Bonus	Bonus Amt	Store Type
2	East	NY	1001	2010	6	65,705	70,000	93.9%	No	0.00	
3	West	CA	1002	2010	6	103,652	100,000	103.7%	Yes	1,036.52	
4	North	IL	1005	2010	6	103,221	100,000	103.2%	Yes	1,032.21	
5	South	NC	1009	2010	6	62,971	50,000	125.9%	Yes	629.71	
6	South	NC	1011	2010	6	88,138	70,000	125.9%	Yes	881.38	
7	South	NC	1012	2010	6	95,628	70,000	136.6%	Yes	956.28	
8	North	IL	1018	2010	6	106,349	100,000	106.3%	Yes	1,063.49	
9	North	OH	1019	2010	6	80,806	70,000	115.4%	Yes	808.06	
10	West	CA	1021	2010	6	21,082	50,000	42.2%	No	0.00	
11	West	CA	1024	2010	6	119,429	100,000	119.4%	Yes	1,194.29	
12	West	CA	1026	2010	6	78,593	70,000	112.3%	Yes	785.93	
13	East	NY	1027	2010	6	112,363	100,000	112.4%	Yes	1,123.63	
14	West	OR	1029	2010	6	18,149	0	0.0%	No	0.00	
15	East	NY	1032	2010	6	111,281	100,000	111.3%	Yes	1,112.81	
16	North	OH	1034	2010	6	110,638	100,000	110.6%	Yes	1,106.38	

Figure 6.12

Nesting IF() Functions

In this next exercise, you will determine the store type, which is a little trickier. Instead of just one condition, there are three conditions. Luckily, you can use multiple IF() functions within one formula. In Excel 2003, you were limited to seven functions in one formula. But in Excel 2007 and 2010, you can write up to 64 functions in a single formula. I don't recommend using that many functions in one cell unless you want to drive a first year auditor to the funny farm. Using multiple functions in one formula is called **nesting** functions. Excel evaluates functions within a formula from left to right, so the first IF() function you write is evaluated first, the second is evaluated next, and so on. When writing multiple functions in a formula, you have to remember to place the parentheses in the right places. Let's try it.

15. In **Cell K2**, *write the following formula:*
    =IF(G2<=50000,"Paper",IF(G2<=70000,"Scissors","Rock"))

The first argument in the formula says if the number in the Budget column (Column G) is less than or equal to 50,000, then return "Paper". If it is not less than or equal to 50,000, then we'll write another test, which is if the Budget column is less than or equal to 70,000, return "Scissors". For everything else, return "Rock". All numbers will fall into one of these three categories. Sometimes it is confusing doing the condition in the middle, which could also be phrased as if the Budget is between 50,000 and 70,000 then return "Scissors". But since Excel evaluates conditions from left to right, we're OK.

16. *Copy the formula down to all cells below.*

	K2				f_x	=IF(G2<=50000,"Paper",IF(G2<=70000,"Scissors","Rock"))				
	A	B	C	D	E	F	G	H	I	J	K
1	Region	State	Store No	Year	Month	Sales	Budget	% Budget	Qual Bonus	Bonus Amt	Store Type
2	East	NY	1001	2010	6	65,705	70,000	93.9%	No	0.00	Scissors
3	West	CA	1002	2010	6	103,652	100,000	103.7%	Yes	1,036.52	Rock
4	North	IL	1005	2010	6	103,221	100,000	103.2%	Yes	1,032.21	Rock
5	South	NC	1009	2010	6	62,971	50,000	125.9%	Yes	629.71	Paper
6	South	NC	1011	2010	6	88,138	70,000	125.9%	Yes	881.38	Scissors
7	South	NC	1012	2010	6	95,628	70,000	136.6%	Yes	956.28	Scissors
8	North	IL	1018	2010	6	106,349	100,000	106.3%	Yes	1,063.49	Rock
9	North	OH	1019	2010	6	80,806	70,000	115.4%	Yes	808.06	Scissors
10	West	CA	1021	2010	6	21,082	50,000	42.2%	No	0.00	Paper
11	West	CA	1024	2010	6	119,429	100,000	119.4%	Yes	1,194.29	Rock
12	West	CA	1026	2010	6	78,593	70,000	112.3%	Yes	785.93	Scissors
13	East	NY	1027	2010	6	112,363	100,000	112.4%	Yes	1,123.63	Rock
14	West	OR	1029	2010	6	18,149	0	0.0%	No	0.00	Paper
15	East	NY	1032	2010	6	111,281	100,000	111.3%	Yes	1,112.81	Rock
16	North	OH	1034	2010	6	119,628	100,000	119.6%	Yes	1,196.28	Rock

Figure 6.13

17. *In* **Cell A31** *type:* **TOTALS**
18. *Write formulas in* **Row 31** *that sum the* **Sales**, **Budget**, *and* **Bonus Amt** *columns, and copy the formula that calculates the* **% Budget** *to* **Row 31**.
19. *Bold* **Row 31** *and resize the columns as necessary.*

The Total Bonus should be $20,832.30. Pretty cool analysis, huh? Do you want to make it even better? Stay with me for a little while longer.

Assumptions Page

One thing I like to do in my spreadsheets, particularly if the variables I'm using could change, is to include all variables on one page called an **Assumptions Page**. An Assumptions page is simply a tab or sheet that contains any possible variable that may change. Let's do that now.

1. *Double-click on the* **Sheet2** *tab and rename it* **Assumptions**.
2. *Click and drag the* **Assumptions** *tab to the left of the* **June_Sales** *tab and release.*

This repositions the Assumptions tab to the left of the June_Sales tab. I prefer to have the Assumptions tab as the first tab in the workbook.

3. *Right-click on the* **Assumptions** *tab, point to* **Tab Color** *and click on* **Red**.

Sometimes I like to make a tab a different color so it will stand out.

4. *Right-click the* **Sheet3** *tab and choose* **Delete** *(since we don't need that sheet). Click on* **Delete** *in the warning box.*
5. *On the* **Assumptions** *tab, in* **Cell A1** *type:* **Bonus Percent**
6. *In* **Cell A3**, *type:* **Total Bonus Payable**
7. *Resize* **Column A** *to fit.*
8. *Input* **0.01** *into* **Cell B1** *and format it as* **Percent**, **one decimal place**.
9. *Click on* **Cell B3**. *Type the = sign, then click on the* **June_Sales** *tab and click on* **Cell J31** *and press* **[Enter]**.
10. *Make sure* **Cell B3** *is formatted as a* **Number**, **two decimal places**.

	B3		fx	=June_Sales!J31
	A	B	C	D
1	Bonus Percent	1.0%		
2				
3	Total Bonus Payable	20,832.30		
4				

Figure 6.14

The formula in Cell B3 of the Assumptions tab should now read: =June_Sales!J31. This is Excel's way of linking to cells in other tabs. Note the exclamation point (!) separates the cell reference (J31) from the tab named June_Sales.

11. *Click on the* **June_Sales** *tab,* **Cell J2**.

The formula in Cell J2 of the June_Sales tab currently reads: *=IF(I2="Yes",F2*0.01,0)*. The "0.01" reference is **hard-coded**, meaning that it is a number, value or text string that is written into the formula and cannot change, unless someone changes or retypes the formula. It is my heartfelt belief that numbers in a formula should NEVER be hard-coded. I always set up another tab, like the Assumptions page, where I can store all of the variables. If your manager asked you to change that number to 0.015 just to see how much bonus would be paid out, you would have to go into each cell and make that change (or at least change it in one cell and copy it to all others). We want to make it REAL EASY for the manager to change any variable he wants and immediately see the results.

That is why I believe that Excel is the best "what if" tool available today -- it is SO EASY to set up these kinds of analyses.

> 12. In **Cell J2** of the **June_Sales** tab, select **0.01** with your mouse, click on the **Assumptions** tab, click on **Cell B1**, press the **[F4]** key to make **Cell B1** an **absolute reference** and press **[Enter]**.

	J2				f_x	=IF(I2="Yes",F2*Assumptions!$B$1,0)				

	A	B	C	D	E	F	G	H	I	J	K
1	Region	State	Store No	Year	Month	Sales	Budget	% Budget	Qual Bonus	Bonus Amt	Store Type
2	East	NY	1001	2010	6	65,705	70,000	93.9%	No	0.00	Scissors
3	West	CA	1002	2010	6	103,652	100,000	103.7%	Yes	1,036.52	Rock
4	North	IL	1005	2010	6	103,221	100,000	103.2%	Yes	1,032.21	Rock
5	South	NC	1009	2010	6	62,971	50,000	125.9%	Yes	629.71	Paper
6	South	NC	1011	2010	6	88,138	70,000	125.9%	Yes	881.38	Scissors
7	South	NC	1012	2010	6	95,628	70,000	136.6%	Yes	956.28	Scissors
8	North	IL	1018	2010	6	106,349	100,000	106.3%	Yes	1,063.49	Rock
9	North	OH	1019	2010	6	80,806	70,000	115.4%	Yes	808.06	Scissors
10	West	CA	1021	2010	6	21,082	50,000	42.2%	No	0.00	Paper
11	West	CA	1024	2010	6	119,429	100,000	119.4%	Yes	1,194.29	Rock

Figure 6.15

The formula in Cell J2 of the June_Sales tab should now read:
>   =IF(I2="Yes",F2*Assumptions!$B$1,0)

> 13. Copy the formula down for all cells **except** the last cell that contains the total summation.

This formula means that if Cell I2 is "Yes", then multiply Cell F2 by whatever value is in Cell B1 on the *Assumptions* tab.   When you copy the formula down, the *Assumptions!$B$1* remains the same in all formulas, hence the use of the absolute reference. The total Bonus_Amt column should still be 20,832.30.

> 14. Click on **Assumptions** tab, **Cell B1**.
> 15. Change the **Bonus Percent cell** (**Cell B1**) to **0.015** (or 1.5%) and press **[Enter]**.

	A	B	C
1	Bonus Percent	1.5%	
2			
3	Total Bonus Payable	31,248.45	
4			

Figure 6.16

Instantaneously, the Total Bonus Payable changes to $31,248.45. Now your manager can use any bonus percent he wants and can instantly see the change in the total bonus payable.

Named Ranges

Sometimes while writing formulas, it is confusing looking at a reference like Assumptions!$B$1. If you wanted to see what value is contained at Assumptions!$B$1, you would have to click on that tab and find the cell. Excel has a way that you can rename a cell or a range of cells to something that makes a little more sense and easier to program and audit in formulas. This is called a **Named Range** or a List Range. A Named Range is a word or string of characters that represents a cell, range of cells, formula or constant value. It's a good idea to use easy-to-understand names when naming ranges. In the next exercise, we will create an input called **Bonus Entry Point** and create a named range called **EntryPoint** and refer to it in the formula.

Let's suppose your manager wants to know how much would be paid if the entry point to start earning a bonus was raised to 110% instead of 100%? That's easy, since we know how to do it.

1. *On the* **Assumptions** *page, insert two rows below* **Row 1**.
2. *In* **Cell A3**, *type:* **Bonus Entry Point**
3. *In* **Cell B3**, *type* **110%**
4. *Format* **Cell B3** *as* **Percent**, **zero decimal places**.
5. *With your cursor on* **Cell B3**, *click in the* **Name Box** *just above* **Column A** *(it should read B3) and type* **EntryPoint** *and press* **[Enter].**

EntryPoint	▼		f_x	110%	
	A	B	C		
1	Bonus Percent	1.5%			
2					
3	Bonnus Entry Point	110%			
4					
5	Total Bonus Payable	31,248.45			
6					

Figure 6.17

Typing **EntryPoint** in the Name Box creates a name for that cell. Note that you cannot use spaces or wildcard characters (*, ? or ~) in a named range name. You can also create Named Ranges for multiple groups of cells, which we will do in later chapters.

Since the Bonus_Amt field in the June_Sales tab refers to the Qual_Bonus field to determine if the store earned a bonus or not, all we have to do is modify the Qual_Bonus formulas and the bonus calculation should be correct. Let's try it.

6. *Click on* **Cell I2** *of the* **June_Sales** *tab.*
7. *Replace the formula:* **=IF(H2>=1,"Yes","No")** *with*
   =IF(H2>=EntryPoint,"Yes","No")

Notice there are no quotes around *EntryPoint*. This is because it is not a text string, but a named range, which Excel recognizes just like a value.

8. *Copy the edited formula down to all cells below.*
9. *Click on the **Assumptions** tab.*

The Bonus Payable is now $26,550.11. At this point, you can change the Bonus Percent and/or the Bonus Entry Point to anything you want and it will immediately calculate the Bonus Payable.

10. *Change the **Bonus Percent** to **1.2%** and the **Bonus Entry Point** to **105%***
    (Answer: $22,516.28)

By using Comparison Operators and the IF() function in writing formulas, you are limited only to your creativity.

Text Operators

Now let's take a look at **Text Operators**. The most useful Text operators are the Ampersand sign (&) and the quote (").

Text Operators	**Definition (Example)**
& (ampersand) and " (quote)	Connects or concatenates two values to produce one contiguous text string. Example: Assuming ***Nitey-Nite*** is in Cell A1 and ***Mattresses*** is in Cell B1, =A1&" "&B1 produces ***Nitey-Nite Mattresses***

Concatenation

Let's try an example using text operators on the Assumptions tab. In this example, you will write a sentence that contains the amount of the Bonus Payable concatenated within the phrase.

1. *On the **Assumptions** tab,* **Cell A7***, type:*
        ="The Total Bonus Payable is "&B5

Figure 6.18

The TEXT() Function

The number for the Total Bonus Payable is correct, but it's not formatted. To format a number within a concatenation string like this, you need to use the **TEXT()** function. The TEXT() function formats text into almost any kind of format. In our case, we want to format the result in a currency format. This is how to do it:

2.   Edit the formula in **Cell A7** to be as follows:
     ="The Total Bonus Payable is "&TEXT(B5,"$0,000.00")

Figure 6.19

Notice that the TEXT() function has two arguments: the cell reference or string you want to format, and the format type. The format type is surrounded by quotes. I encourage you to play around with this function and try to create some of your own formats. To create a Percent format with one decimal place, the format type would be "0.0%". To concatenate more text at the end of the formula, simply type the & sign followed by a quote and the text you want. If the formula ends with a function, you can simply end the formula with the closing parenthesis. Otherwise, you need to end the formula with an ampersand sign and a quote. Let's suppose you want to end the sentence with a period and then a statement that says "Please forward to the Accounts Payable department."

3.   Edit the formula in **Cell A7** to be as follows:

> **="The Total Bonus Payable is "&TEXT(B5,"$0,000.00")&". Please**
> **forward to the Accounts Payable department."**

| | A7 | | f_x | ="The Total Bonus Payable is "&TEXT(B5,"$0,000.00")&". Please forward to the Accounts Payable department." |

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Bonus Percent	1.2%											
2													
3	Bonnus Entry Point	105%											
4													
5	Total Bonus Payable	22,516.28											
6													
7	The Total Bonus Payable is $22,516.28. Please forward to the Accounts Payable department.												
8													

Figure 6.20

4. Now change the **Bonus Percent** to be **1.5%**.

The Total Bonus Payable AND the Bonus sentence change when the Bonus Percent is modified.

5. *Save and close the file.*

Text Operators make it simple to put data in an English sentence which makes it easy for people who don't do well with numbers on a spreadsheet. You will find this very useful for putting two or more strings of data together in one cell.

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 6, Section 2 of 2** option and complete the review questions.*

Conclusion

In the chapter, you learned the basics of writing formulas. Behind the basics are Arithmetic, Comparison and Text Operators, which you should now know very well. You were introduced to the IF() function, which is one of the most common functions you will use in Excel. To help you write an IF() function (or any other function), you were exposed to the Insert Function Dialog Box. You learned how to use multiple IF() functions in a formula, which is called nesting functions. You developed an Assumptions Page where you stored all of the variables used in your analysis. Using an Assumptions Page makes it useful to avoid hard-coded numbers into formulas. You also created a Named Range, which makes writing and auditing formulas much easier. Finally, you concatenated a calculated number and formatted it using a TEXT() function within a text string, making an accurate, easy-to-understand, and updatable sentence.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on

Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER SEVEN – TEXT FUNCTIONS

In this chapter, you will:

- Write formulas using TEXT functions, including:
    - FIND()
    - LEFT()
    - RIGHT()
    - MID()
    - UPPER()
    - LOWER()
    - PROPER()
    - LEN()
    - TRIM()
    - VALUE()

I LOVE writing formulas. Here are two of my favorites:

=IF(ISERROR(VLOOKUP(MATCH(G5,Assumptions!$E$3:$E$10,1),Assumptions !$D$3:$F$10,3,FALSE)*D5),0,VLOOKUP(MATCH(G5,Assumptions!$E$3:$E$10,1),Assumptions!$D$3:$F$10,3,FALSE)*D5)

This one calculates a bonus based on a criteria table. It's similar to the one we did in Chapter 6 but it does everything in one cell.

=MID(B2,FIND(",",B2)+2,100)&" "&LEFT(B2,FIND(",",B2)-1)

This formula takes a name which is formatted as "LastName, FirstName" in Cell B2 and switches it to a "FirstName LastName" format. You will become an expert at this formula in this chapter.

This is what the meat of Excel is all about – writing formulas. In this and the three following chapters, you will work examples using the most popular and useful functions.

Listed on the next page are the most common functions I have used. There are many other functions in Excel. However, in my work as an accountant and financial analyst, these are the ones I've found to be most useful.

Common Functions

TEXT	**FINANCIAL**	**DATE & TIME**
FIND()	FV()	DATE()
LEFT()	IRR()	DAY()
LEN()	NPV()	MONTH()
LOWER()	PMT()	NOW()
MID()	PV()	TODAY()
PROPER()		WEEKDAY()
RIGHT()	**MATH**	YEAR()
SEARCH()	ABS()	
TEXT()	INT()	**STATISTICAL**
TRIM()	RAND()	AVERAGE()
UPPER()	RANDBETWEEN()	AVERAGEIFS()*
VALUE()	ROUND()	COUNT()
	SUM()	COUNTIF()
LOOKUP & REFERENCE	SUMIF()	COUNTIFS()*
HLOOKUP()	SUMIFS()*	MAX()
INDEX()		MEDIAN()
LOOKUP()	**LOGICAL**	MIN()
MATCH()	AND()	MODE()
VLOOKUP()	CELL()	RANK()
	IF()	
	ISERROR()	
	OR	

 *New in Excel 2010

Text Functions

Let's first talk about **Text Functions**. Text functions are basically things you can do with text strings.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter7\Employees.xlsx***.*
2. *Save it as* **C:\ExcelCEO\Excel 2010\Chapter7\myEmployees.xlsx.**
3. *Click on the* **Employee** *tab.*

This file is a list of the employees at Nitey-Nite Mattresses. Note that the names in this tab are in Last Name, First Name format. We'll use this list of names as the example behind your lesson on TEXT functions. In the next few pages, you will write a formula *in one cell* that will turn these names from a Last Name, First Name format into a First Name Last Name format. To accomplish this, you will write a series of formulas using only TEXT functions to break apart the first and last names, and then write a formula to put it back together again. (We WILL do better than all the king's horses and all the kings

men). The trick is to write **one** formula that will accomplish all of this. We will use some of the TEXT functions listed above, as well as our experience in working with concatenating strings you learned in Chapter 6 to accomplish it. But first, let's go over each function.

The FIND() and SEARCH() Functions

The first text functions we'll learn how to use is the **FIND()** and **SEARCH() functions**. The FIND() function finds a text string (find_text) within another text string (within_text), and returns the number of the starting position of the find_text, from the first character of the within_text. You can use the SEARCH() function to find one text string within another, but unlike SEARCH(), FIND() is case sensitive and doesn't allow wildcard characters. Following is the list of wildcard characters used in Excel.

Character	**Using SEARCH() Finds:**
? (question mark)	Any single character
	For example, sm?th finds
	"smith" and "smyth"
* (asterisk)	Any number of characters
	For example, *east finds
	"Northeast" and "Southeast"
~ (tilde) followed by	A question mark, asterisk, or tilde
?, * or ~	For example, fy91~? finds "fy91?"

The FIND() and SEARCH() functions have two required arguments and one optional argument. The first argument is the find_text, or the text you want to find. The second argument is the within_text, or the string in which you want to search. The optional argument is the start_num argument. You use this optional argument when you don't want to start at the first character in the string. The functions return the number position of the text string you're searching for. In the next example, you'll use the FIND() function, although either function would work.

In this example, we want to find the number position of the comma (,) in the cells that contain the employees' name. The comma is the common character in all of the names. You may not understand why we do this right now, but humor me for a few minutes and follow along.

    4. *In* **Cell E1***, type:* **Find**
    5. *In* **Cell E2***, type:* **=FIND(",",B2)**

Figure 7.1

The result of this formula is 8, meaning that the comma in Cell B2 is in the eighth character from the left in the string: *Goodson, Virgetta.*

6. Copy the formula in **Cell E2** *down to all cells below.*

You see that the comma in the next few cells is found as the sixth character, the ninth character, and so on. It is a very simple function that returns a simple value.

The LEFT() Function

The **LEFT() function** returns the left-most characters in a text string, based on the number of characters you specify. This function has two arguments: first is the text where you want to extract the string from. Second is the number of characters you want to extract, starting from the first character on the left. Let's work an example.

7. In **Cell F1**, *type:* **Last Name**
8. In **Cell F2**, *type the following formula:* **=LEFT(B2,7)**

	F2		▾	fx	=LEFT(B2,7)		

◢	A	B	C	D	E	F
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099		8 Goodson
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006		6
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099		9
5	012716	Ragland, Tom	9/5/2005	12/5/2005		8
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006		5
7	002134	Nunn, Clayton	8/8/2008	1/1/2099		5
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007		9
9	001479	Bub, Kil	9/5/2005	5/13/2007		4
10	010085	Dawson, Burline	4/16/2008	1/1/2099		7
11	002715	Hattaway. Haydee	6/6/2006	1/1/2099		9

Figure 7.2

This formula tells Excel to return the left 7 characters in the text string in Cell B2. The result is "Goodson". In this manner, we can extract that last name of the names in Column B.   However, the last name won't always be 7 characters long, like we programmed into the function. How can we calculate the length of the last name? Well, we've already calculated where the comma is, and the last name will always end one character before the comma.   For "Goodson, Virgetta", the comma is the eighth character, so the last name should be at the comma (or the eighth place) less one. Let's modify our formula to see if that works.

> 9.   Edit the formula in **Cell F2** to the following: **=LEFT(B2,E2-1)**
> 10. Copy down to all cells below and resize **Column F** as needed.

	F2		▾	fx	=LEFT(B2,E2-1)		

◢	A	B	C	D	E	F
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099		8 Goodson
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006		6 Szmyd
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099		9 Dereamer
5	012716	Ragland, Tom	9/5/2005	12/5/2005		8 Ragland
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006		5 Burg
7	002134	Nunn, Clayton	8/8/2008	1/1/2099		5 Nunn
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007		9 Monaghan
9	001479	Bub, Kil	9/5/2005	5/13/2007		4 Bub
10	010085	Dawson, Burline	4/16/2008	1/1/2099		7 Dawson
11	002715	Hattaway. Haydee	6/6/2006	1/1/2099		9 Hattaway

Figure 7.3

That seems to work. All we're doing here is taking the number in Column E less one.

The RIGHT() Function

The **RIGHT() function** operates in the same way as the LEFT() function, except that it returns characters from the right.

> *11. In* **Cell G1***, type:* **First_Name**
> *12. In* **Cell G2***, type the following formula:* **=RIGHT(B2,8)**

	G2			f_x	=RIGHT(B2,8)		
	A	B	C	D	E	F	G
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name	First Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099	8	Goodson	Virgetta
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006	6	Szmyd	
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099	9	Dereamer	
5	012716	Ragland, Tom	9/5/2005	12/5/2005	8	Ragland	
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006	5	Burg	
7	002134	Nunn, Clayton	8/8/2008	1/1/2099	5	Nunn	
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007	9	Monaghan	
9	001479	Bub, Kil	9/5/2005	5/13/2007	4	Bub	
10	010085	Dawson, Burline	4/16/2008	1/1/2099	7	Dawson	
11	002715	Hattaway, Haydee	6/6/2006	1/1/2099	9	Hattaway	

Figure 7.4

Again, hard-coding the "8" in this formula will work for the first name, and it will work for all first names with eight characters, but it won't work for all names. In this case, we could use a nested left/right function to extract the correct value, but it's a lot easier to use the MID() function.

The MID() Function

The **MID() function** operates in the same manner as the LEFT() and RIGHT() functions, with one additional argument – it requires you to tell the formula which character to start on.

> *13. In* **Cell G2***, delete the previous formula and type this formula:*
>   **=MID(B2,10,8)**

	G2		*fx*	=MID(B2,10,8)			
	A	B	C	D	E	F	G
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name	First Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099		8 Goodson	Virgetta
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006		6 Szmyd	
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099		9 Dereamer	
5	012716	Ragland, Tom	9/5/2005	12/5/2005		8 Ragland	
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006		5 Burg	
7	002134	Nunn, Clayton	8/8/2008	1/1/2099		5 Nunn	
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007		9 Monaghan	
9	001479	Bub, Kil	9/5/2005	5/13/2007		4 Bub	
10	010085	Dawson, Burline	4/16/2008	1/1/2099		7 Dawson	
11	002715	Hattaway. Haydee	6/6/2006	1/1/2099		9 Hattaway	

Figure 7.5

This formula tells Excel to return the eight right-most characters starting from the 10th character from the left. When we analyze all names, there are two variables we need to calculate: first, the character to start on, and second, how many characters are in the first name. Since we've already calculated the position of the comma, we know that the beginning character of the first name is always going to be at the comma plus two (remember to include the space after the comma as a character). I usually put 100 as the number of characters in the first name, as I don't know ANY first names with more than 100 characters. This way, Excel will return all of the characters in the first name. Let's try it.

> 14. Edit **Cell G2** *to the following:* **=MID(B2,E2+2,100)**
> 15. *Copy down to all cells below and resize the column as necessary.*

	G2		*fx*	=MID(B2,E2+2,100)			
	A	B	C	D	E	F	G
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name	First Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099		8 Goodson	Virgetta
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006		6 Szmyd	Janelle
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099		9 Dereamer	Norwood
5	012716	Ragland, Tom	9/5/2005	12/5/2005		8 Ragland	Tom
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006		5 Burg	Leopoldo
7	002134	Nunn, Clayton	8/8/2008	1/1/2099		5 Nunn	Clayton
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007		9 Monaghan	Yuna
9	001479	Bub, Kil	9/5/2005	5/13/2007		4 Bub	Kil
10	010085	Dawson, Burline	4/16/2008	1/1/2099		7 Dawson	Burline
11	002715	Hattaway. Haydee	6/6/2006	1/1/2099		9 Hattaway	Haydee

Figure 7.6

Since you already know how to concatenate cells, all you have to do now is to write a formula in Cell H2 to put the first name and last name together.

16. In **Cell H1**, *type:* **Full Name**
17. In **Cell H2**, *type the following formula:* **=G2&" "&F2**
18. *Copy down to all cells below and resize the column as necessary.*

We now have the full name, but we would like to put the formula in ONE cell. So far, we used use four columns to come up with the full name. To put it all in one cell, all we have to do is some copying and pasting.

19. *Click on* **Cell G2**.
20. *With your cursor, highlight the entire formula in the* **Formula Bar** *without the "=" sign, press* **[Ctrl]+c** *to copy the formula into memory, then press* **[Esc]** *to take the action out of copy mode.*

IF		▾	X ✓ *fx*	=MID(B2,E2+2,100)			
	A	B	C	D	E	F	G	H
1	Empl_No	Name	Start_Date	End_Date	Find	Last Name	First Name	Full Name
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099	8	Goodson	:2+2,100)	Virgetta Goodson
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006	6	Szmyd	Janelle	Janelle Szmyd
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099	9	Dereamer	Norwood	Norwood Dereamer
5	012716	Ragland, Tom	9/5/2005	12/5/2005	8	Ragland	Tom	Tom Ragland
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006	5	Burg	Leopoldo	Leopoldo Burg
7	002134	Nunn, Clayton	8/8/2008	1/1/2099	5	Nunn	Clayton	Clayton Nunn
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007	9	Monaghan	Yuna	Yuna Monaghan
9	001479	Bub, Kil	9/5/2005	5/13/2007	4	Bub	Kil	Kil Bub
10	010085	Dawson, Burline	4/16/2008	1/1/2099	7	Dawson	Burline	Burline Dawson
11	002715	Hattaway, Haydee	6/6/2006	1/1/2099	9	Hattaway	Haydee	Haydee Hattaway

Figure 7.7

All we did here was to put the formula in Cell G2 (without the "=" sign) into memory.

21. *With the formula in* **Cell G2** *now in memory, click on* **Cell H2** *and highlight* **G2** *in that formula and press* **[Ctrl]+v** *(to paste the* **G2** *formula) and press* **[Enter]**.

The formula in Cell H2 should now read as follows:
        =MID(B2,E2+2,100)&" "&F2

All we did was to replace G2 with the formula in Cell G2. Let's do the same for F2.

22. *Click on* **Cell F2**.
23. *With your cursor, highlight the formula (without the "=" sign), press* **[Ctrl]+c** *to copy the formula into memory, and press* **[Esc]** *(to take the action out of edit mode).*
24. *With the formula in* **Cell F2** *in memory, click on* **Cell H2** *and highlight* **F2** *in the formula and press* **[Ctrl]+v** *(to paste the* **F2** *formula) and press* **[Enter]**.

The formula in Cell H2 should now read as follows:
    =MID(B2,E2+2,100)&" "&LEFT(B2,E2-1)

Figure 7.8

Come to think of it, the two occurrences of E2 in this formula are also calculated, so we can replace those references as well.

>   25. *Click on* **Cell E2**.
>   26. *With your cursor, highlight the formula (without the "=" sign) and press* **[Ctrl]+c** *to copy the formula into memory, and press* **[Esc]** *(to take the action out of edit mode).*
>   27. *With the formula in* **Cell E2** *in memory, click on* **Cell H2** *and highlight the first occurrence of* **E2** *in the formula and press* **[Ctrl]+v** *(to paste the F2 formula), then do the same for the second occurrence of* **E2** *and press* **[Enter]**.

The formula in Cell H2 should now read as follows:
>   **=MID(B2,FIND(",",B2)+2,100)&" "&LEFT(B2,FIND(",",B2)-1)**

>   28. *Copy down to all cells below.*

Figure 7.9

At this point, you don't need Columns E, F, and G, so you can delete them.

>   29. *Delete* **Columns E, F**, *and* **G**.

	A	B	C	D	E	F
	E2		f_x	=MID(B2,FIND(",",B2)+2,100)&" "&LEFT(B2,FIND(",",B2)-1)		
1	Empl_No	Name	Start_Date	End_Date	Full Name	
2	012355	Goodson, Virgetta	4/12/2008	1/1/2099	Virgetta Goodson	
3	010545	Szmyd, Janelle	1/9/2005	11/19/2006	Janelle Szmyd	
4	003882	Dereamer, Norwood	12/24/2008	1/1/2099	Norwood Dereamer	
5	012716	Ragland, Tom	9/5/2005	12/5/2005	Tom Ragland	
6	007519	Burg, Leopoldo	1/21/2005	5/10/2006	Leopoldo Burg	
7	002134	Nunn, Clayton	8/8/2008	1/1/2099	Clayton Nunn	
8	002914	Monaghan, Yuna	3/3/2007	12/19/2007	Yuna Monaghan	
9	001479	Bub, Kil	9/5/2005	5/13/2007	Kil Bub	
10	010085	Dawson, Burline	4/16/2008	1/1/2099	Burline Dawson	
11	002715	Hattaway, Haydee	6/6/2006	1/1/2099	Haydee Hattaway	

Figure 7.10

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 7, Section 1 of 2** option and complete the review questions.*

The UPPER(), LOWER() and PROPER Functions

There is another thing that we can do to clean up the formula just a little more. Look at Cell E25. The first name *Blair* is in caps, whereas all other names are in upper and lower case. Excel has a formula to change text to upper case, lower case or proper case. Proper case is where the first letter of each word is capitalized and the remaining letters are lower case. Let's enclose our formula with the **UPPER()**, **LOWER(),** and **PROPER() functions**.

> 30. Edit **Cell E2** *to input* **UPPER(** *just to the right of the "=" sign and close the formula with an ending parenthesis.*

The formula in Cell E2 should now read as follows:
         =UPPER(MID(B2,FIND(",",B2)+2,100)&" "&LEFT(B2,FIND(",",B2)-1))

The name is now shown as **VIRGETTA GOODSON**.

> 31. In the formula in **Cell E2**, *replace the word* **UPPER** *with* **LOWER**.

The name is now shown as **virgetta goodson**.

> 32. In the formula, replace the word **LOWER** with **PROPER**.
> 33. Copy down to all cells below.

The PROPER() function capitalizes the first letter in a text string and any other letters in the text that follow any character other than a letter. It then converts all other letters to

lower case. Using the PROPER() function in this formula now converts the name to **V**i**rgetta Goodson**.

> *Note: When you use the PROPER() function, names like Jim McGowen and Joe Smith III will appear as Jim Mcgowen and Joe Smith Iii. Although this function is very useful in some cases, there are still some quirks to using it.*

Work this example as many times as you need to lock it in your memory. You will find MANY uses for formulas similar to this one.

The LEN() and TRIM() Functions

Now we'll discuss the **LEN()** and **TRIM() functions**. These functions are very useful when analyzing data that may not quite be in the right format. Sometimes when data is copied or imported from one database to another, numbers are copied over as text strings and vice-versa. This sometimes happens when databases are not programmed correctly and sometimes it may add characters to the data that are almost invisible to the user.

> 1. *Click on the* **Stores** *tab of the* **myEmployees.xlsx** *file.*

	A	B	C	D	E	F	G	H
1	Store_ID	Store_No	Store_Name	Address1	City	State	ZIP	Phone
2	2	1005	Nitey-Nite Glynn	1082 Glynn Court	Philadelphia	PA	24378-1245	(107) 021-2094
3	3	1063	Nitey-Nite Alan	922 Alan Blvd	Philadelphia	PA	24477	(107) 566-2859
4	4	1034	Nitey-Nite Capri	351 Capri Parkway	Jersey City	NJ	32582	(108) 812-5833
5	5	1029	Nitey-Nite Marakas	337 Marakas Way	Baltimore	MD	24442	(104) 124-6759
6	6	1050	Nitey-Nite Reid	617 Reid Street	Baltimore	MD	24400-3456	(104) 108-6508
7	7	1032	Nitey-Nite Pease	348 Pease Street	Philadelphia	PA	24543	(107) 382-9110
8	8	1009	Nitey-Nite Isidor	1106 Isidor Parkway	Philadelphia	PA	24510	(107) 234-3425
9	10	1011	Nitey-Nite McKinny	111 McKinny	Baltimore	MD	24421	(104) 007-2258
10	11	1040	Nitey-Nite Chachy	427 Chachy	Jersey City	NJ	32558	(108) 182-8419
11	12	1019	Nitey-Nite Alameda	266 Alameda Blvd	Baltimore	MD	24414	(104) 475-5490
12	13	1059	Nitey-Nite	753 LaMontage Way	Baltimore	MD	24386	(104) 490-4511

Figure 7.11

This is a listing of the stores that Nitey-Nite Mattresses owns. It was copied directly from a SQL Server database and has not been cleaned up yet. Let's suppose we want to create a formula in one cell that concatenates the Address, City, and State.

> 2. *In* **Cell I1** *of the* **Stores** *tab, type:* **Location**
> 3. *Format* **Cell I1** *as the other headings.*
> 4. *In* **Cell I2**, *type the following formula:* **=D2&", "&E2&", "&F2**

Figure 7.12

This formula puts the Address, City and State into one cell, separated by commas. After you type the formula, you see there is a long string of spaces after the address. It also appears there are some spaces before the address, as the address appears to be indented from the left. This adding of spaces happens frequently when data is copied from a database into Excel. Let's play around with the Address field and see what is there.

5. In **Cell J2**, *type the following formula:* **=LEN(D2)**

Figure 7.13

The LEN() function counts the number of characters in the text string in Cell D2 (the address). The string "1082 Glynn Court" has only 16 characters (including two spaces), so the result of the formula should be 16, but we see the LEN() function returned **30**. This indicates that there are additional spaces before, after and/or between the words in the address. You can solve the issue by enclosing the address with a **TRIM()** function. The TRIM () function removes all spaces from a text string except for one space between each word.

6. *Delete the contents of* **Cell J2**.
7. *Edit the formula in* **Cell I2** *to be the following:*
    =TRIM(D2)&", "&E2&", "&F2
8. *Copy the formula down for all cells below and resize the column.*

Now the concatenation of the Address, City and State appears correctly.

Figure 7.14

The VALUE() Function

Another useful function is the **VALUE() function**. This function turns numbers that are shown as text strings into numbers. For example, sometimes US ZIP codes contain five digits and sometimes ten digits (a five and four digit code separated by a dash). In this example, when the data was copied over from a database, Excel recognized the five digit codes as numbers and the ten digit codes as text, as you can't have a dash character in a number. Let's suppose that we really don't care about the four digit extension – all we really want is the five digit ZIP code formatted as a number.

9. *In* **Cell J1**, *type* **ZIP**
10. *Format the heading like the others.*
11. *In* **Cell J2**, *type the following formula:* **=LEFT(G2,5)**

Figure 7.15

When you use a text function like LEFT(), Excel turns the result into a text string. To make that text string a number, you must first be sure there are only numbers in the string. Then you can use the VALUE() function.

12. *Edit the formula in* **Cell J2** *to be as follows:* **=VALUE(LEFT(G2,5))**
13. *Copy down for all cells.*

	J2			f_x	=VALUE(LEFT(G2,5))	

	F	G	H	I	J
1	State	ZIP	Phone	Location	ZIP
2	PA	24378-1245	(107) 021-2094	1082 Glynn Court, Philadelphia, PA	24378
3	PA	24477	(107) 566-2859	922 Alan Blvd, Philadelphia, PA	24477
4	NJ	32582	(108) 812-5833	351 Capri Parkway, Jersey City, NJ	32582
5	MD	24442	(104) 124-6759	337 Marakas Way, Baltimore, MD	24442
6	MD	24400-3456	(104) 108-6508	617 Reid Street, Baltimore, MD	24400
7	PA	24543	(107) 382-9110	348 Pease Street, Philadelphia, PA	24543
8	PA	24510	(107) 234-3425	1106 Isidor Parkway, Philadelphia, PA	24510
9	MD	24421	(104) 007-2258	111 McKinny Highway, Baltimore, MD	24421
10	NJ	32558	(108) 182-8419	427 Chachy Highway, Jersey City, NJ	32558
11	MD	24414	(104) 475-5490	266 Alameda Blvd, Baltimore, MD	24414
12	MD	24386	(104) 490-4511	753 LaMontago Way, Baltimoro, MD	24386

Figure 7.16

Now you have a clean column with five-digit ZIP codes, all in a number format. You can usually tell if a number is formatted as text or as a number by 1) seeing if the number is left or right justified (a left-justified number usually indicates it is text); 2) if you can add the number(s) (if you can't add them, they are formatted as text), or 3) if the number(s) contains a leading zero (leading zeros indicate a text field).

> *Trick: A quick and dirty way to turn a text string containing only numbers into a number format is to just add 0 at the end of the formula. (Actually, any mathematical calculation will work.) In this example, you would use this function: =LEFT(G2,5)+0. However, don't tell this to programmers. Being the purists they are, they will tell you I'm crazy, but guess what? It works! Try it.*

14. *Save and close the file.*

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 7, Section 2 of 2** option and complete the review questions.*

Conclusion

In this chapter, you learned about the most common functions, and we explored in depth the various types of Text functions. You split apart a name in a *last name, first name* format using the FIND(), LEFT(), and MID() functions. You also worked an example using the RIGHT() function. You then concatenated the first name and last name fields in one impressive formula. You saw how to change the case sensitivity of text by working examples using the UPPER(), LOWER(), and PROPER() functions. You learned how to use the LEN() function to find out how many characters are in a cell. You

used the TRIM() function to take out spaces before and after a text string. Finally, you learned how to use a VALUE() function to turn a number formatted as text into a number.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER EIGHT –FINANCIAL AND MATH FUNCTIONS

In this chapter, you will:

- Create formulas using Financial Functions, including:
    - PMT()
    - PV()
    - FV()
    - IRR()
    - NPV()
- Create an amortization schedule.
- Work with Scenario Manager.
- Create a Proforma Income Statement.
- Estimate the value of a business, investment or income-producing property by using the Direct Capitalization and Discounted Cash Flow (DCF) methods.
- Work with the Find and Replace functionality.
- Write formulas using Math Functions, including:
    - RAND()
    - INT()
    - ROUND()
    - ABS()
    - SUMIF()
    - SUMIFS()

Financial and Math Functions

I just LOVE math. My idea of a good time is solving algebraic problems on the white boards in my office. I do realize, however, that some people don't share my enthusiasm for math. I'll assume if you've made it this far in the course, you either share my enthusiasm or someone is forcing you to take it (hopefully the first).

Financial Functions

If you've ever taken a Finance class, you should remember the discussions on calculating a payment (PMT), Present Value (PV), Future Value (FV), Internal Rate of Return (IRR) and Net Present Value (NPV). With **Financial functions**, Excel makes it easy to calculate those values. Let's begin with the PMT() function.

The PMT() Function

The **PMT() function** is one of the most commonly used functions for financial people. We always want to know what the payment is, particularly when we are analyzing our own home loan or applying for some other type of loan. The PMT() function has three required arguments: interest rate, number of periods and present value. You can also include two optional arguments: future value and type. Future value is the cash balance you want to have after the last payment is made. A type of one means payments are made at the beginning of the period, and a type of zero means payments are made at the end of the period. If the future value and type arguments are left out, Excel assumes a zero for each. In this first exercise, you will calculate the mortgage payment for a $200,000 loan.

1. *Open* **Excel** *to a new workbook.*
2. *Save the new workbook as* **C:\ExcelCEO\Excel 2010\Chapter8\myAmort.xlsx**.
3. *Type data onto the spreadsheet to look like* **Figure 8.1**.

	A	B	C
1	Interest Rate	8%	
2	No. of Periods	30	Years
3	Present Value	200,000	
4	Monthly Payment		
5			

Figure 8.1

4. *In* **Cell B4**, *type* **=PMT(B1/12,B2*12,B3)**
5. *Format* **Cell B4** *as* **Currency**, **two decimal places**.

Figure 8.2

Let's discuss the different parts of the formula. The interest rate in our analysis is 8%, which is an **annual** interest rate. To calculate a monthly payment, we have to convert the **annual** interest rate to a **monthly** interest rate. We do that by dividing Cell B1 by 12. The number of periods is 30, or 30 years. That is a common number of periods for a home loan. Again, this is an annual number that we need to convert into a monthly number, and we do that by multiplying the number of periods by 12. Finally, we input the present value of the loan, or $200,000. Note that we input that loan amount and not the sale price of the house. You can buy a $250,000 house and put $50,000 down for a loan amount of $200,000, or you can buy a $300,000 home with $100,000 down and you would have the same loan amount and payment. The payment is calculated on the loan amount, not the purchase price of the home.

Notice that the formula returns a negative number. If the present value of the home is a positive number, then the payments should be negative to support that payment. One value is a cash inflow (the present value of the home) and the other is the cash outflow (the payments). You can make the payments be a positive number by simply putting a minus sign in front of the formula or the reference to Cell B3, but not in both places.

6. *In the formula in* **Cell B4***, put a minus sign before the reference to* **Cell B3***.*

Figure 8.3

Create an Amortization Schedule

Whenever you purchase a home, the lending institution will give you an **amortization schedule**. An amortization schedule shows the loan balance after every payment, as well

as the interest amount and principal applied to each loan payment. In this next exercise, we will create an amortization schedule for the home loan we've modeled.

7. *Type the labels in* **Cells A6** *through* **F6** *as follows:*

	A	B	C	D	E	F
1	Interest Rate	8%				
2	No. of Periods	30	Years			
3	Present Value	200,000				
4	Monthly Payment	$1,467.53				
5						
6	Payment No.	Date	Payment	Interest	Principal	Balance
7						
8						
9						
10						

Figure 8.4

8. *In* **Cell A7**, *type:* **1**
9. *In* **Cell A8**, *type:* **2**
10. *With your mouse, select* **Cells A7** *and* **A8**. *Using the* **AutoFill** *box in the lower right corner of the selected range, drag the* **AutoFill** *box until the* **ScreenTip** *reads* **360** *and release.*

This action creates a column of payment numbers.

11. *Freeze the panes at* **Cell A7**.
12. *In* **Cell B7**, *type:* **1/15/2011**
13. *Format* **Cell B7** *as* **Date** *in the format* **M/YYYY**
14. *In* **Cell B8**, *type:* **=B7+(365.25/12)**
15. *Format* **Cell B8** *as* **Date** *in the format* **M/YYYY**.
16. *Copy* **Cell B8** *down to all cells below ending at* **Payment No. 360**.

	B8	▾ ◉	f_x	=B7+(365.25/12)	

◢	A	B	C	D	E	F
1	Interest Rate	8%				
2	No. of Periods	30	Years			
3	Present Value	200,000				
4	Monthly Payment	$1,467.53				
5						
6	Payment No.	Date	Payment	Interest	Principal	Balance
7		1	1/2011			
8		2	2/2011			
9		3	3/2011			
10		4	4/2011			
11		5	5/2011			
12		6	6/2011			
13		7	7/2011			
14		8	8/2011			

Figure 8.5

The last date in the range should be 12/2040. I like to begin using the 15th of the month and add 365.25/12 (the .25 accounts for a leap year day every four years) for each month to get the next month. Trust me, if you start with the first day of the month, you will end up with some complications in February. Next you will create names for the various cells to make it easier to write your formulas. We did an example of this in Chapter 6.

> 17. *Name the following cells with the following names:*
>
> | **Cell** | **Name** |
> |---|---|
> | **B1** | **rate** |
> | **B2** | **no_pds** |
> | **B3** | **pv** |
> | **B4** | **payment** |

payment		▾ ⊙		f_x =PMT(B1/12,B2*12,-B3)		
◢	A	B	C	D	E	F
1	Interest Rate	8%				
2	No. of Periods	30	Years			
3	Present Value	200,000				
4	Monthly Payment	$1,467.53				
5						
6	Payment No.	Date	Payment	Interest	Principal	Balance
7		1	1/2011			
8		2	2/2011			
9		3	3/2011			
10		4	4/2011			
11		5	5/2011			
12		6	6/2011			
13		7	7/2011			
14		8	8/2011			
15		9	9/2011			

Figure 8.6

It's easier to audit formulas when you have logical names for the variables in the formulas. Notice the word "payment" in the Name box in the upper left corner of Figure 8.6.

18. In **Cell C7**, *type:* **=payment**
19. *Format* **Cell C7** *as* **Number**, **two decimal places, Use 1000 Separator(,)**
    and copy down to all cells below.

Figure 8.7

So far it's been relatively easy, but here comes the tricky part. We now need to calculate the interest attributed to the first payment. That is done by taking the interest rate multiplied by the balance of the loan divided by 12 (since it is a monthly payment).

> 20. In **Cell D7**, *type:* **=pv*rate/12**
> 21. *Format* **Cell D7** *as* **Number**, **two decimal places, Use 1000 Separator (,)**.

	D7		▼ ◯	f_x	=pv*rate/12		
◢	A	B	C	D	E	F	G
1	Interest Rate	8%					
2	No. of Periods	30	Years				
3	Present Value	200,000					
4	Monthly Payment	$1,467.53					
5							
6	Payment No.	Date	Payment	Interest	Principal	Balance	
7	1	1/2011	1,467.53	1,333.33			
8	2	2/2011	1,467.53				
9	3	3/2011	1,467.53				
10	4	4/2011	1,467.53				
11	5	5/2011	1,467.53				
12	6	6/2011	1,467.53				
13	7	7/2011	1,467.53				
14	8	8/2011	1,467.53				
15	9	9/2011	1,467.53				

Figure 8.8

We can't copy this formula down yet because the balance of the loan will change with each payment. Now we will calculate the principal portion of the payment by simply subtracting the interest payment from the total payment. We will then calculate the ending balance of the loan by reducing the beginning balance by the principal paid. Let's model it.

22. *In* **Cell E7**, *type:* **=C7-D7**
23. *In* **Cell F7**, *type:* **=pv-E7** *(to calculate the loan balance)*
24. *Format both* **Cells** *as* **Number**, **two decimal places, Use 1000 Separator (,)**.

	F7		▼ ◯	f_x	=pv-E7		
◢	A	B	C	D	E	F	
1	Interest Rate	8%					
2	No. of Periods	30	Years				
3	Present Value	200,000					
4	Monthly Payment	$1,467.53					
5							
6	Payment No.	Date	Payment	Interest	Principal	Balance	
7	1	1/2011	1,467.53	1,333.33	134.20	199,865.80	
8	2	2/2011	1,467.53				
9	3	3/2011	1,467.53				
10	4	4/2011	1,467.53				
11	5	5/2011	1,467.53				

Figure 8.9

Now that we have the balance of the loan after the first payment, we can write formulas that will calculate the interest, principal and new balance of the loan after each payment.

25. In **Cell D8**, *type:* **=F7*rate/12** *(which calculates the interest paid on the new balance)*
26. *Copy the formula in* **Cell E7** *to* **Cell E8**.
27. *In* **Cell F8**, *type:* **=F7-E8**
28. *Format* **Cells D8**, **E8** *and* **F8** *as* **Number, two decimal places, Use 1000 Separator (,)**.
29. *Copy* **Cells D8, E8** *and* **F8** *down to all cells below.*

	A	B	C	D	E	F
1	Interest Rate	8%				
2	No. of Periods	30	Years			
3	Present Value	200,000				
4	Monthly Payment	$1,467.53				
5						
6	Payment No.	Date	Payment	Interest	Principal	Balance
7	1	1/2011	1,467.53	1,333.33	134.20	199,865.80
8	2	2/2011	1,467.53	1,332.44	135.09	199,730.71
9	3	3/2011	1,467.53	1,331.54	135.99	199,594.72
10	4	4/2011	1,467.53	1,330.63	136.90	199,457.83
11	5	5/2011	1,467.53	1,329.72	137.81	199,320.01
12	6	6/2011	1,467.53	1,328.80	138.73	199,181.29

Figure 8.10

If you did it right, the first few rows will look like the above schedule. Scroll down to the last cell in Column F (Cell F366) and you will see the balance of the loan is zero. Now you can play around with the interest rate, number of periods and loan amount (present value) numbers.   If you change the interest rate to 10%, the new payment will automatically calculate at $1,755.14.36. Change the number of periods to 20 and the payment changes to $1,930.04.   The amortization schedule also changes with every change in the input.

30. *Save the file but don't close it yet.*

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 8, Section 1 of 4** *option and complete the review questions.*

Scenario Manager

As I have said previously, it is my opinion that Excel is the best "what-if" analysis tool on the market today. One of the features to help users manage various analyses is called

Scenario Manager.   Within Scenario Manager, Excel allows you to create various scenarios, or alternative values for cells in the spreadsheet. You can add, edit, delete, and summarize these scenarios. In this next exercise, you will build on the skills you learned using the PMT() function to analyze various interest rates, number of periods, and loan amounts of a prospective loan.

For this exercise, let's use the home loan example. You live in an area where home prices average around $300,000 for the type of home you want to purchase. You have about $75,000 in cash for the down payment on the home, but you don't know if you want to spend all of that money on the down payment. Alternatively, you could put part of that money into a money market fund, or just have it in a savings fund for emergencies. With more money paid down on the loan, however, you could get a lower annual interest rate on the home loan. Therefore, you will build an analysis that shows the monthly payment, total money paid into the loan and the total interest paid under each scenario.

1. *Open up a new workbook.*
2. *Save it under* **the C:\ExcelCEO\Excel 2010\Chapter8** *folder as* **myScenario.xlsx.**
3. *Create the analysis as show in* **Figure 8.11.**

	A	B
1	**My Home Analysis**	
2		
3	Sale Price of Home	$300,000
4	Down Payment	$75,000
5	Loan Amount	$225,000
6	Annual Interest Rate	6.25%
7	Number of Months	360
8		
9	Monthly Payment	$1,385.36
10	Total Payments	$498,731
11	Total Interest	$273,731

Figure 8.11

4. *The formulas for* **Cells B5, B9, B10** *and* **B11** *are as follows:*
   Cell B5: *=B3-B4*
   Cell B9: *=PMT(B6/12,B7,-B5)*
   Cell B10: *=B9*B7*
   Cell B11: *=B10-B5*

5. *Round the dollar cells to* **zero** *decimal places (except for the Monthly Payment cell) and format all other cells as shown.*

6. *Name the following cells with the indicated ranges:*

    B4: down_payment
    B6: annual_interest_rate
    B7: number_of_months
    B9: monthly_payment
    B10: total_payments
    B11: total_interest

This is the first, or base, scenario. It assumes you will purchase a home for $300,000 and pay $75,000 down. As such, you can get a 30 year (360 month) loan at a 6.25% APR. The monthly payment calculates to be $1,385.36. The Total Payments to be made over the life of the loan is $498,731, and the total interest paid over the life of the loan is $273,731. The questions you want answered are 1) what would the monthly payment, total payments and total interest figures be if you were to pay only $50,000 down and have a higher interest rate; 2) what would the same amounts be if you were to pay a higher down payment of $100,000 and get a lower interest rate, and 3) what would the numbers be if you were to get a 20 year loan which would qualify you for a slightly lower interest rate? All of these assumptions can be managed by Scenario Manager. Let's start off by creating the base scenario in Scenario Manager that analyzes the purchase and loan if we paid $75,000 down over 360 months (30 years) at an interest rate of 6.25%.

7. *On the spreadsheet, select* **Cells B4***,* **B6** *and* **B7***.*
8. *Click on the* **Data** *tab, then click on the* **What-If Analysis** *button in the* **Data Tools** *group, and choose* **Scenario Manager***.*
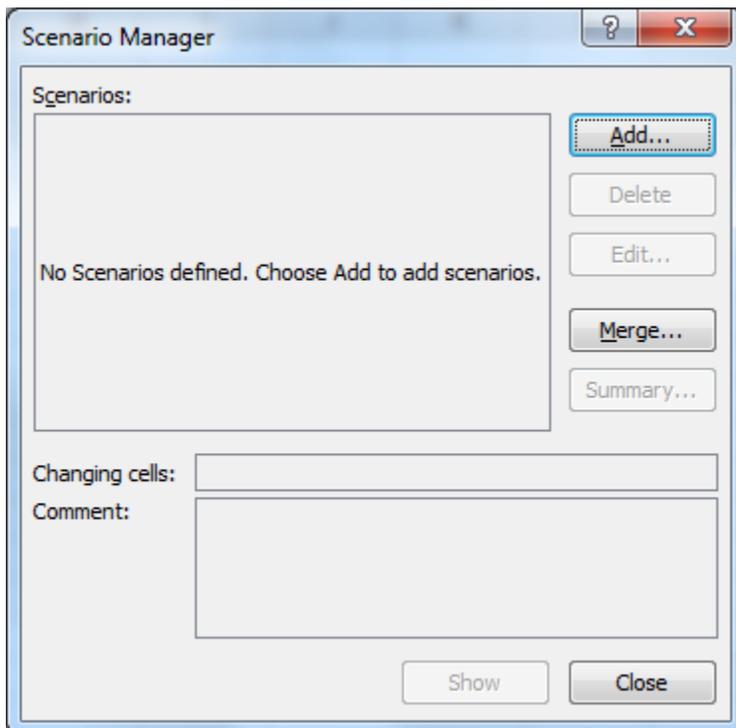
Figure 8.12

The Scenario Manager dialog box appears.

    9.   *Click the* **Add…** *button.*
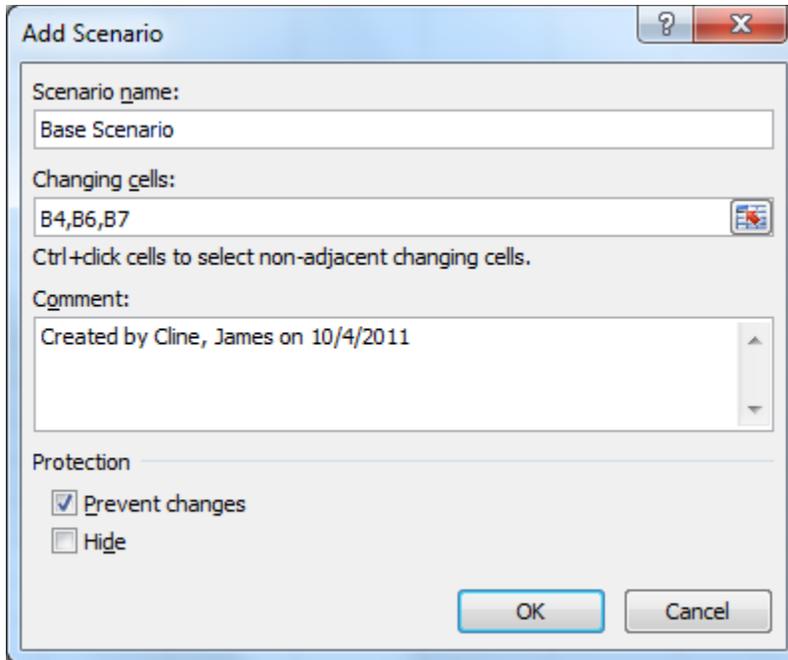
Figure 8.13

    10. *In the* **Scenario name** *box, type* **Base Scenario** *and click* **OK**.
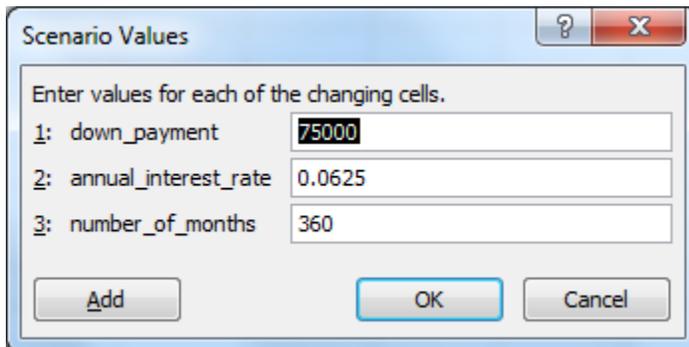
Figure 8.14

The Scenario Values dialog box appears.

    11. *Click* **OK** *in the* **Scenario Values** *box to accept the current assumptions.*
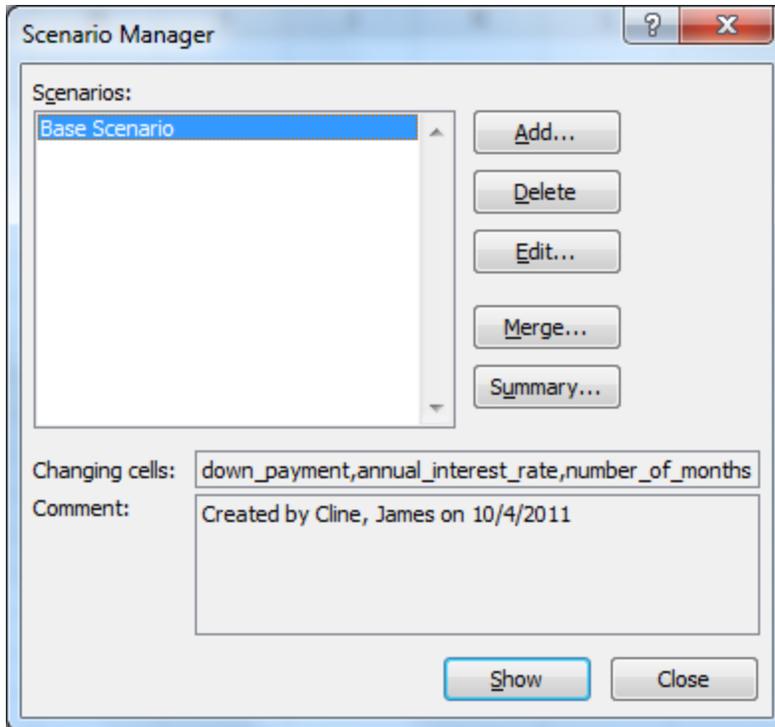
Figure 8.15

The Scenario Manager now has one scenario listed, the Base Scenario. To add more scenarios, just click Add and follow the same procedure while changing the assumptions in the Scenario Values box for each scenario.

12. *Click* **Add** *in the* **Scenario Manager** *box to add another scenario.*
13. *Call the next scenario* **Low down, high interest rate** *and click* **OK**.
14. *Change the values in the* **Scenario Values** *box to be consistent with the following values and click* **OK**.
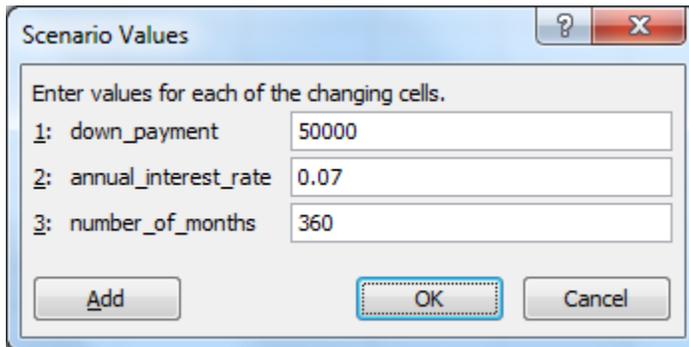
Figure 8.16

15. *Create another scenario called* **High down, low interest rate** *with* **$100,000** *down at a* **5.5%** *interest rate over* **360** *months.*
16. *Create the last scenario with* **$75,000** *down at* **6.00%** *interest rate over* **20 years (240 months)**. *Call it* **Average down, low terms.**
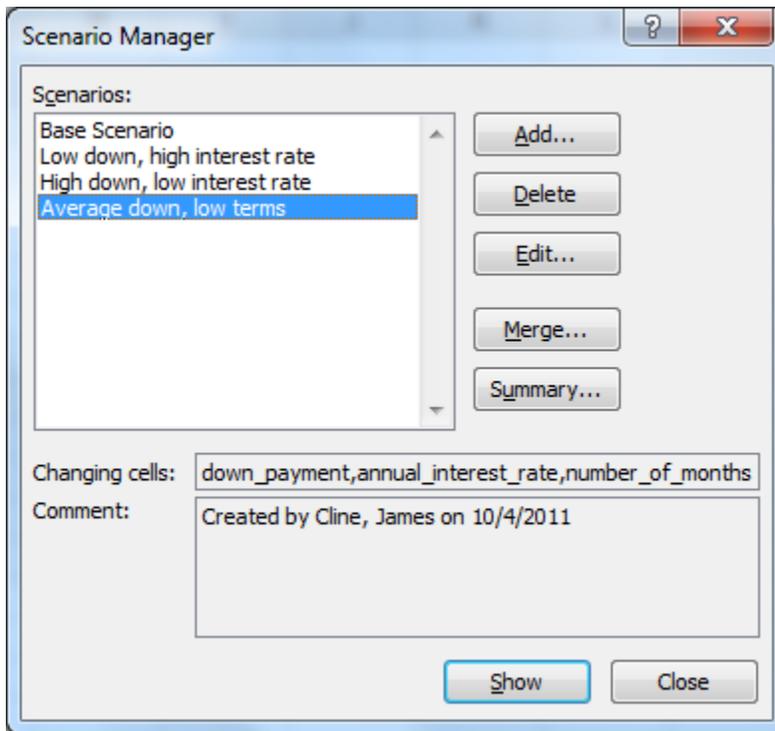
Figure 8.17

The Scenario Manager should look like Figure 8.17. To display the assumptions in each scenario in the Excel spreadsheet, simply click the Show button.

17. *Click on the* **Low down, high interest rate** *scenario and click the* **Show**
    button.
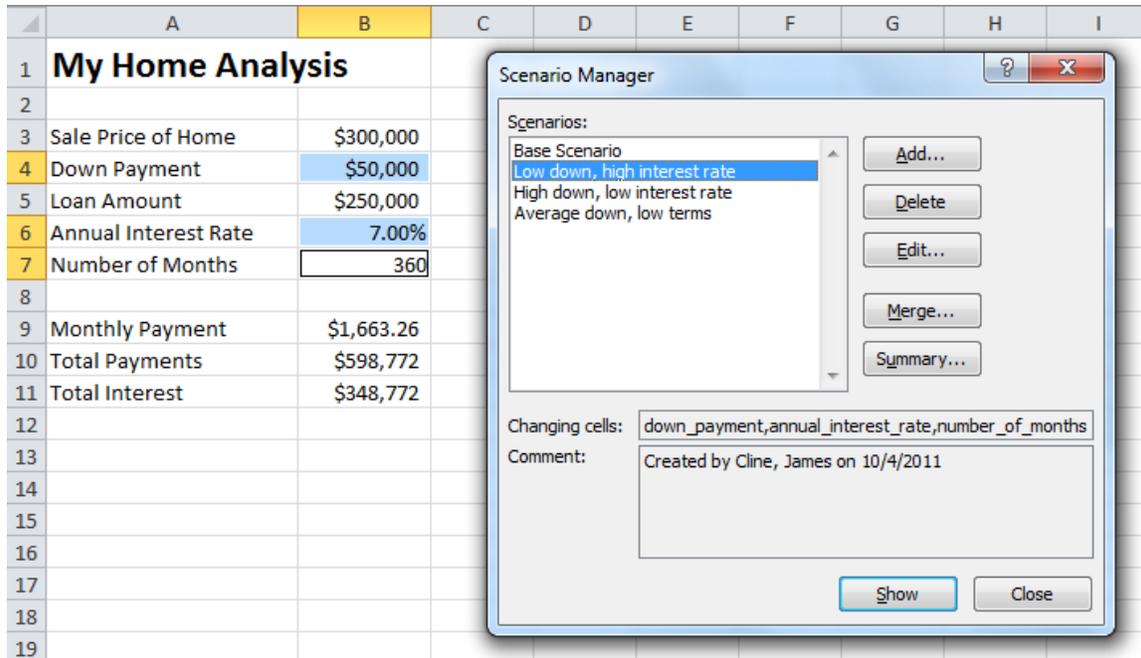
Figure 8.18

If you move the Scenario Manager dialog box to the right of the My Home Analysis, you will see that the down payment changed to $50,000 and the Annual Interest Rate changed to 7.00%. The Monthly payment went up to $1,663.26 and all of the other numbers in the analysis changed according to the changes.

> 18. Click on the **Average down, low terms** *scenario and click the* **Show** *button.*
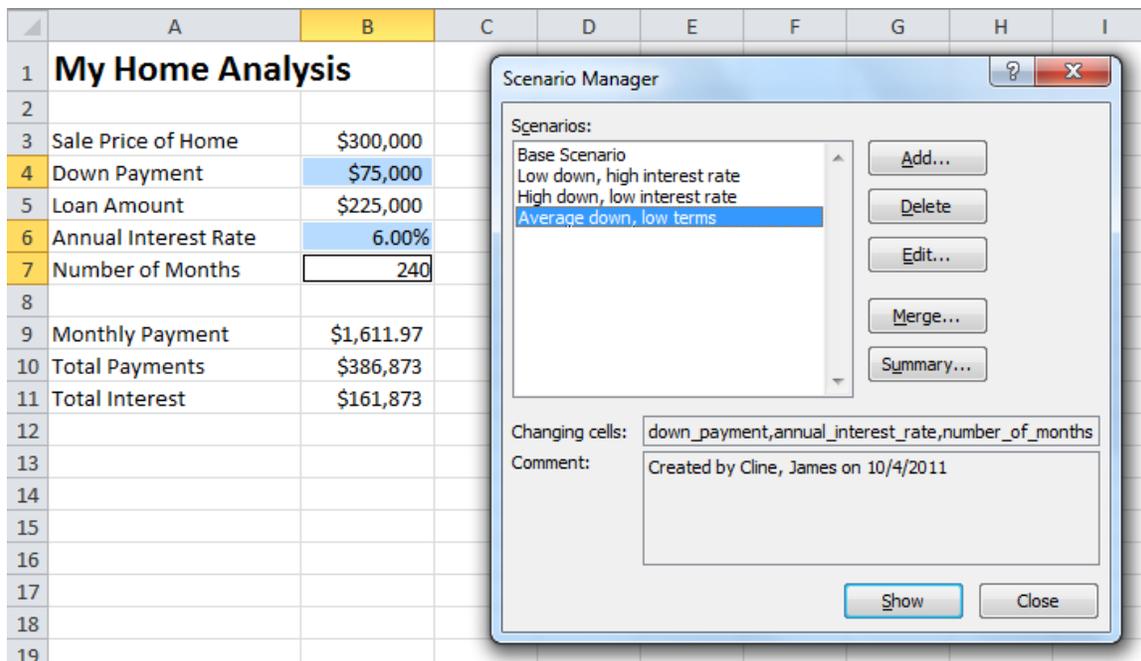
Figure 8.19

The My Home Analysis changes according to the assumptions in the Average down, lower terms scenario. But what if you wanted to see all scenarios next to each other? You can do that too.

19. *Change the current scenario back to the* **Base Scenario** *and click the* **Summary** *button.*
20. *Select* **Cells B9** *to* **B11**.
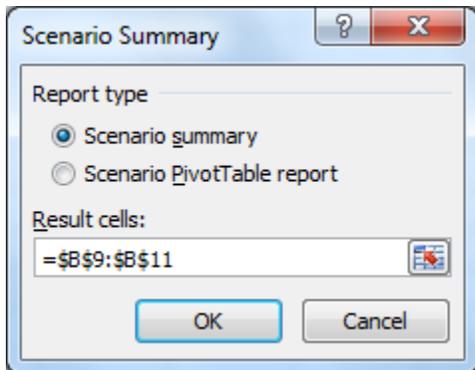
Figure 8.20

21. *Make sure the* **Scenario summary** *radio button is checked and that the* **Result cells** *reads =$B$9:$B$11 and click* **OK**.

Figure 8.21

Excel creates another tab with the Scenario Summary on it.

22. *Delete* **Column D** *(Current Values) in the* **Scenario Summary** *tab and resize columns as necessary.*

	A	B	C	D	E	F	G	H
1								
2		**Scenario Summary**						
3				Base Scenario	Low down, high interest rate	High down, low interest rate	Average down, low terms	
5		**Changing Cells:**						
6			down_payment	$75,000	$50,000	$100,000	$75,000	
7			annual_interest_rate	6.25%	7.00%	5.50%	6.00%	
8			number_of_months	360	360	360	240	
9		**Result Cells:**						
10			monthly_payment	$1,385.36	$1,663.26	$1,135.58	$1,611.97	
11			total_payments	$498,731	$598,772	$408,808	$386,873	
12			total_interest	$273,731	$348,772	$208,808	$161,873	
13		Notes: Current Values column represents values of changing cells at						
14		time Scenario Summary Report was created. Changing cells for each						
15		scenario are highlighted in gray.						
16								

Figure 8.22

Now you have a scenario summary anyone can be proud of. Personally, I don't use Scenario Manager often. I send most of my reports and analyses to users who need to understand and know how to use them. Scenario Manager is more of an advanced tool that most Excel users don't know how to use, but it can be very useful for experienced users.

23. Save and close the file.

The PV() Function

The Present Value function, or **PV() function**, returns the present value of an investment. The present value is the total amount that a series of future payments is worth in today's dollars, discounted back at a certain discount rate. This function has three required arguments and two optional arguments. The three required arguments are rate (interest rate or discount rate), number of periods, and payment. The optional arguments are future value (or a cash balance you want to attain after the last payment is made) and type, which indicates when the payments are due. A type of 0 represents payments at the end of the period and a type of 1 represents payments made at the beginning of the period. If the optional arguments are omitted, 0 is assumed for both. Note that the PV() function requires the payment to be in equal amounts, like an annuity.

Let's assume you took the advice of the fortune cookie you had at lunch and chose the numbers 2, 5, 17, 26, 35 and 49 in the state lottery and you won $20,000,000! I assume if that happened, you wouldn't be taking this course. That aside, the state says you can take your winnings in 20 annual payments of $1,000,000 per year for the next 20 years, or you can take a one-time lump sum payment of $10,000,000. The lump sum payment represents the present value of the 20 annual $1,000,000 payments. Is that a good deal or not? Which one would you take? The answer lies in the discount rate. Let's suppose that you read in the paper that investors were paying an 8% discount rate on lottery winnings. All you have to do is calculate the lump sum payment (or the present value) at an 8% rate and compare that with the $10,000,000 the state is offering, and you choose the larger of the two. Let's do it.

1. *Click on* **Sheet2** *of the* **myAmort.xlsx** *file.*
2. *Rename* **Sheet2** *as* **PV**.
3. *Input the following values in the indicated cells:*

	A	B	
1	Discount Rate	8%	
2	No. Periods	20	
3	Payment	-1,000,000	
4	Present Value		
5			

Figure 8.23

4. *In* **Cell B4**, *type this formula:* **=PV(B1,B2,B3,0,1)**
5. *Format* **Cell B4** *as* **Number, zero decimal places, Use 1000 Separator (,)**.
6. *Resize* **Columns A** *and* **B**.

Cell B3 needs to be a negative number as if we were making payments so the present value will calculate as a positive number. I included the optional arguments of 0 as the future value (as the state will not make any payments after the last payment) and a 1 for the type, assuming you will receive the first $1,000,000 payment immediately. The answer is $10,603,599, as follows:

B4			f_x	=PV(B1,B2,B3,0,1)	
	A	B	C	D	E
1	Discount Rate	8%			
2	No. Periods	20			
3	Payment	-1,000,000			
4	Present Value	10,603,599			

Figure 8.24

This means the investor would make you a lump sum payment of $10,603,599, which is higher than the $10,000,000 the state offered you. Since your name is splattered all over the front page after your win, you get a letter in the mail from another investor offering you a 10% discount rate. That sounds better, doesn't it? Just to make sure, let's change our discount rate assumption.

7. *Change the* **Discount Rate** *to* **10%**.

	A	B	C
1	Discount Rate	10%	
2	No. Periods	20	
3	Payment	-1,000,000	
4	Present Value	9,364,920	
5			

Figure 8.25

Uh-oh! Did we do something wrong? The value went **down** to $9,364,920. That is correct! The **higher** the discount rate is, the **lower** the present value will be. Different investors have different investment criteria, and a higher discount rate indicates the investor's perception of the risk associated with the investment. The higher the risk, the more the investor needs to make on the investment, thus the lower present value, or the lower the amount the investor is willing to pay for the investment.

The FV() Function

The Future Value, or **FV() function**, is similar to the PV() function except it calculates the future value of an investment based on periodic, constant payments and a constant rate of interest. It has the same arguments as the PV() function, except it allows you to input a present value in place of the future value in the optional arguments. All other assumptions are the same.

Let's do an example of a Future Value calculation. We will assume that you will receive the $1,000,000 every month from the state and put it into an investment earning an average of 7.5% per year over the next 20 years. What would the value of that investment be in 20 years, compounding the 7.5% earned?

1. *Copy the* **PV** *tab and rename the new tab* **FV** *(press* **[Ctrl]** *and click on the* **PV** *tab and drag it to the right and release).*
2. *Change* **Cell A1** *in the* **FV** *tab to be:* **Interest Rate**
3. *Add one decimal place to* **Cell B1***.*
4. *Change* **Cell A4** *to be:* **Future Value**
5. *Change the formula in* **Cell B4** *to the following:* **=FV(B1,B2,B3)**

B4		▾	*fx*	=FV(B1,B2,B3)	
	A	B	C	D	
1	Interest Rate	7.5%			
2	No. Periods	20			
3	Payment	-1,000,000			
4	Present Value	43,304,681			
5					

Figure 8.26

Holy Cow! Could that be correct? Yes, it is. Many people don't realize the power of compounded interest until they experiment with formulas like this one. In this example, I didn't use the optional arguments as they don't apply.

6. *Save and close the file.*

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 8, Section 2 of 4** *option and complete the review questions.*

Proforma Income Statement

When analyzing the value of a property or business, many investors or analysts look at a business' ten-year income statement. In this next exercise, we will build a **proforma** (or projected) ten-year income statement for one of Nitey-Nite's stores to estimate the value of the business. First we will populate the proforma income statement with all of the appropriate numbers and then apply functions and formulas to analyze the store's anticipated performance.

1. *Open the file located at* **C:\ExcelCEO\Excel 2010\Chapter8\Proforma.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter8\myProforma.xlsx.**

	A	B	C	D	E	F	G	H	I	J	K	L	M
1			Nitey-Nite Mattresses										
3			*Projected Net Income Statement*										
4			*For the Years 2010 - 2020*										
5			*Store No. 1023*										
6													
7		Investment	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
8	Revenue												
9	Mattresses		$143,905										
10	Pillows		7,349										
11	Total Merchandise		151,254										
12	Services		6,502										
13	Discounts		-5,033										
14	TOTAL REVENUE		152,723										
16	Variable Expenses												
17	Cost of Merchandise		38,839										
18	*% of Revenue*		*25.4%*										
19	Selling Expenses		18,966										
20	*% of Revenue*		*12.4%*										
21	Variable Expenses Total		57,805										
23	Gross Margin		94,918										
25	Fixed Expenses												
26	Salary Expense		17,401										
27	General Admin Expenses		12,943										
28	Building Expenses		7,542										
29	Fixed Expenses Total		37,886										
31	TOTAL EXPENSES		95,691										
33	*NET INCOME*	-$203,649	*$57,032*										

Figure 8.27

This file is the shell of a ten-year proforma operating statement for Store No. 1023. The accountants have delivered this statement to you so you can estimate the value of the business. It contains the amount of the initial investment (-$203,649, shown as a

negative number), the actual revenue and expense numbers for the year 2010, and columns for ten more years of income statement data. In actuality, it is an 11-year statement, as we'll be using the 11th year Net Income number later.

There are numerous ways to estimate the value of a business, investment or income-producing property. Two of the more popular ways are the **Direct Capitalization method** and the **Discounted Cash Flow (DCF) method**. The Direct Capitalization method is by far the easiest. Using the Direct Capitalization method, you divide the Net Income from the investment by a capitalization rate. In our example, let's suppose the capitalization rate is 8%. The value of the business using this method is estimated by dividing the net income of $57,032 by 8%, resulting in a value of $712,900, rounded to $713,000. While this is an easy way to estimate the value of a business, it is sometimes inaccurate, particularly when the net income for the year isn't representative of a typical year. An example of an atypical year is if the store was hit by a tornado and was closed for a couple of months, or if it was a new store and operated for only part of the year.

The DCF method is more complex. This method is performed by discounting each year's net income back to a present value. If this is not making a lot of sense to you yet, just stay with me for a while longer. It will make much more sense when we complete the proforma and you can look back to see what you've done.

In applying the DCF method, the most common practice is to estimate the Net Income for eleven years, apply the Direct Capitalization method to the 11th year Net Income and discount each year's net income PLUS the capitalized value of the investment in the 11th year (per the Direct Capitalization method) back to a present value. Capitalizing the 11th year Net Income assumes we sell the business at the end of the 11th year. We do this as we can assume the investment is operating at a **stabilized** rate after 11 years of operations. We don't really plan on selling it at the end of the 11th year, but it is done as a valuation technique. We will apply this methodology in our analysis.

Let's suppose that this store is a relatively new store, and that it opened on January 1, 2010. From our experience in opening similar stores, we believe that revenue should increase by 20% in 2011, 10% in 2012 and should increase at approximately the rate of inflation thereafter. Let's also assume that fixed expenses should increase at the rate of inflation. Variable expenses are expected to be the same percentage of revenue as they were in 2010, and we will use a 3% general inflation rate. With that said, let's modify the spreadsheet to include the above assumptions.

3. *In* **Cells A35** *through* **B39***, input the following data:*

Revenue Inflation Year 1	**20%**
Revenue Inflation Year 2	**10%**
General Inflation	**3%**
11th Year Capitalization Rate	**10%**
Discount Rate	**7%**

28	Building Expenses		7,542
29	**Fixed Expenses Total**		37,886
31	**TOTAL EXPENSES**		95,691
33	*NET INCOME*	-$203,649	$57,032
34			
35	Revenue Inflation Year 1	20%	
36	Revenue Inflation Year 2	10%	
37	General Inflation	3%	
38	11th Year Capitalization Rate	10%	
39	Discount Rate	7%	
40			

Figure 8.28

4. *Name the following cells with the following names:*

Cell	**Name**
C18	**com_pct**
C20	**sell_pct**
B35	**rev_infl_1**
B36	**rev_infl_2**
B37	**infl**
B38	**cap_rate**
B39	**disc_rate**

5. *Copy all cells in* **Column C** *that contain formulas (not hard-coded numbers) to* **Column D**.
6. *In* **Cell D9**, *type the following formula:* **=C9*(1+rev_infl_1)**

| D9 | | fx | =C9*(1+rev_infl_1) | | |

	A	B	C	D	E
1				Nitey-Nite	
3				Projected Net In	
4				For the Year	
5				Store I	
6					
7		Investment	2010	2011	2012
8	**Revenue**				
9	Mattresses		$143,905	$172,686	
10	Pillows		7,349		
11	Total Merchandise		151,254	172,686	
12	Services		6,502		
13	Discounts		-5,033		
14	**TOTAL REVENUE**		152,723	172,686	

Figure 8.29

This formula takes the dollar amount in Cell C9 and increases it by the rate of revenue inflation for year 1, or 20%. We will apply this formula to all Revenue accounts in 2011.

7. *Copy the formula in* **Cell D9** *down to* **Cells D10, D12***, and* **D13***.*

| D13 | | fx | =C13*(1+rev_infl_1) | | |

	A	B	C	D	E
1				Nitey-N	
3				Projected Ne	
4				For the Y	
5				Sta	
6					
7		Investment	2010	2011	2012
8	**Revenue**				
9	Mattresses		$143,905	$172,686	
10	Pillows		7,349	$8,819	
11	Total Merchandise		151,254	181,505	
12	Services		6,502	$7,802	
13	Discounts		-5,033	-$6,040	
14	**TOTAL REVENUE**		152,723	183,268	

Figure 8.30

Now we have estimated the revenue for 2011. Let's go on to the expenses.

   8. *In* **Cell D17**, *write the following formula:* **=D14*com_pct**

As you type the named ranges (like com_pct), notice how the intelli-sense menu appears that shows the name of the range or a function that has the same first letters. For example, when you type =D14*com, you will see a menu with three items on it (com_pct, the cell that we named, and two functions, COMBIN and COMPLEX). Press the tab key when com_pct is selected to input that name into your formula.

This formula takes the total estimated revenue for 2011 and calculates the cost of merchandise on that revenue, using the same cost of merchandise percentage as calculated in 2010. We need to do the same for the Selling Expense line, except we need to use the Selling Expense % of Revenue number.

   9. *In* **Cell D19**, *type the following formula:* **=D14*sell_pct**

	D19	▼	f_x	=D14*sell_pct		
	A	B	C	D	E	
1				Nitey-Nit		
3				Projected Net		
4				For the Yec		
5				Store		
6						
7		Investment	2010	2011	2012	
8	**Revenue**					
9	Mattresses		$143,905	$172,686		
10	Pillows		7,349	$8,819		
11	Total Merchandise		151,254	181,505		
12	Services		6,502	$7,802		
13	Discounts		-5,033	-$6,040		
14	**TOTAL REVENUE**		152,723	183,268		
16	**Variable Expenses**					
17	Cost of Merchandise		38,839	46,607		
18	*% of Revenue*		25.4%	25.4%		
19	Selling Expenses		18,966	22,759		
20	*% of Revenue*		12.4%	12.4%		
21	**Variable Expenses Total**		57,805	69,366		
23	**Gross Margin**		94,918	113,901		
25	Fixed Expenses					

Figure 8.31

As a check, the Gross Margin line for 2011 should read 113,901. Now let's go on to Fixed Expenses.

> 10. In **Cell D26**, *type the following formula:* **=C26*(1+infl)**
> 11. *Copy the formula in* **Cell D26** *to* **Cells D27** *and* **D28**.

| D28 | | fx | =C28*(1+infl) | | |

⊿	A	B	C	D	E	
1				Nitey-Nit		
3				Projected Net		
4				For the Ye		
5				Store		
6						
7		Investment	2010	2011	2012	
8	**Revenue**					
9	Mattresses		$143,905	$172,686		
10	Pillows		7,349	$8,819		
11	Total Merchandise		151,254	181,505		
12	Services		6,502	$7,802		
13	Discounts		-5,033	-$6,040		
14	**TOTAL REVENUE**		152,723	183,268		
16	**Variable Expenses**					
17	Cost of Merchandise		38,839	46,607		
18	*% of Revenue*		25.4%	25.4%		
19	Selling Expenses		18,966	22,759		
20	*% of Revenue*		12.4%	12.4%		
21	**Variable Expenses Total**		57,805	69,366		
23	**Gross Margin**		94,918	113,901		
25	**Fixed Expenses**					
26	Salary Expense		17,401	17,923		
27	General Admin Expenses		12,943	13,331		
28	**Building Expenses**		7,542	7,768		
29	**Fixed Expenses Total**		37,886	39,023		
31	**TOTAL EXPENSES**		95,691	108,389		
33	*NET INCOME*	-$203,649	$57,032	$74,879		

Figure 8.32

All we're doing in this formula is increasing the 2010 Salary Expense, General Admin Expenses and Building Expenses at the rate of inflation.

> 12. *Format all cells in* **Column D** *to be the same as in* **Column C**.

> > **Trick:** *A quick way to do this is to select* **Cells C9** *through* **C33**, *click the* **Format Painter** *icon, and click on* **Cell D9**.

Your spreadsheet should now look something like Figure 8.33:

	A	B	C	D	E	F	G	H
1					**Nitey-Nite Mattresses**			
3					*Projected Net Income Statement*			
4					*For the Years 2010 - 2020*			
5					*Store No. 1023*			
6								
7		Investment	2010	2011	2012	2013	2014	201
8	Revenue							
9	Mattresses		$143,905	$172,686				
10	Pillows		7,349	8,819				
11	Total Merchandise		151,254	181,505				
12	Services		6,502	7,802				
13	Discounts		-5,033	-6,040				
14	TOTAL REVENUE		152,723	183,268				
16	Variable Expenses							
17	Cost of Merchandise		38,839	46,607				
18	% of Revenue		25.4%	25.4%				
19	Selling Expenses		18,966	22,759				
20	% of Revenue		12.4%	12.4%				
21	Variable Expenses Total		57,805	69,366				
23	Gross Margin		94,918	113,901				
25	Fixed Expenses							
26	Salary Expense		17,401	17,923				
27	General Admin Expenses		12,943	13,331				
28	Building Expenses		7,542	7,768				
29	Fixed Expenses Total		37,886	39,023				
31	TOTAL EXPENSES		95,691	108,389				
33	NET INCOME	-$203,649	$57,032	$74,879				

Figure 8.33

Now we need to copy the formulas in Column D to Column E. We will first copy all of the formulas over then make the necessary changes.

> 13. Copy **Cells D9** *through* **D33** *to* **E9** *through* **E33**.

Find and Replace

Copying those cells worked fine, except for one thing. Remember the inflation rate that you used for 2011? You're still using it for 2012 after you did the copy. You need to change it to be the revenue inflation rate for 2012, or Year 2. You can use the **Find and Replace** functionality to quickly change it:

> 14. Select **Cells E9** *through* **E13**.

15. *Type* **[Ctrl]+f** *on your keyboard, and the* **Find and Replace** *dialog box appears.*
16. *Click on the* **Replace** *tab.*
17. *In the* **Find what***: box, type:* **rev_infl_1**
18. *In the* **Replace with***: box, type:* **rev_infl_2**
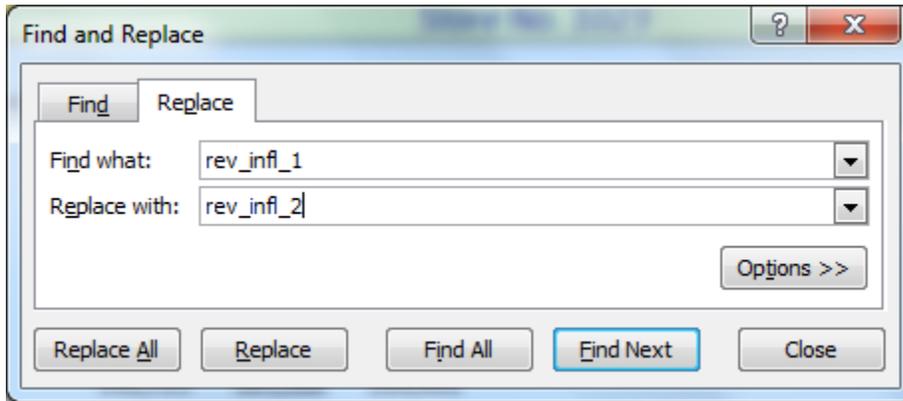
Figure 8.34

> *Note: You can also click the* **Find** *icon (the binoculars) you placed on your* **Quick Access Toolbar***.*

19. *Click the* **Replace All** *button.*
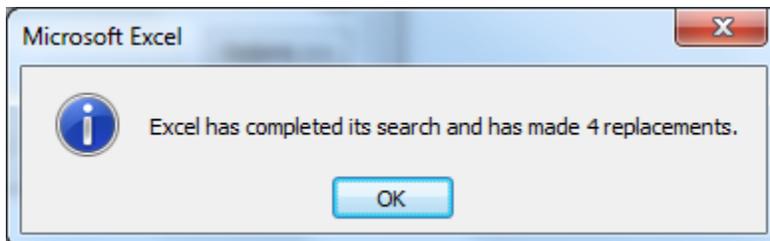
Figure 8.35

20. *Click* **OK** *and then click* **Close** *in the* **Find and Replace** *dialog box***.**

> ***Trick***: *Another way you can "go to" a place in your workbook is to type the* **[F5]** *key. When you press the* **[F5]** *key, the following dialog box appears:*
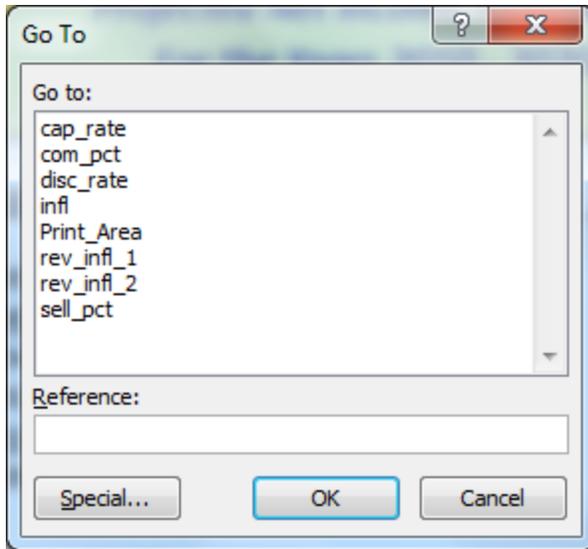
Figure 8.36

> *Just type in the cell reference or named range you want to go to and click* **OK**.

Excel should replace four formulas. Since that is the only change needed to the formulas, you can now copy everything in Column E to Column F.

21. *Copy all cells in* **Column E** *to* **Column F**.
22. *Replace* **rev_infl_2** *with* **infl** *in all* **Revenue** *cells (you should again have four replacements).*
23. *Copy all cells in* **Column F** *to* **Columns G** *through* **M**.
24. *Format the statement to have a dark bold line (* **Thick Box Border** *) surrounding the entire statement.*

	A	B	C	D	E	F	G	H	I	J	K	L	M
1						**Nitey-Nite Mattresses**							
3						*Projected Net Income Statement*							
4						*For the Years 2010 - 2020*							
5						*Store No. 1023*							
6													
7		Investment	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
8	Revenue												
9	Mattresses		$143,905	$172,686	$189,955	$195,653	$201,523	$207,569	$213,796	$220,209	$226,816	$233,620	$240,629
10	Pillows		7,349	8,819	9,701	9,992	10,291	10,600	10,918	11,246	11,583	11,931	12,289
11	Total Merchandise		151,254	181,505	199,655	205,645	211,814	218,169	224,714	231,455	238,399	245,551	252,917
12	Services		6,502	7,802	8,583	8,840	9,105	9,378	9,660	9,950	10,248	10,556	10,872
13	Discounts		-5,033	-6,040	-6,644	-6,843	-7,048	-7,260	-7,477	-7,702	-7,933	-8,171	-8,416
14	TOTAL REVENUE		152,723	183,268	201,594	207,642	213,871	220,288	226,896	233,703	240,714	247,936	255,374
16	Variable Expenses												
17	Cost of Merchandise		38,839	46,607	51,267	52,806	54,390	56,021	57,702	59,433	61,216	63,053	64,944
18	% of Revenue		25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%
19	Selling Expenses		18,966	22,759	25,035	25,786	26,560	27,357	28,177	29,023	29,893	30,790	31,714
20	% of Revenue		12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%
21	Variable Expenses Total		57,805	69,366	76,303	78,592	80,950	83,378	85,880	88,456	91,110	93,843	96,658
23	Gross Margin		94,918	113,901	125,292	129,050	132,922	136,909	141,017	145,247	149,605	154,093	158,716
25	Fixed Expenses												
26	Salary Expense		17,401	17,923	18,461	19,015	19,585	20,173	20,778	21,401	22,043	22,704	23,385
27	General Admin Expenses		12,943	13,331	13,731	14,143	14,567	15,004	15,455	15,918	16,396	16,888	17,394
28	Building Expenses		7,542	7,768	8,001	8,241	8,489	8,743	9,006	9,276	9,554	9,841	10,136
29	Fixed Expenses Total		37,886	39,023	40,193	41,399	42,641	43,920	45,238	46,595	47,993	49,433	50,916
31	TOTAL EXPENSES		95,691	108,389	116,496	119,991	123,591	127,298	131,117	135,051	139,102	143,275	147,574
33	NET INCOME	-$203,649	$57,032	$74,879	$85,098	$87,651	$90,281	$92,989	$95,779	$98,652	$101,612	$104,660	$107,800

Figure 8.37

The last step in creating our proforma in preparation for the IRR and NPV analysis is to divide the Net Income number in 2020 by the 11th year capitalization rate. You also need to footnote that number so it is clear in the proforma what the last year's Net Income number represents.

25. *Edit the formula in* **Cell M33** *to be the following:* **=(M14-M31)/cap_rate**
26. *In* **Cell N33***, type:* **'(1)** *(the apostrophe is necessary to make the cell a text reference rather than a number).*
27. *Italicize* **Cell N33***.*
28. *In* **Cell D35***, type:*
    =''(1) Capitalizes Net Income of ''&TEXT(M14-M31,''$0,000'')&'' as if the store was sold.''
29. *Italicize* **Cell D35***.*

| | | fx | ="(1) Capitalizes Net Income of "&TEXT(M14-M31,"$0,000")&" as if the store was sold." | | | | | | | | | |

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				**Nitey-Nite Mattresses**									
3				*Projected Net Income Statement*									
4				*For the Years 2010 - 2020*									
5				*Store No. 1023*									
6													
7		Investment	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
16	**Variable Expenses**												
17	Cost of Merchandise		38,839	46,607	51,267	52,806	54,390	56,021	57,702	59,433	61,216	63,053	64,944
18	% of Revenue		25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%
19	Selling Expenses		18,966	22,759	25,035	25,786	26,560	27,357	28,177	29,023	29,893	30,790	31,714
20	% of Revenue		12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%
21	**Variable Expenses Total**		57,805	69,366	76,303	78,592	80,950	83,378	85,880	88,456	91,110	93,843	96,658
23	**Gross Margin**		94,918	113,901	125,292	129,050	132,922	136,909	141,017	145,247	149,605	154,093	158,716
25	**Fixed Expenses**												
26	Salary Expense		17,401	17,923	18,461	19,015	19,585	20,173	20,778	21,401	22,043	22,704	23,385
27	General Admin Expenses		12,943	13,331	13,731	14,143	14,567	15,004	15,455	15,918	16,396	16,888	17,394
28	Building Expenses		7,542	7,768	8,001	8,241	8,489	8,743	9,006	9,276	9,554	9,841	10,136
29	**Fixed Expenses Total**		37,886	39,023	40,193	41,399	42,641	43,920	45,238	46,595	47,993	49,433	50,916
31	**TOTAL EXPENSES**		95,691	108,389	116,496	119,991	123,591	127,298	131,117	135,051	139,102	143,275	147,574
33	*NET INCOME*	-$203,649	$57,032	$74,879	$85,098	$87,651	$90,281	$92,989	$95,779	$98,652	$101,612	$104,660	$1,078,000 (1)
34													
35	Revenue Inflation Year 1	20%		(1) Capitalizes Net Income of $107,800 as if the store was sold.									
36	Revenue Inflation Year 2	10%											
37	General Inflation	3%											
38	11th Year Capitalization Rate	10%											
39	Discount Rate	7%											

Figure 8.38

The IRR() Function

And Presto! You have built a complete proforma income statement where you can change any one of a number of assumptions and immediately see the result. Now we are ready to analyze it using the **IRR() function** (Internal Rate of Return). The IRR() function returns the internal rate of return for a series of cash flows represented by the numbers in values. These cash flows do not have to be the same, as with the PV() function. However, the cash flows must occur at regular intervals, such as monthly or annually. The internal rate of return is the rate received for an investment consisting of payments (negative values) and income (positive values) that occur at regular periods. The IRR() function has two arguments: the series of values (income stream, cash flows, whatever you want to calculate the IRR for), and a guess at what the approximate IRR would be.

> *30. In* **Cell A40***, type:* **Internal Rate of Return**
> *31. In* **Cell B40***, write the following formula:* **=IRR(B33:M33,0.2)**

	B40		▾	f_x	=IRR(B33:M33,0.2)		
	A	B	C	D	E	F	

	A	Investment	2010	2011	2012	2
1	Nitey-Nite					
3	Projected Net Inc					
4	For the Years					
5	Store No					
7		Investment	2010	2011	2012	2
18	% of Revenue		25.4%	25.4%	25.4%	25.4!
19	Selling Expenses		18,966	22,759	25,035	25,
20	% of Revenue		12.4%	12.4%	12.4%	12.4!
21	Variable Expenses Total		57,805	69,366	76,303	78,
23	Gross Margin		94,918	113,901	125,292	129,
25	Fixed Expenses					
26	Salary Expense		17,401	17,923	18,461	19,
27	General Admin Expenses		12,943	13,331	13,731	14,
28	Building Expenses		7,542	7,768	8,001	8,
29	Fixed Expenses Total		37,886	39,023	40,193	41,
31	TOTAL EXPENSES		95,691	108,389	116,496	119,
33	*NET INCOME*	-$203,649	$57,032	$74,879	$85,098	$87,
34						
35	Revenue Inflation Year 1	20%		*(1) Capitalizes Net Income of*		
36	Revenue Inflation Year 2	10%				
37	General Inflation	3%				
38	11th Year Capitalization Rate	10%				
39	Discount Rate	7%				
40	Internal Rate of Return	41%				

Figure 8.39

The range B33:M33 includes the initial investment outflow of $203,649 and all the other net income numbers, including the last year's theoretical sale of the business. For the second argument, I chose 0.2, or 20%. It really doesn't matter what you choose for the guess, as long as it's reasonable. You should have calculated an internal rate of return of 41%.

> *Review Questions: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 8, Section 3 of 4** option and complete the review questions.*

The NPV() Function

The Net Present Value, or **NPV() function** returns the Present Value of the future income (or cash flows) of an investment net of the initial investment. The NPV() function contains two arguments: rate and range. In our example, we paid a total of $203,649 to set up the store and we forecast annual income of $57,032, $74,879, and so on. The Net Present Value formula is written as follows:

1. *In* **Cell A41**, *type:* **Net Present Value**
2. *In* **Cell B41**, *type the following formula:* **=NPV(disc_rate,B33:M33)**
3. *Format* **Cell B41** *to be* **Currency, zero decimal places**.

B41		f_x	=NPV(disc_rate,B33:M33)			
	A	B	C	D	E	F
1				Nitey-Nite Ma		
3				Projected Net Incom		
4				For the Years 201		
5				Store No. 10		
6						
7		Investment	2010	2011	2012	2013
27	General Admin Expenses		12,943	13,331	13,731	14,143
28	Building Expenses		7,542	7,768	8,001	8,241
29	Fixed Expenses Total		37,886	39,023	40,193	41,399
31	TOTAL EXPENSES		95,691	108,389	116,496	119,991
33	*NET INCOME*	-$203,649	$57,032	$74,879	$85,098	$87,651
34						
35	Revenue Inflation Year 1	20%		*(1) Capitalizes Net Income of $107,*		
36	Revenue Inflation Year 2	10%				
37	General Inflation	3%				
38	11th Year Capitalization Rate	10%				
39	Discount Rate	7%				
40	Internal Rate of Return	41%				
41	Net Present Value	$855,520				
42						

Figure 8.40

The Net Present Value formula returns a value of $855,520, meaning that if you spend $203,649 on the initial investment, you have a store that has a net present value of $855,520.

You can also trick the NPV() function to return a **present value** number. Remember, if you use a PV() function, you must have equal payments, like an annuity. In our example, the annual net income is different every year, so we can't use a PV() function. Using the NPV() function, you can have unequal payments to calculate the investment's present value – just eliminate the initial investment number. Let's try it.

1. *In* **Cell A42**, *type:* **Present Value**
2. *In* **Cell B42**, *type the following formula:* =**NPV(disc_rate,C33:M33)**
3. *Format* **Cell B42** *to be* **Currency**, **zero decimal places**.

	B42		f_x	=NPV(disc_rate,C33:M33)			
	A	B	C	D	E	F
1				Nitey-Nite N
3				Projected Net Inc
4				For the Years 2
5				Store No.
6				
7		Investment	2010	2011	2012	20:
27	General Admin Expenses		12,943	13,331	13,731	14,14
28	Building Expenses		7,542	7,768	8,001	8,24
29	Fixed Expenses Total		37,886	39,023	40,193	41,39
31	TOTAL EXPENSES		95,691	108,389	116,496	119,99
33	NET INCOME	-$203,649	$57,032	$74,879	$85,098	$87,65
34					
35	Revenue Inflation Year 1	20%		(1) Capitalizes Net Income of $1
36	Revenue Inflation Year 2	10%		
37	General Inflation	3%		
38	11th Year Capitalization Rate	10%		
39	Discount Rate	7%		
40	Internal Rate of Return	41%		
41	Net Present Value	$855,520		
42	Present Value	$1,119,055		

Figure 8.41

The result is $1,119,055, which represents the present value of the investment. Just remember, the **present value** does not consider the initial investment, whereas the **net present value** includes it.

4. *Save and close the file.*

Math Functions

Math functions are very useful and easy to learn, assuming you have a relatively good grasp on math. Let's start off with the RAND() function.

The RAND() Function

Sometimes when creating spreadsheets, I need to input some test, or fictitious data. One of the most useful math functions in creating fictitious data is the Random, or **RAND() function**. It is a function that simply creates a random number between 0 and 1. Let's try it.

1. *Open a blank workbook.*
2. *Save the file as* **C:\ExcelCEO\Excel 2007\Chapter8\myMath.xlsx.**
3. *In* **Cell A1** *of* **Sheet1***, type:* **=RAND()**
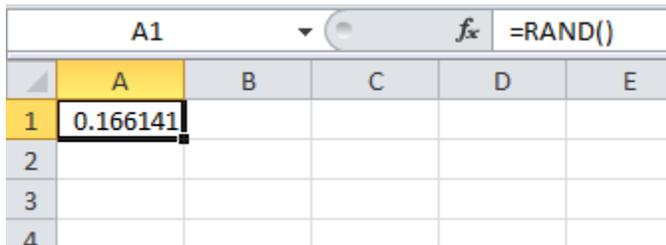
Figure 8.42

Keep in mind that my number will be different from yours, as Excel is generating a random number. Excel 2010 also provides a new function called **RANDBETWEEN()**. It is a great function if you need random numbers between two ranges and are too lazy (like me) to write the formula inside the RAND() formula. Let's create random numbers between 1,000 and 9,999.

4. *Edit* **Cell A1** *to be:* **=RANDBETWEEN(1000,9999)**
5. *Copy* **Cell A1** *down through* **Cell A10***.*

Figure 8.43

Again, your numbers will be different than mine. Every time you make a change to the spreadsheet, or when you press the [F9] key, the RAND() or RANDBETWEEN() numbers change. Try it. Press the [F9] key several times and watch the numbers generated by these functions change.

The INT() and ROUND() Functions

The **INT() function** rounds a number down to the nearest whole integer, and the **ROUND() function** rounds a number up or down to a level you specify. Normally, I use the ROUND() function, but I've found the INT() function to be very useful in certain situations. To illustrate the difference, try the following:

   6. Click on **Sheet2** of the **myMath.xlsx** *file.*
   7. *Type the following values in the corresponding cells:*

Figure 8.44

   8. *In* **Cell B2***, type:* **=INT(A2)**

The result is 2, as the formula takes 2.2309 and rounds it *down* to the nearest whole integer, which is 2. In other words, the INT() function truncates or deletes all numbers to

the right of the decimal point. Note that the INT() function has only one argument – the number that you want to apply the function to.

9. *Copy the formula down for all cells through* **Cell B5**.

B2			fx	=INT(A2)	
	A	B	C	D	E
1	Number	INT	ROUND		
2	2.2309	2			
3	32.98	32			
4	497.5	497			
5	10498.43	10498			

Figure 8.45

The ROUND() function allows you to specify the decimal place you want to round to. You make that determination in the second argument of the function.

10. In **Cell C2**, *write the following formula:* **=ROUND(A2,2)**

C2			fx	=ROUND(A2,2)	
	A	B	C	D	E
1	Number	INT	ROUND		
2	2.2309	2	2.23		
3	32.98	32			
4	497.5	497			
5	10498.43	10498			

Figure 8.46

You can round to as many decimal places as you want by simply changing the number in the second argument.

11. In **Cell C3**, *write the following formula:* **=ROUND(A3,0)**
12. *Copy* **Cell C3** *down to* **Cell C4**.

C4			fx	=ROUND(A4,0)	
	A	B	C	D	E
1	Number	INT	ROUND		
2	2.2309	2	2.23		
3	32.98	32	33		
4	497.5	497	498		
5	10498.43	10498			

Figure 8.47

You can also round a number to a significant level, such as 10s, 100s, 1000s, etc. You do this by typing a negative number in the second argument. For example, suppose you want to round 10,498.43 to the thousands of dollars.

13. In **Cell C5**, *write the following formula: =ROUND(A5,-3)*

	C5			f_x	=ROUND(A5,-3)	
	A	B	C	D	E	
1	Number	INT	ROUND			
2	2.2309	2	2.23			
3	32.98	32	33			
4	497.5	497	498			
5	10498.43	10498	10000			

Figure 8.48

Changing the formula to be =ROUND(A5,-2) rounds to the hundreds of dollars and returns 10500.

The ABS() Function

The next helpful math function is the Absolute Value, or **ABS() function**. An absolute value is simply the positive value of any number. It has one argument, which is the number for which you want to calculate the absolute value. Over the years, I've used this function in a handy little formula that calculates year-over-year performance. Sometimes the year-over-year numbers get kind of weird, and the ABS() function has helped save the day.

1. *Click on the* **Sheet3** *tab.*
2. *Create a table similar to the following:*

	A	B	C	D	
1			Income		
2	Store No.	2011	2010	% Change	
3	1	59,821	51,874		
4	2	32,985	-19,430		
5	3	-3,209	43,597		
6	4	-4,387	-7,219		
7					

Figure 8.49

Typically, a percentage change formula is calculated by taking the current year number less the prior year number, divided by the prior year number.

3. *In **Cell D3**, type the following formula: =(B3-C3)/C3*
4. *Format as **Percent**, **one decimal place**.*
5. *Copy that formula down to **Cells D4** through **D6**.*

	D3			f_x =(B3-C3)/C3	
	A	B	C	D	E
1		Income			
2	Store No.	2011	2010	% Change	
3	1	59,821	51,874	15.3%	
4	2	32,985	-19,430	-269.8%	
5	3	-3,209	43,597	-107.4%	
6	4	-4,387	-7,219	-39.2%	

Figure 8.50

The numbers calculate fine, but look at the result. The % Change for Store No. 1 looks reasonable, but Store No. 2 had negative income in 2010 and positive income in 2011, yet the % Change calculates to be a negative percentage, which can't be correct. Mathematically it is correct, but logically it is not. You can use the ABS() function in the formula to correct the calculation:

6. *Edit the formula in **Cell D3** to the following: =(B3-C3)/ABS(C3)*
7. *Copy the formula down to the cells below.*

	D3			f_x =(B3-C3)/ABS(C3)	
	A	B	C	D	E
1		Income			
2	Store No.	2011	2010	% Change	
3	1	59,821	51,874	15.3%	
4	2	32,985	-19,430	269.8%	
5	3	-3,209	43,597	-107.4%	
6	4	-4,387	-7,219	39.2%	

Figure 8.51

Now let's look logically at the results. Store No. 2 did much better in 2011 than it did in 2010 and the percentage change reflects a big increase. Store No. 3 was very positive in 2010, but went down below zero in 2011, as reflected in the -107.4% number. Store No. 4 is negative in both years, but it is less negative in 2011, which indicates a positive trend. Trust me – this formula works. It is a very handy formula. Keep it.

8. *Save and close the file.*

The SUMIF() Function

We already introduced the =SUM() function in Chapter 1. However, the **SUMIF() function** is very useful in extracting summary data from databases by adding cells that meet a specified criteria. Let's try an example using this function.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter8\1017_Mattresses.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter8\my1017_Mattresses.xlsx.**

	A	B	C	D	E	F	G	H	I
1	Store	Sale Date	Invoice No.	Manufacturer	Product	Item_Cd	Qty	Unit_Cost	Total_Cost
2	1017	02-Aug-11	248418	Dream	Mattress	DMQG131	2	593	1,186
3	1017	02-Aug-11	61381	Leavan	Mattress	LMTE169	2	142	284
4	1017	02-Aug-11	63196	Leavan	Mattress	LMTG168	3	109	327
5	1017	03-Aug-11	22719	Cama	Mattress	CMDF150	1	472	472
6	1017	03-Aug-11	27570	Cama	Mattress	CMQB149	1	670	670
7	1017	03-Aug-11	250615	Dream	Mattress	DMTF138	1	263	263
8	1017	04-Aug-11	248984	Dream	Mattress	DMTB141	1	384	384
9	1017	04-Aug-11	61595	Leavan	Mattress	LMTE169	3	142	426
10	1017	04-Aug-11	7403582	Sleepwell	Mattress	SMQF114	1	846	846
11	1017	05-Aug-11	30895	Cama	Mattress	CMQF146	1	483	483
12	1017	05-Aug-11	242449	Dream	Mattress	DMKE128	1	857	857
13	1017	05-Aug-11	244142	Dream	Mattress	DMKF126	1	758	758
14	1017	06-Aug-11	31605	Cama	Mattress	CMTB157	3	340	1,020
15	1017	06-Aug-11	244330	Dream	Mattress	DMKF126	1	758	758
16	1017	06-Aug-11	245228	Dream	Mattress	DMKF126	1	758	758
17	1017	07-Aug-11	239842	Dream	Mattress	DMDB137	2	681	1,362
18	1017	07-Aug-11	246346	Dream	Mattress	DMKG127	2	802	1.604

Figure 8.52

The AP tab (AP stands for Accounts Payable) contains a detailed list of all of the mattresses purchased by Nitey-Nite at Store No. 1017 in August 2011. Your job is to create a summary report that lists the name of the manufacturer, the total number of units purchased from that manufacturer and the total cost. The Summary tab contains a shell of the report. You need to write the SUMIF() formula to calculate the total units and total costs.

3. *Click on the* **Summary** *tab.*
4. *In* **Cell B2**, *write the following formula:*
    =SUMIF(AP!D:D,A2,AP!G:G)

Figure 8.53

Remember, instead of typing the formula, you can type "=*SUMIF*(" then click on Column D in the AP tab, type a comma, click on Cell A2 in the Summary tab, type a comma, and click on Column G in the AP tab. For me, that way is easier than typing in the formula. As long as there are no subtotals or anything else that is inconsistent with the data in the referenced tab, the formula will work.

This formula says to look at Column D in the AP tab, and for every occurrence of whatever is in Cell A2, sum the contents of Column G in the AP tab, or the number of units. The answer is 52. Let's check that number.

5. *Sort the list in the* **AP** *tab by* **Manufacturer**.
6. *Select* **Cells G2** *through* **G29** *(which should be the* **Quantity** *sold by* **Cama***)*.

The AutoSum number should be 52.

7. *Copy the formula in the* **Summary** *tab,* **Cell B2***, to* **Cells B3***,* **B4** *and* **B5**.

Figure 8.54

> *Note: Since we selected the entire columns D and G in our formula, we had no problems when we copied the formula down.*

The formula indicates that Leaven sold no mattresses. Is that correct? If you look at the AP tab, you will see that is not correct, as Leavan has a number of entries. What could be wrong? In order for the SUMIF() function to work, the criteria in the database (i.e., the

Manufacturer name) and the criteria in the Summary tab must be <u>exactly</u> the same. But they appear to be the same! Remember, sometimes text comes from programs with spaces in screwy places. In this case, there is a space after the letter "n" in Leavan in Cell A4 of the Summary tab. Take out that space and the formula will work.

8. *Edit* **Cell A4** *of the Summary tab to take out the space after the letter* **n**.

Alternatively, you could surround the A5 reference in the formula with a TRIM() function. Either way would work.

9. *Write a* **SUMIF()** *formula to calculate the total cost.*
10. *Underline* **Cells B5** *and* **B6**.
11. *Sum the number of mattresses and the cost in* **Cells B6** *and* **C6**.
12. *Format the values as follows:*

	C6	▼		f_x	=SUM(C2:C5)	
◢	A	B		C		D
1	Manufacturer	No. Mattresses		Cost		
2	Cama	52		28,570		
3	Dream	46		27,047		
4	Leavan	33		7,975		
5	Sleepwell	26		20,698		
6	Totals	157		84,290		

Figure 8.55

13. *Check your answers with the* **AP** *tab.*

The SUMIFS() Function

The **SUMIFS() function**, which is new in Excel 2010, allows the user to use a SUMIF() function to input multiple criteria. You could probably nest an AND() function (discussed in a later chapter) to accomplish the same purpose, but it sure is convenient to have the SUMIF() function be able to contain criteria.

Let's say you want to repeat the same cost calculation as you did in the previous exercise, but you want to include only the items that have a unit cost greater than $200. Management believes that the items with a cost lower than $200 would distort what they are trying to accomplish in this analysis. I'll give you the formula and then we'll discuss it.

14. *In* **Cell D1**, *type* **Cost (>$200),** *underline the cell and resize the column.*
15. *In* **Cell D2**, *write the following formula and press* **[Enter]**:
    =SUMIFS(AP!I:I,AP!D:D,"=CAMA",AP!H:H,">200")

Let's take a look at this formula. It looks similar to a SUMIF() function, but it has more stuff in it. The first part of the formula is the sum_range. It says that we want to sum up the values in Column I of the AP tab. Then we have to program in the criteria. If you notice in the screen tip that appears when you click inside the formula in the Formula Bar on AP!D:D, the text criteria_range1 appears in bold. This is the range of the first criteria. As it appears without brackets, it is a required field. Our formula indicates that the range is in Column D of the AP tab, which shows the name of the manufacturer. The last two arguments are to filter only the values in Column H for those that are greater than $200. As you can see in the screen tip, you can have several additional criteria, indicated by the arguments in brackets ([criteria_range3, criteria3], etc.).

In the criteria1 argument, we have "=CAMA". I wanted to do that to show you that this criteria is not case-sensitive. Let's change the criteria to look like Cell A2.

16. *Change the formula in* **Cell D2** *to show* **Cama**.
17. *Copy the formula in* **Cell D2** *to* **Cells D3** *through* **D5**.

	D3		▼	*fx*	=SUMIFS(AP!I:I,AP!D:D,"=Cama",AP!I:I,">200")			
	A	B	C	D	E	F	G
1	Manufacturer	No. Mattresses	Cost	Cost (>$200)			
2	Cama	52	28,570	28570			
3	Dream	46	27,047	28570			
4	Leavan	33	7,975	28570			
5	Sleepwell	26	20,698	28570			
6	Totals	157	84,290				

Figure 8.56

What happened there? It should be easy to figure out. The manufacturer Cama is hard-coded in the formula, so no matter what the name of the manufacturer is in Column A, the formula will return the results for Cama. Let's correct that. Now, since the name Cama is a text string, we need to convert this formula to read whatever is in Column A. To do that, we need to replace Cama with "&A2&".

18. *In the formula in* **Cell D2**, *replace* **Cama** *with* **"&A2&"**,*copy to all cells below and format the same as in* **Column C**.

	D2		▾	⊙		fx	=SUMIFS(AP!I:I,AP!D:D,"="&A2&"",AP!I:I,">200")			

◢	A	B	C	D	E	F	G
1	Manufacturer	No. Mattresses	Cost	Cost (>$200)			
2	Cama	52	28,570	28,570			
3	Dream	46	27,047	27,047			
4	Leavan	33	7,975	7,833			
5	Sleepwell	26	20,698	20,698			
6	Totals	157	84,290				

Figure 8.56

If you check the data in the AP tab, you'll see that the only manufacturer with items that cost less than $200 is Leavan. The cost for all of the other manufacturers is the same as in the SUMIF() function.

> 19. *Save and close the file.*

> > ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 8, Section 4 of 4** option and complete the review questions.*

Conclusion

In this chapter, you learned about the various Financial functions, including PMT(), PV(), FV(), IRR() and NPV(). You used the PMT() function to help in the creation of an amortization schedule. You used Scenario Manager to keep track of your scenarios of a mortgage/home purchase analysis. You created a Proforma Income Statement that had variables you could change and instantly see the results. You learned some of the ways that appraisers and analysts estimate the value of a business, investment, or income-producing property (the Direct Capitalization and the Discounted Cash Flow (DCF) method), and worked an example using both methods. You created other formulas using the PV(), FV(), IRR() and NPV() functions. You used the Find and Replace functionality to look for and replace text within formulas. Finally, you learned about Math Functions and worked examples using the RAND(), RANDBETWEEN(), INT(), ROUND(), ABS(), SUMIF() and SUMIFS() functions.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER NINE – DATE, STATISTICAL AND LOOKUP FUNCTIONS

In this chapter, you will:

- Create formulas using Date Functions, including:
  - NOW()
  - TODAY()
  - MONTH()
  - DAY()
  - YEAR()
  - DATE()
  - WEEKDAY()
- Create formulas using Statistical Functions, including:
  - COUNT()
  - AVERAGE()
  - AVERAGEIFS()
  - MEDIAN()
  - MODE()
  - MAX()
  - MIN()
  - COUNTIF()
  - COUNTIFS()
  - RANK()
- Create a summary and an item-by-item margin analysis using Statistical functions.
- Create formulas using Database Functions, including:
  - DSUM()
  - DCOUNT()
- Create formulas using Lookup Functions, including:
  - VLOOKUP()
  - HLOOKUP()
- Create drop-down menus using Data Validation.
- Use Validation Rules.
- Use numbers and text in VLOOKUP() functions.
- Use the Text to Columns functionality to convert text data to numbers.

Introduction

Back in the 1960's, there was a game show hosted by Monty Hall called "Let's Make a Deal". On stage, there were three doors: Door No. 1, Door No. 2 and Door No. 3. Behind one of the doors was a grand prize, like a car, a living room suite, or something else very expensive. Behind the other two doors were booby prizes, like a candy bar or a box of pencils. The contestant would pick one of the doors and win whatever prize was behind it. Before the contestant saw the prize behind the door he or she picked, Monty would show the contestant and the audience one of the booby prizes behind one of the doors not picked. Then Monty would give the contestant a choice: Do you want to stay with the original door chosen, or do you want to pick the other one? What should the contestant do? Should the contestant A) always switch to the other door; B) always stay with the original door they picked; or C) it doesn't matter. Most people would say C, as there appears to be a 50/50 chance. However, if the contestant would always switch, he/she would have a 67% win rate. How is that so? Answer: The magic of statistics. A statistician once argued with me about this until he was blue in the face. He finally proved it to himself by writing a program that played the game and made those choices. He came back humbled and told me that the win rate was 68% out of 10,000 iterations if he always switched doors in his program.

Date Functions

We've already introduced the concepts of formatting dates in Chapter 1, but now we'll review date and time functions. Remember that a date is simply a number that is formatted to look like a date. The number 1 represents January 1, 1900, 2 represents January 2, 1900. March 4, 2011 is 40,606, or in other words, there are 40,606 days from 1/1/1900 to 3/4/2011. Sometimes you will want to perform calculations based on the day of the week (Monday, Tuesday, etc.) and other times you may want to split apart the month, day and year into separate cells. Let's experiment with each of those functions.

The NOW() and TODAY() Functions

1. Open **Excel** *to a blank spreadsheet and make it look like the following:*

	A	B	C	D	E	F
1	Current	Month	Day	Year	Date	
2						
3						
4						
5						

Figure 9.1

2. *Save the file as* **C:/ClineSys/Excel 2010/Chapter9/myDate.xlsx.**
3. *In* **Cell A2** *type:* **=NOW()**
4. *In* **Cell A3***, type:* **=TODAY()**

A3			f_x	=TODAY()	
	A	B	C	D	E	F
1	Current	Month	Day	Year	Date	
2	10/5/2011 7:32					
3	10/5/2011					
4						
5						

Figure 9.2

The **NOW()** and **TODAY() functions** are very similar, except that the NOW() function returns the current date *and* time, whereas the TODAY() function includes only the current date. Your results will reflect the date and time you performed this exercise.

The MONTH(), DAY(), YEAR() and DATE() Functions

You can split out the Month, Day and Year from a date using the **MONTH()**, **DAY()** and **YEAR() functions**.

6. *In* **Cell B2***, type:* **=MONTH(A2)**

This formula returns the number 10, as I was writing this portion of the course on October 5, 2011. You can now treat this number just like any other number.

7. *Edit* **Cell B2** *as follows:* **=MONTH(A2)-1**
8. *Format* **Cell B2** *as* **Number** *with* **no decimal places***.*

The result in my example is now 9, which is 10 less one. You have to be careful with the MONTH() function, though. I had a student do a similar example in January and ended up with 0. Just remember that this function returns a number, not a month.

9. *Take out the* **-1** *in* **Cell B2.**
10. *In* **Cell C2***, type:* **=DAY(A2)**
11. *In* **Cell D2***, type:* **=YEAR(A2)**

D2		▼	*fx*	=YEAR(A2)	
	A	B	C	D	E
1	Current	Month	Day	Year	Date
2	10/5/2011 7:35	10	5	2011	
3	10/5/2011				
4					

Figure 9.3

The MONTH(), DAY() and YEAR() functions are very easy to understand. Sometimes data can come to you in different ways, and many times dates are split up into Month, Day and Year columns. You can easily put them back into one cell by using the **DATE() function**. The DATE() function has three arguments: Year, Month, and Day.

> 12. In **Cell E2**, *type: =DATE(D2,B2,C2)*

E2		▼	*fx*	=DATE(D2,B2,C2)		
	A	B	C	D	E	F
1	Current	Month	Day	Year	Date	
2	10/5/2011 7:36	10	5	2011	10/5/2011	
3	10/5/2011					
4						

Figure 9.4

The result is 10/5/2011, which is the same date as the NOW() and TODAY() functions we input into Column A.

The WEEKDAY() Function

Sometimes you need to know the day of the week (i.e., Sunday, Monday, Tuesday, etc.). Do you think it would be important to understand the daily highs and lows of a retail sales operation based on the days of the week? You bet it's important. If your lowest sales day of the week is on Wednesday, you may want to run a "Wicked Wednesday" special to try and drive sales on that day. For this, you can use the **WEEKDAY() function**.

> 13. In **Cell E3**, *type: =WEEKDAY(E2)*

Figure 9.5

The result is 4, meaning that 10/5/2011 falls on the fourth day of the week, Wednesday. To display the word "Wednesday" instead of the number four, simply format the cell.

14. *While on* **Cell E3***, press* **[Ctrl]+1** *(which is another way to display the* **Format Cells** *dialog box).*
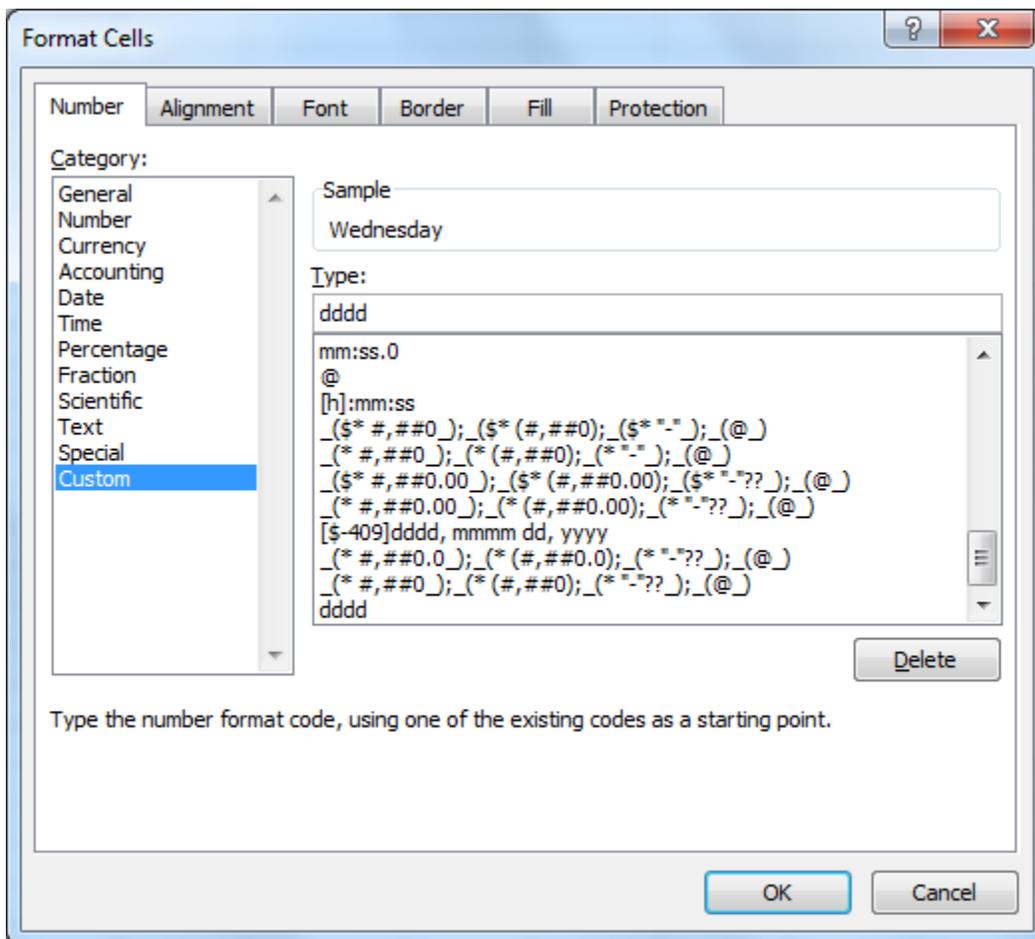15. *Click on the* **Custom** *category and input* **dddd** *in the* **Type** *box.*

Figure 9.6

16. *Click* **OK.**

	A	B	C	D	E
1	Current	Month	Day	Year	Date
2	10/5/2011 7:37	10	5	2011	10/5/2011
3	10/5/2011				Wednesday
4					

Figure 9.7

Dates in Excel can be seemingly difficult to understand, but if you've completed this simple exercise, you should now have a relatively good grasp on dates.

>   *17. Save and close the file.*

>   **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 9, Section 1 of 4** *option and complete the review questions.*

Statistical Functions

Managers love **statistics**. In many companies, statistics are the life-blood of the organization. Since Nitey-Nite Mattresses is an up-and-coming company, there are numerous vendors who try to convince us to use their products. We would be interested in using other vendors if their products made sense to the organization, both financially and in terms of making the product fit into our line. In the next exercise, you will prepare a report that analyzes the profit margins of all the products that Nitey-Nite sells. When vendors approach us, management can use this report to compare our current line with their products to make a first-pass decision on whether or not a relationship should be investigated. To do so, we will use a number of statistical functions.

The COUNT() Function

Probably the easiest statistical function to understand in the **COUNT() function**. The COUNT() function simply counts the number of cells in the selected range that contain any **numeric** value. Let's prepare an example to use.

>   1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter9\Item.xlsx.**
>   2. *Save as* **C:\ExcelCEO\Excel 2010\Chapter9\myItem.xlsx.**

	A	B	C	D	E	F	G	H	I
1	Item ID	Item No	Manufacturer	Product	Size	Quality	Series	Retail Price	Cost
2	1	SMKF110	Sleepwell	Mattress	King	Fair	Saphire	1,009.00	230.12
3	2	SMKG111	Sleepwell	Mattress	King	Good	Ruby	1,159.00	281.32
4	3	SMKE112	Sleepwell	Mattress	King	Excellent	Emerald	1,359.00	335.06
5	4	SMKB113	Sleepwell	Mattress	King	Best	Diamond	1,559.00	390.98
6	5	SMQF114	Sleepwell	Mattress	Queen	Fair	Saphire	799.00	272.55
7	6	SMQG115	Sleepwell	Mattress	Queen	Good	Ruby	899.00	302.89
8	7	SMQE116	Sleepwell	Mattress	Queen	Excellent	Emerald	1,049.00	329.72
9	8	SMQB117	Sleepwell	Mattress	Queen	Best	Diamond	1,149.00	386.71
10	9	SMDF118	Sleepwell	Mattress	Double	Fair	Saphire	599.00	196.03

Figure 9.8

This file is a listing of every mattress and pillow that Nitey-Nite sells. The first thing you need to do is to prepare the file to return the statistics you need. Then you will set up an area on the spreadsheet which will contain summary statistical information about the items in the list.

3. *In* **Cell J1**, *type:* **Margin** *and underline it.*
4. *In* **Cell J2**, *write a formula that calculates the margin (the margin is the inverse of the cost over the retail price, or one minus (cost / retail price)).*
5. *Format* **Cell J2** *to be* **Percent** *with* **two decimal places** *and copy to all cells below.*

	A	B	C	D	E	F	G	H	I	J
1	Item ID	Item No	Manufacturer	Product	Size	Quality	Series	Retail Price	Cost	Margin
2	1	SMKF110	Sleepwell	Mattress	King	Fair	Saphire	1,009.00	230.12	77.19%
3	2	SMKG111	Sleepwell	Mattress	King	Good	Ruby	1,159.00	281.32	75.73%
4	3	SMKE112	Sleepwell	Mattress	King	Excellent	Emerald	1,359.00	335.06	75.35%
5	4	SMKB113	Sleepwell	Mattress	King	Best	Diamond	1,559.00	390.98	74.92%
6	5	SMQF114	Sleepwell	Mattress	Queen	Fair	Saphire	799.00	272.55	65.89%
7	6	SMQG115	Sleepwell	Mattress	Queen	Good	Ruby	899.00	302.89	66.31%
8	7	SMQE116	Sleepwell	Mattress	Queen	Excellent	Emerald	1,049.00	329.72	68.57%
9	8	SMQB117	Sleepwell	Mattress	Queen	Best	Diamond	1,149.00	386.71	66.34%
10	9	SMDF118	Sleepwell	Mattress	Double	Fair	Saphire	599.00	196.03	67.27%

Figure 9.9

1. *In* **Cell L1**, *type:* **Summary Statistics**
2. *Using the* **Merge and Center** *icon, center* **Summary Statistics** *over* **Cells L1** *and* **M1**.
3. *In* **Cell L2**, *type:* **Number of Items**
4. *In* **Cell L3**, *type:* **Average**
5. *In* **Cell L4**, *type:* **Median**
6. *In* **Cell L5**, *type:* **Mode**
7. *In* **Cell L6**, *type:* **Maximum**
8. *In* **Cell L7**, *type:* **Minimum**
9. *Resize* **Column L** *to fit.*
10. *In* **Cell M2**, *type the following formula:* **=COUNT($J$2:$J$69)**

11. *Make the cells* **absolute references** *(with $s in front of each* **Column** *and* **Row** *reference)*

	M2		▼	◯		*fx*	=COUNT($J$2:$J$69)	
◢	I	J	K		L		M	N
1	Cost	Margin			Summary Statistics			
2	230.12	77.19%			Number of Items		68	
3	281.32	75.73%			Average			
4	335.06	75.35%			Median			
5	390.98	74.92%			Mode			
6	272.55	65.89%			Maximum			
7	302.89	66.31%			Minimum			
8	229.72	68.57%						

Figure 9.10

Remember, the COUNT() function counts the number of cells in the range that contain *numbers*, not text strings. However, the COUNT functionality of the Status Bar at the bottom of the screen will count all cells that are populated with numbers or text.

The AVERAGE(), MEDIAN(), MODE(), MAX() and MIN() Functions

With the spreadsheet set up this way, we are now prepared to use other statistical functions. The **AVERAGE() function** is a simple average, or arithmetic mean, of the data range. The **MEDIAN() function** is the number in the middle of a set of numbers; that is, half the numbers have values that are greater than the median, and half have values are less. The **MODE() function** returns the most frequently occurring value. The **MAX() function** returns the highest value in the selected range and the **MIN() function** returns the lowest value. Let's populate our example with these functions.

1. *Copy* **Cell M2** *down to* **Cell M3** *and change* **COUNT** *to* **AVERAGE** *in* **Cell M3**.
2. *Copy* **Cell M3** *down through* **Cell M7** *and change* **AVERAGE** *to* **MEDIAN**, **MODE**, **MAX**, *and* **MIN**, *respectively.*

	M7			▼ ⊝		f_x	=MIN($J$2:$J$69)	
◢	I	J	K		L		M	N
1	Cost	Margin			Summary Statistics			
2	230.12	77.19%			Number of Items		68	
3	281.32	75.73%			Average		70.63%	
4	335.06	75.35%			Median		69.70%	
5	390.98	74.92%			Mode		#N/A	
6	272.55	65.89%			Maximum		85.00%	
7	302.89	66.31%			Minimum		55.12%	
8	329.72	68.57%						

Figure 9.11

In our example, there are no duplicate margin values, so Excel returns an #N/A error for the MODE() function. Since it returns an error, we don't need that field in our summary statistics, so we will move the Maximum and Minimum cells on top of it. *Note: Don't delete the row as it will delete the data in the base table to the left.*

3. *Select* **Cells L6** *through* **Cell M7**.
4. *Position your cursor over the top bold line of the selected range and your cursor*

   will turn to a pointer over a cross with up, down, left and right arrows
5. *Click, hold and drag the selection where the word* **Maximum** *is in* **Cell L5** *and release.*

Microsoft Excel

⚠ Do you want to replace the contents of the destination cells?

OK   Cancel

Figure 9.12

6. *Click* **OK**.

Figure 9.13

The COUNTIF() Function

In our Summary Statistics table, we know the number of items in the table (68), but we don't yet know the count of items for manufacturer. For that, we can use the **COUNTIF() function**.

1. *Select* **Cells L3** *to* **M6** *and move the range down where* **Average** *is in* **Cell L7**.
2. *In* **Cells L3** *through* **L6**, *type the following:* **Cama**, **Dream**, **Leavan** *and* **Sleepwell**.
3. *Select* **Cells L3** *through* **L6** *and click the* **Increase Indent** *icon* ⧉ *in the* **Alignment** *group of the* **Home** *tab*.
4. *In* **Cell M3**, *type the following formula:* **=COUNTIF(C:C,L3)**

This formula counts all of the cells in Column C (Manufacturer) that equal the value(s) in Column L. If you had placed spaces before the manufacturer name instead of using the Indent functionality, the results would have been wrong. You did a similar function in Chapter 8 when you wrote the SUMIF() function.

5. *Copy the formula in* **Cell M3** *through* **Cell M6**.

	M3		▾ ◉	f_x	=COUNTIF(C:C,L3)	

◢	I	J	K	L	M	
1	Cost	Margin		Summary Statistics		
2	230.12	77.19%		Number of Items	68	
3	281.32	75.73%		Cama	16	
4	335.06	75.35%		Dream	16	
5	390.98	74.92%		Leavan	12	
6	272.55	65.89%		Sleepwell	24	
7	302.89	66.31%		Average	70.63%	
8	329.72	68.57%		Median	69.70%	
9	386.71	66.34%		Maximum	85.00%	
10	196.03	67.27%		Minimum	55.12%	

Figure 9.14

The AVERAGEIFS() and COUNTIFS() Function

As with the SUMIF() and SUMIFS() functions, the AVERAGEIF() and COUNTIF() functions also has new capabilities in Excel 2010, the **AVERAGEIF()** and **COUNTIFS()** functions. Like the SUMIFS() function, these functions allow the user to filter for multiple criteria. The syntax for the AVERAGEIFS() function is exactly the same for the SUMIFS() function, so if you need to know more about that function, please refer to the Chapter 8.   The syntax for the COUNTIFS() function is COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2], [criteria_range3, criteria3], etc.), with the second criteria and range forward being optional. The only difference is that the COUNTIFS() function does not include a data_range argument.

The RANK() Function

Another statistical function I've found to be very useful is the **RANK() function**. The RANK() function returns the rank of a number in a list of numbers. The rank of a number is its size relative to other values in a list. It contains two required arguments (the number or cell you want to rank and the range of the ranking) and one optional argument, order. A zero order, or if it is omitted, means to sort the rank as if the range was in descending order (highest to lowest). An optional argument of 1 means to sort the rank as if the reference range was in ascending order. We will now use the RANK() function to rank all of the items in the list based on a descending order or margin, where the highest margin appears with a rank number of one.

1. *Insert a column between* **Columns K** *and* **L**.
2. *In* **Cell K1***, type:* **Rank** *and underline it.*
3. *In* **Cell K2***, type the following formula:* **=RANK(J2,$J$2:$J$69)**

	K2			f_x	=RANK(J2,$J$2:$J$69)	
⊿	G	H	I	J	K	L
1	Series	Retail Price	Cost	Margin	Rank	
2	Saphire	1,009.00	230.12	77.19%	10	
3	Ruby	1,159.00	281.32	75.73%		
4	Emerald	1,359.00	335.06	75.35%		
5	Diamond	1,559.00	390.98	74.92%		
6	Saphire	799.00	272.55	65.89%		
7	Ruby	899.00	302.89	66.31%		
8	Emerald	1,049.00	329.72	68.57%		
9	Diamond	1,149.00	386.71	66.34%		
10	Saphire	599.00	196.03	67.27%		
11	Ruby	699.00	230.34	67.05%		
12	Emerald	799.00	256.56	67.89%		
13	Diamond	699.00	217.84	68.84%		
14	Saphire	299.00	100.13	66.51%		

Figure 9.15

Make sure to include the absolute references in the second argument, as you want to keep this range in tact when copying.

> 4. *Copy the formula in* **Cell K2** *to all cells below.*
> 5. *Sort the table in* **ascending** *order (smallest to largest) on* **Column K**.

	K2			f_x	=RANK(J2,$J$2:$J$69)	
⊿	G	H	I	J	K	L
1	Series	Retail Price	Cost	Margin	Rank	
2	Rose	279.00	41.86	85.00%	1	
3	Daisey	79.00	12.70	83.92%	2	
4	Rose	599.00	98.99	83.47%	3	
5	Tulip	499.00	86.31	82.70%	4	
6	Daisey	199.00	37.73	81.04%	5	
7	Rose	279.00	54.41	80.50%	6	
8	Tulip	249.00	48.62	80.47%	7	
9	Tulip	99.00	19.85	79.95%	8	
10	Daisey	459.00	93.13	79.71%	9	
11	Saphire	1,009.00	230.12	77.19%	10	
12	Daisey	199.00	46.38	76.69%	11	
13	Tulip	249.00	59.36	76.16%	12	
14	Ruby	1,159.00	281.32	75.73%	13	

Figure 9.16

You can use statistical functions to really impress upper management. You may even consider a new career as an actuary.

6. *Save and close the file.*

    Review Questions*: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 9, Section 2 of 4** *option and complete the review questions.*

Database Functions

I'll be the first to say that **database functions** are not my favorite functions in Excel. If you find yourself using a lot of database functions, you are probably doing a project that should be done in Access or some other database, rather than Excel. Many times, you can use a PivotTable (discussed in Chapters 11 and 12) to replace a database function, which is usually my preference. However, knowing database functions are necessary to becoming an Excel master, so it is necessary to briefly review them here.

In the Statistical Functions section in this chapter, you learned about a lot of different types of functions like COUNT(), MAX(), MIN(), AVERAGE() and the like. Database functions work very similar to statistical functions, but you are able to define criteria with a database function. One obvious difference between database and statistical functions is that database functions begin with the letter "D" at the beginning of the name, like DSUM(), DCOUNT() and DMAX(). As the syntax for most database functions is basically the same, we will do examples of only two database functions, DSUM() and DCOUNT(). If you need to use other database functions, you should be able to figure out the syntax easily enough.

To illustrate, you will use the 1018_Sales file.

1. *Open the* **1018_Sales.xlsx** *file under the* **C:\ExcelCEO\Excel 2010\Chapter9** *folder.*
2. *Save it in the same folder as* **my1018_Sales.xlsx.**

	A	B	C	D	E	F
1	Store No	Sale Date	Month	Ticket No	Item Code	Total Sale
2	1018	9/25/2010	9	1018200301457	SMKE112	1,495.00
3	1018	9/19/2010	9	1018200301419	DMQF130	560.00
4	1018	3/30/2010	3	1018200300431	SPQE175	196.00
5	1018	8/5/2010	8	1018200301114	SPQE175	98.00
6	1018	11/2/2010	11	1018200301664	CMTE156	552.00
7	1018	10/30/2010	10	1018200301647	SPQG174	76.00
8	1018	9/8/2010	9	1018200301346	DMQG131	615.00
9	1018	2/4/2010	2	1018200300126	CMDF150	966.00
10	1018	10/26/2010	10	1018200301620	DMQE132	1,909.00
11	1018	8/19/2010	8	1018200301210	LMQG162	274.00
12	1018	1/15/2010	1	1018200300054	SPDG172	304.00
13	1018	8/3/2010	8	1018200301095	CMDF150	966.00
14	1018	4/30/2010	4	1018200300591	SPQE175	98.00

Figure 9.17

The DSUM() Function

The file is a simple spreadsheet that contains detail sales data by ticket for Store No. 1018 for all sales in 2010. We will create a database function that will calculate the total sales amount in July 2010 using the **DSUM() function**.   To do this without a database function, you could sort and/or filter the data and sum all of the sales in July. Alternatively, you can write a database function to sum it for you. To use a database function, you first have to set up a criteria range. That is usually done by copying the titles of each column to another part of the spreadsheet and using the row under that range as the inputs for the criteria.

3. *Copy the range* **Cell A1 to F1** *to* **Cell I1**.
4. *Resize the columns as necessary.*
5. *In* **Cell K2**, *type* **7** *(as we want to filter the list for sales in July).*

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Store No	Sale Date	Month	Ticket No	Item Code	Total Sale			Store No	Sale Date	Month	Ticket No	Item Code	Total Sale
2	1018	9/25/2010	9	1018200301457	SMKE112	1,495.00					7			
3	1018	9/19/2010	9	1018200301419	DMQF130	560.00								
4	1018	3/30/2010	3	1018200300431	SPQE175	196.00								
5	1018	8/5/2010	8	1018200301114	SPQE175	98.00								
6	1018	11/2/2010	11	1018200301664	CMTE156	552.00								
7	1018	10/30/2010	10	1018200301647	SPQG174	76.00								
8	1018	9/8/2010	9	1018200301346	DMQG131	615.00								
9	1018	2/4/2010	2	1018200300126	CMDF150	966.00								
10	1018	10/26/2010	10	1018200301620	DMQE132	1,909.00								
11	1018	8/19/2010	8	1018200301210	LMQG162	274.00								
12	1018	1/15/2010	1	1018200300054	SPDG172	304.00								
13	1018	8/3/2010	8	1018200301095	CMDF150	966.00								
14	1018	4/30/2010	4	1018200300591	SPQE175	98.00								

Figure 9.18

6. *In* **Cell H5**, *type* **July Sales:** *and resize the column.*

7. *In* **Cell I5***, write the formula* **=DSUM(A1:F2110,"Total Sale",I1:N2)**
8. *In the* **Number** *group of the* **Home** *tab, click on the* **Number Format** *drop down arrow and choose* **Currency**.

Figure 9.19

Let's talk about the formula. It has three arguments. The first is the **database**, or the list/table where you want to pull the data from (in this case, the range is Cells A1 to F2110). Next is the **field**, or the specific column you want to total, count, etc. (the Total Sale column). Last is the **criteria range** (Cells I1 to N2). The criteria range should include the names of the field as well as one row beneath it to include the criteria you want to type in. In this example, it tells us that there was $111,301.00 in sales in July 2010 at Store No 1018.

The DCOUNT() Function

To get a count of the number of sales, you can use the **DCOUNT() function** in a similar way.

9. *In* **Cell H6***, type* **July Count:** *and resize the column.*
10. *In* **Cell I6** *write the formula* **=DCOUNT(A1:F2110,"Total Sale",I1:N2)**
11. *Format* **Cell I6** *as* **Number***, zero decimal places*.

Figure 9.20

Another trick is to use arithmetic operators in the criteria. Suppose you wanted to see the year-to-date sales and count for July, meaning all sales from January through July. You can use arithmetic operators in the criteria section.

12. *Change* **Cell K2** *to be* **<=7.**

	K2		▾	f_x	<=7							
	A	B	C	D	E	F	G	H	I	J	K	L
1	Store No	Sale Date	Month	Ticket No	Item Code	Total Sale			Store No	Sale Date	Month	Ticket
2	1018	9/25/2010	9	1018200301457	SMKE112	1,495.00					<=7	
3	1018	9/19/2010	9	1018200301419	DMQF130	560.00						
4	1018	3/30/2010	3	1018200300431	SPQE175	196.00						
5	1018	8/5/2010	8	1018200301114	SPQE175	98.00		July Sales	$785,437.00			
6	1018	11/2/2010	11	1018200301664	CMTE156	552.00		July Count	1,080			
7	1018	10/30/2010	10	1018200301647	SPQG174	76.00						
8	1018	9/8/2010	9	1018200301346	DMQG131	615.00						
9	1018	2/4/2010	2	1018200300136	CMDE150	866.00						

Figure 9.21

As soon as you press [Enter], the July Sales and Count numbers change. Like I said, if you want to use other database functions, learn how to use the normal statistical function then apply the database function syntax we reviewed here. And again, I would advise you to re-examine your project if you find yourself using a lot of database functions. I get nervous when people use database functions in a spreadsheet, just like I'm wary of doing what-if analyses in a database.

13. *Save and close the file.*

Lookup Functions

In my humble opinion (although some people say there's nothing humble about my opinion), there are three things that EVERY Excel user should know how to do: a nested IF statement (which we talked about in Chapter 6), PivotTables (Chapters 11 and 12) and a VLOOKUP() function, which is the next subject.

The VLOOKUP() Function

The **VLOOKUP() function** is one of the most powerful, if not THE most powerful function in Excel. It is similar to creating a join, or establishing a relationship, between two tables in a database. The "V" in VLOOKUP stands for vertical, meaning that the data in the table must be in a vertical format (from top to bottom, or that the fields must be in columns, not rows). VLOOKUP searches for a value in the leftmost column in a range, and then returns a value in the same row from a column you specify in the range. The VLOOKUP() function has three required arguments and one optional argument, although I contend that the optional argument should be necessary in most cases. The three required arguments are: 1) the lookup value, or the value you want to find in the table; 2) the table, array or database range that you want to use to find the values; and 3) index number, or the column in the table, array or database you want to return a value from.

The optional argument, which I will tell you to ALWAYS include, is a TRUE/FALSE argument (Excel defines this as the range/lookup argument, but I think that definition is not very meaningful). The TRUE/FALSE argument tells the function whether or not to return the closest value. If the argument is set to TRUE or if it is omitted, it will return the largest value that is less than or equal to lookup value. I rarely use that functionality. Therefore, I set the optional argument in a VLOOKUP() function to FALSE, as I want to return an exact match or an error when there is no exact match. In most of your work, you will probably do the same.

Let's start with a simple example.

1. *Open a new workbook.*
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter9\myLookup.xlsx.**
3. *Starting with* **Cell A1**, *create a table with the following data.*

State	Name
AL	Alabama
AK	Alaska
AZ	Arizona
CA	California
CO	Colorado
DE	Delaware
FL	Florida
GA	Georgia
HI	Hawaii
IA	Iowa

4. *Underline* **Cells A1** *and* **B1** *and resize the columns if necessary.*

Figure 9.22

Next you will write a VLOOKUP() statement where the user inputs the state abbreviation in one cell and the VLOOKUP() statement will return the corresponding state name in the adjacent cell.

5. *In* **Cell D1**, *type* **State** *and in* **Cell E1** *type* **Name**. *Underline both cells.*
6. *In* **Cell D2**, *type* **AL**.
7. *In* **Cell E2** *write the following formula:*
   =VLOOKUP(D2,A2:B11,2,FALSE)

	E2			*fx*	=VLOOKUP(D2,A2:B11,2,FALSE)	
	A	B	C	D	E	F	G
1	State	Name		State	Name		
2	AL	Alabama		AL	Alabama		
3	AK	Alaska					
4	AZ	Arizona					
5	CA	California					
6	CO	Colorado					
7	DE	Delaware					
8	FL	Florida					
9	GA	Georgia					
10	HI	Hawaii					
11	IA	Iowa					
12							

Figure 9.23

Let's review the formula. Cell D2 is the value you want to look up, or the value you want to find the state name for. The range A2:B11 is the range of the database. It is important to remember that the left-most column in your database must contain the same values as those contained as your formula's lookup value argument. If you don't set it up that way, the VLOOKUP() function will not work. The third argument, 2, tells the function that you want to return the value that is contained in the second column of the database range. Finally, FALSE tells the function that you want an exact match. Typing TRUE or omitting the argument could return an incorrect result.

This is the basic syntax behind a VLOOKUP function. Seems pretty simple, huh? Let's play around with our formula.

8. *In* **Cell D2**, *type:* **CO**

Cell E2 changes to "Colorado".

9. *In* **Cell D2**, *type:* **HI**

Cell E2 changes to "Hawaii".

10. In **Cell D2***, type:* **TX**
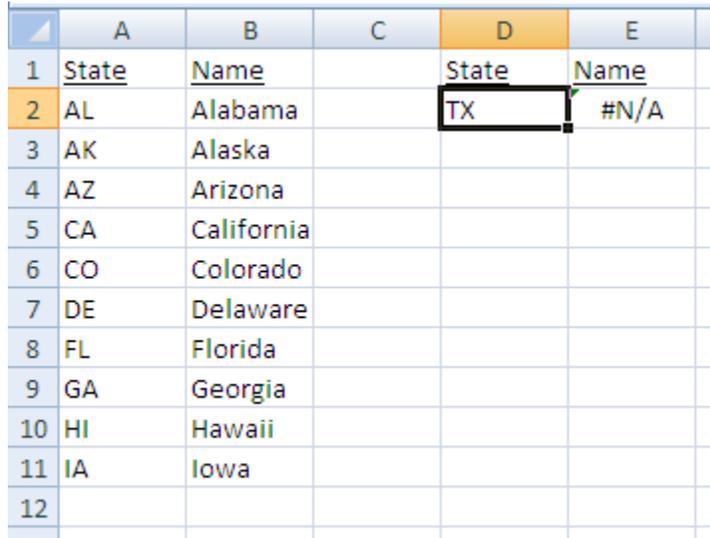
	A	B	C	D	E
1	State	Name		State	Name
2	AL	Alabama		TX	#N/A
3	AK	Alaska			
4	AZ	Arizona			
5	CA	California			
6	CO	Colorado			
7	DE	Delaware			
8	FL	Florida			
9	GA	Georgia			
10	HI	Hawaii			
11	IA	Iowa			
12					

Figure 9.24

Cell E2 returns an #N/A error, because TX is not contained in the left-most column of the database range. So you need to include Texas in your list of states.

11. In **Cell A12***, type:* **TX**
12. In **Cell B12***, type:* **Texas**

Cell E2 still returns a #N/A error. That is because the database range in the formula is still shown as A2:B11. TX and Texas are listed in Cells A12 and B12. Therefore, you need to revise the database range in your formula to incorporate the new cells.

13. Edit the database range in your **VLOOKUP formula** *to include the* **Texas** *cells on* **Row 12***.*

	E2			f_x	=VLOOKUP(D2,A2:B12,2,FALSE)	
	A	B	C	D	E	F	G
1	State	Name		State	Name		
2	AL	Alabama		TX	Texas		
3	AK	Alaska					
4	AZ	Arizona					
5	CA	California					
6	CO	Colorado					
7	DE	Delaware					
8	FL	Florida					
9	GA	Georgia					
10	HI	Hawaii					
11	IA	Iowa					
12	TX	Texas					

Figure 9.25

Now the formula returns the correct value.

Data Validation

As we saw in our example, if you input a value other than those contained in Cells A2 through A12, it will return an error message. To force users to choose one of the values in the list, you can create a drop down menu. This is done using **Data Validation**. Let's deviate from lookup functions for a short while and create a drop down list in our example to require users to choose one of the values.

1. *Click on* **Cell D2**.
2. *Click on the* **Data** *tab, then click on the* **Data Validation** *button in the* **Data Tools** *group.*

The Data Validation dialog box appears.

3. *Make sure the* **Settings** *tab is selected.*
4. *In the* **Allow:** *drop down menu, choose* **List**.
5. *Click in the* **Source box** *and use your mouse to select the range* **A2** *to* **A12** *and click* **OK**.
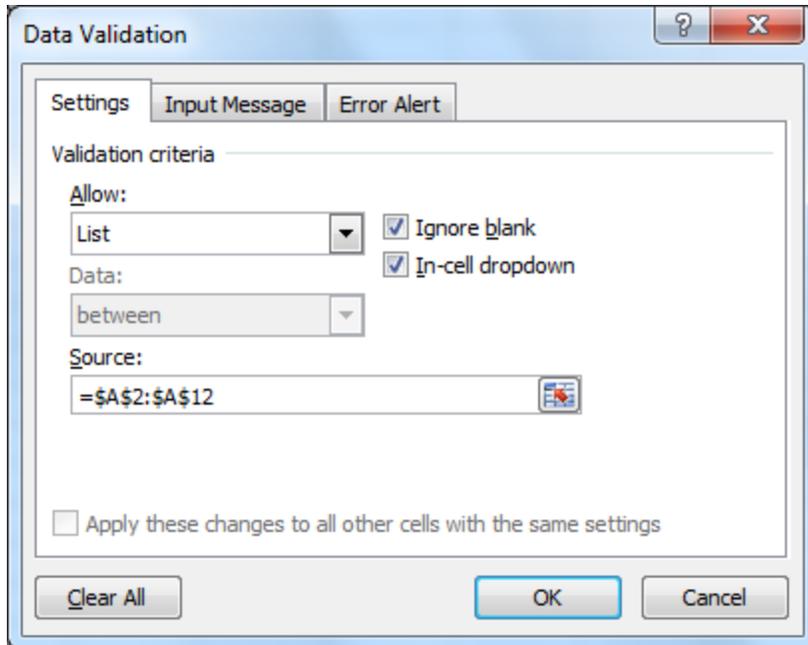
Figure 9.26

You can use the mouse to select the range or you can type it in. If you use the mouse to select the range, Excel will automatically input the range using an absolute value reference, with $'s around the cell references. The absolute value reference fixes the range to where it will not change if it is copied to another cell.

Cell D2 now has a drop down menu attached to it. The drop down menu will appear only when the cell is selected.

Figure 9.27

You can use this functionality to restrict values that can be used. Let's make the drop down menu a little more functional.

> 6. *While* **Cell D2** *is selected, click on the* **Data Validation** *button to open the* **Data Validation** *dialog box.*
> 7. *Click on the* **Input Message** *tab.*
> 8. *In the* **Title:** *box, type* **State** *and in the* **Input message:** *box type* **Choose a state from the list**.
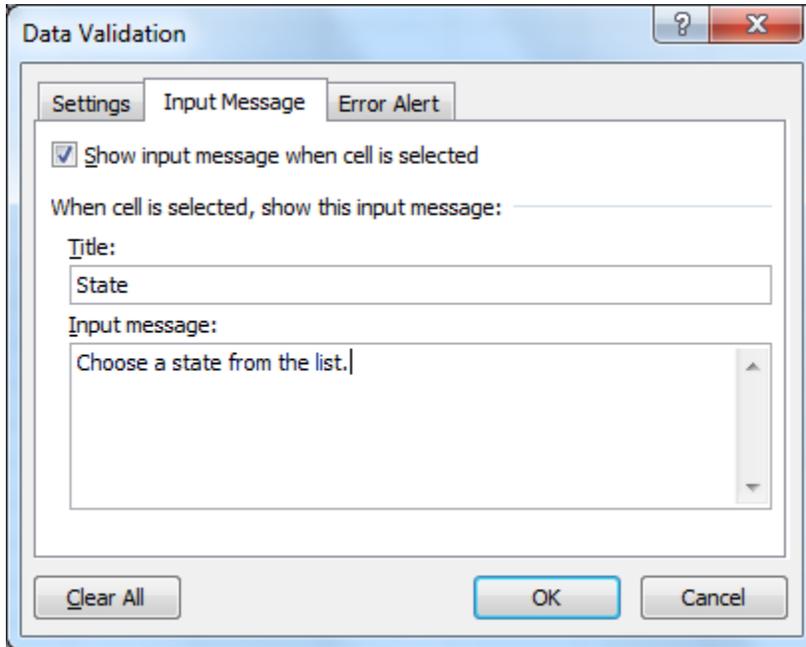
Figure 9.28

> 9. *Click in the* **Error Alert** *tab.*
> 10. *In the* **Style:** *box, make sure* **Stop** *is selected.*
> 11. *In the* **Title:** *box, type* **OOPS!**
> 12. *In the* **Error Message box**, *type* **You must choose a state from the list.**
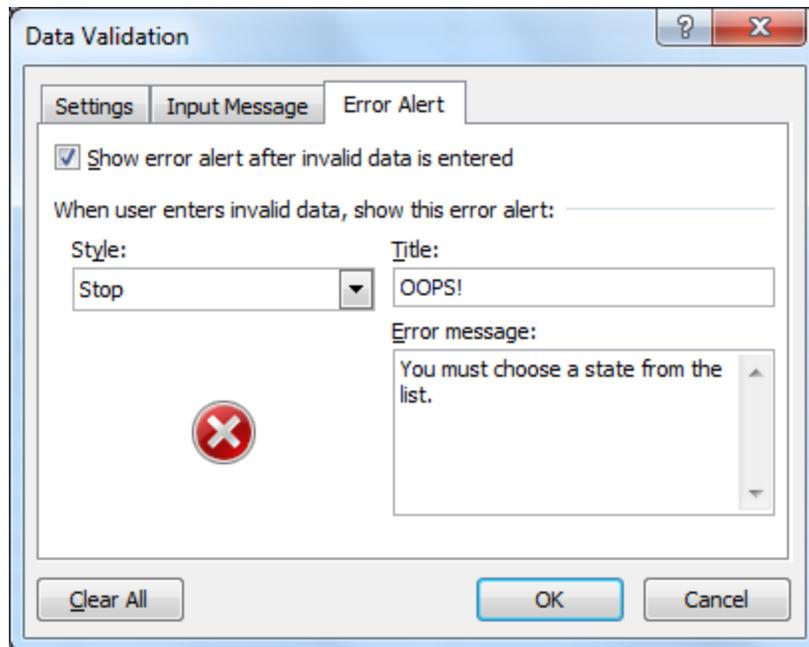
Figure 9.29

13. Click **OK**.

By typing in a title and message in the Input Message tab, the title and message automatically appear whenever the cell is selected.

Figure 9.30

14. Click on the drop down menu in **Cell D2** *and choose* **DE**.
15. Click on any cell other than **Cell D2**.

The state name Delaware appears in Cell E2. To see the complete name of the state in Cell E2, you must click on any cell outside of Cell D2 so the drop down arrow disappears.

16. In **Cell D2**, *type:* **UT**

You get the error message telling you that you have to choose a state from the list.

17. *Click Cancel and save the file.*

Validation Rules

You can also create **validation rules** on existing data. Excel provides a nifty tool for you to identify cells with invalid data.

1. *Open the* **Item_2.xlsx** *file located at* **C:\ExcelCEO\Excel 2010\Chapter9**.

	A	B	C	D	E	F	G	H	I
1	Item_ID	Item_No	Manufacturer	Product	Size	Quality	Series	Retail_Price	Cost
2	1	SMKF110	Sleepwell	Mattress	King	Fair	Saphire	1,009.00	230.12
3	2	SMKG111	Sleepwell	Mattress	King	Good	Ruby	1,159.00	281.32
4	3	SMKE112	Sleepwell	Mattress	King	Excellent	Emerald	1,359.00	335.06
5	4	SMKB113	Sleepwell	Mattress	King	Best	Diamond	1,559.00	390.98
6	5	SMQF114	Sleepwell	Mattress	Queen	Fair	Saphire	799.00	272.55
7	6	SMQG115	Sleepwell	Mattress	Queen	Good	Ruby	899.00	302.89
8	7	SMQE116	Sleepwell	Mattress	Queen	Excellent	Emerald	1,049.00	329.72
9	8	SMQB117	Sleepwell	Mattress	Queen	Best	Diamond	1,149.00	386.71
10	9	SMDF118	Sleepwell	Mattress	Double	Fair	Saphire	599.00	196.03
11	10	SMDG119	Sleepwell	Mattress	Double	Good	Ruby	699.00	230.34
12	11	SMDE120	Sleepwell	Mattress	Double	Excellent	Emerald	799.00	256.56
13	12	SMDB121	Sleepwell	Mattress	Double	Best	Diamond	699.00	217.84
14	13	SMTF122	Sleepwell	Mattress	Twin	Fair	Saphire	299.00	100.13
15	14	SMTG123	Sleepwell	Mattress	Twin	Good	Ruby	349.00	97.89
16	15	SMTF124	Sleepwell	Mattress	Twin	Excellent	Emerald	399.00	102.72

Figure 9.31

This file is simply a copy of the Item file used previously. Let's assume that you want to have a validation rule that says the size should be either King, Queen, Double, or Twin. Let's create that rule.

2. *In* **Cells L1 through L5**, *create the following list:*

	K	L	M
		Size List	
		King	
		Queen	
		Double	
		Twin	

3. *Select* **Cells E2** *through* **E69**, *and click on the* **Data Validation** *button to open the* **Data Validation** *dialog box.*
4. *Click on the* **Settings** *tab.*
5. *On the* **Allow** *drop down menu, choose* **List**.
6. *In the* **Source** *box, type (or select)* =**$L$2:$L$5** *and click* **OK**.
7. *With the* **Range E2:E69** *selected, click on the* **Data Validation** *drop down arrow and choose* **Circle Invalid Data**.
8. *Scroll down to the bottom of the list.*

	A	B	C	D	E	F	G	H	I
1	Item_ID	Item_No	Manufacturer	Product	Size	Quality	Series	Retail_Price	Cost
43	42	CMDG151	Cama	Mattress	Double	Good	Silver	489.00	147.64
44	43	CMDE152	Cama	Mattress	Double	Excellent	Gold	539.00	149.05
45	44	CMDB153	Cama	Mattress	Double	Best	Platinum	609.00	188.28
46	45	CMTF154	Cama	Mattress	Single	Fair	Bronze	199.00	51.01
47	46	CMTG155	Cama	Mattress	Single	Good	Silver	239.00	77.57
48	47	CMTE156	Cama	Mattress	Single	Excellent	Gold	279.00	77.99
49	48	CMTB157	Cama	Mattress	Single	Best	Platinum	319.00	109.10
50	49	LMKF158	Leavan	Mattress	King	Fair	Daisey	459.00	93.13
51	50	LMKG159	Leavan	Mattress	King	Good	Tulip	499.00	86.31
52	51	LMKE160	Leavan	Mattress	King	Excellent	Rose	599.00	98.99
53	52	LMQF161	Leavan	Mattress	Queen	Fair	Daisey	199.00	37.73
54	53	LMQG162	Leavan	Mattress	Queen	Good	Tulip	249.00	48.62
55	54	LMQE163	Leavan	Mattress	Queen	Excellent	Rose	279.00	41.86
56	55	LMFF164	Leavan	Mattress	Full	Fair	Daisey	199.00	46.38
57	56	LMFG165	Leavan	Mattress	Full	Good	Tulip	249.00	59.36
58	57	LMFE166	Leavan	Mattress	Full	Excellent	Rose	279.00	54.41
59	58	LMTE167	Leavan	Mattress	Twin	Fair	Daisey	79.00	12.70

Figure 9.32

Any cell that is not King, Queen, Double, or Twin now has a red circle around it.

9. *Click on the* **Data Validation** *drop down arrow and choose* **Clear Validation Circles**.
10. *Close the file (no need to save it).*

*Review Questions: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 9, Section 3 of 4** option and complete the review questions.*

The HLOOKUP() Function

Let's now explore the **HLOOKUP () function**. The HLOOKUP() function behaves in the same way as the VLOOKUP() function, except that the database or reference table is contained in a horizontal format rather than a vertical format. The lookup is done in rows instead of columns, but everything else is the same as with a VLOOKUP(). As databases are typically contained in vertical formats, the HLOOKUP() function is less common than VLOOKUP(), but every now and then it's necessary to use it, so let's do an example.

*11. Click on the **Sheet2** tab of the **myLookup.xlsx** file.*
12. Input data in the cells as follows:

	A	B	C	D	
1	N	S	E	W	
2	North	South	East	West	
3					

Figure 9.33

*13. In **Cell F1**, type: **S***
*14. In **Cell G1**, type the following formula:*
    =HLOOKUP(F1,A1:D2,2,FALSE)

G1				f_x	=HLOOKUP(F1,A1:D2,2,FALSE)		
	A	B	C	D	E	F	G	H
1	N	S	E	W		S	South	
2	North	South	East	West				
3								

Figure 9.34

The formula now works using a table in a horizontal format rather than a vertical format.

15. Save and close the file.

Text to Columns

One of the things that make people like us very valuable is our ability to manipulate data. Many times, we don't get to choose the format in which we receive data. Sometimes, the

data is just flat ugly. Data can come in multiple formats, and sometimes it's contained all in one column.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter9\Employees.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter9\myEmployees.xlsx.**

This is a simple file of the store managers at Nitey-Nite and the stores they manage. In this file, all of the data in contained in one column. The data is actually in six columns, but sometimes when data was copied from one system to another, it was copied to one column. In this case, you can use a **Text to Columns** procedure to split out the data into separate columns. If you notice, the data in this spreadsheet is separated by a comma. The comma is known as the **delimiter**, or the character that separates the fields of data. Other common delimiters include a space, semi-colon, or a tab. Some more sophisticated databases use other characters that are rarely used in text strings, like a tilde (~) or pipe symbol (|). Let's use the Text to Columns functionality to separate this data into its respective columns.

3. *Select* **Column A**.
4. *Click on the* **Data** *tab, then click on the* **Text to Columns** *icon in the* **Data Tools** *group (the* **Convert Text to Columns Wizard** *opens).*
5. *In* **Step 1** *of the* **Convert Text to Columns Wizard***, make sure the* **Delimited** *radio button is selected and click* **Next**.
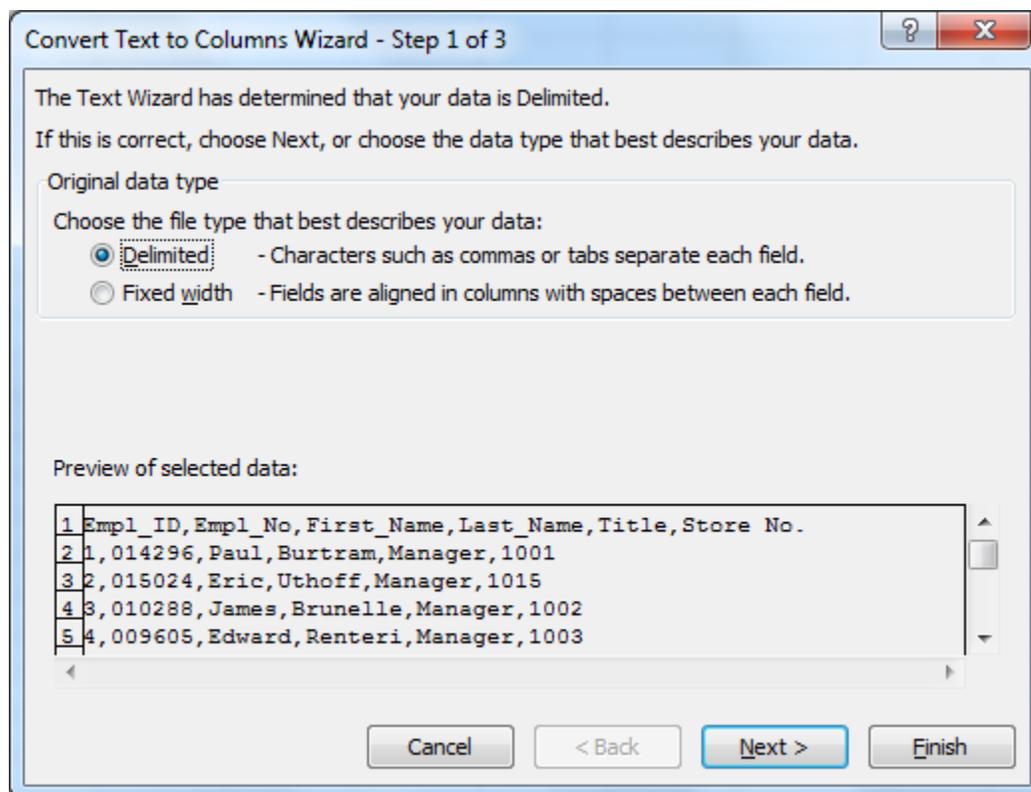
Figure 9.35

6. *In* **Step 2**, *uncheck the* **Tab** *checkbox (or any other checkbox that is checked), check the* **Comma** *checkbox and click* **Next***.*
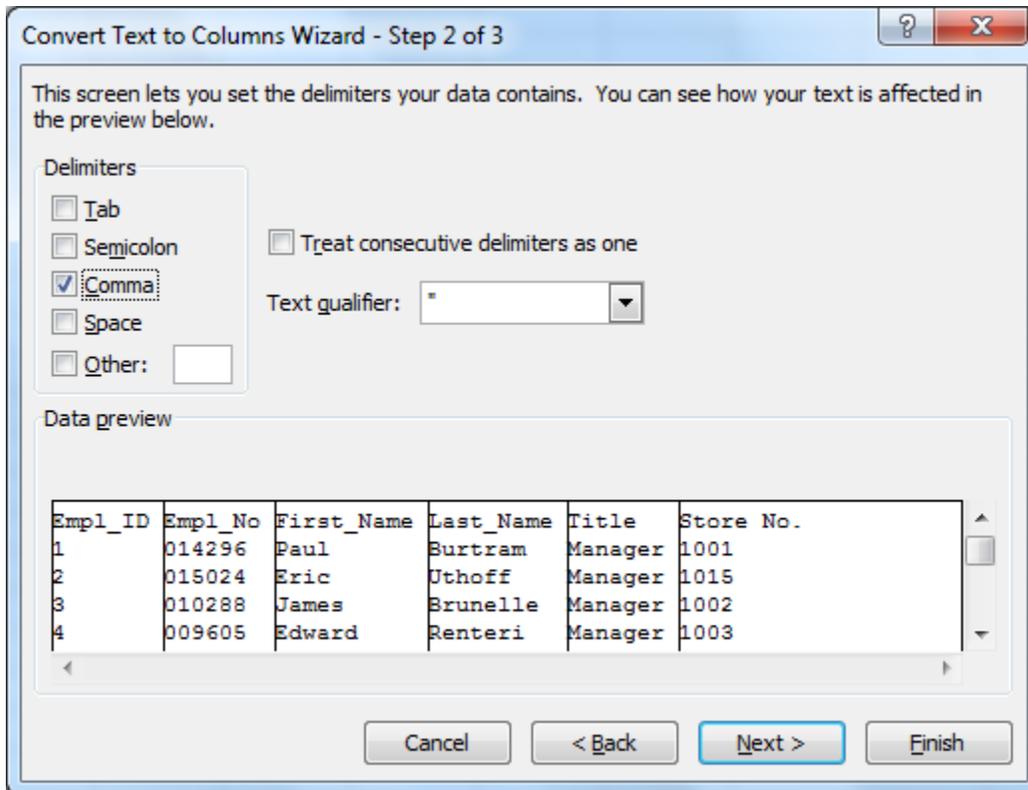
Figure 9.36

7. *In the last step of the wizard, under* **Data preview***, click on the second column (that reads* **General** *and* **Empl_No** *on the first and second lines), click on the* **Text** *radio button in the* **Column data format** *section, and click* **Finish***.*
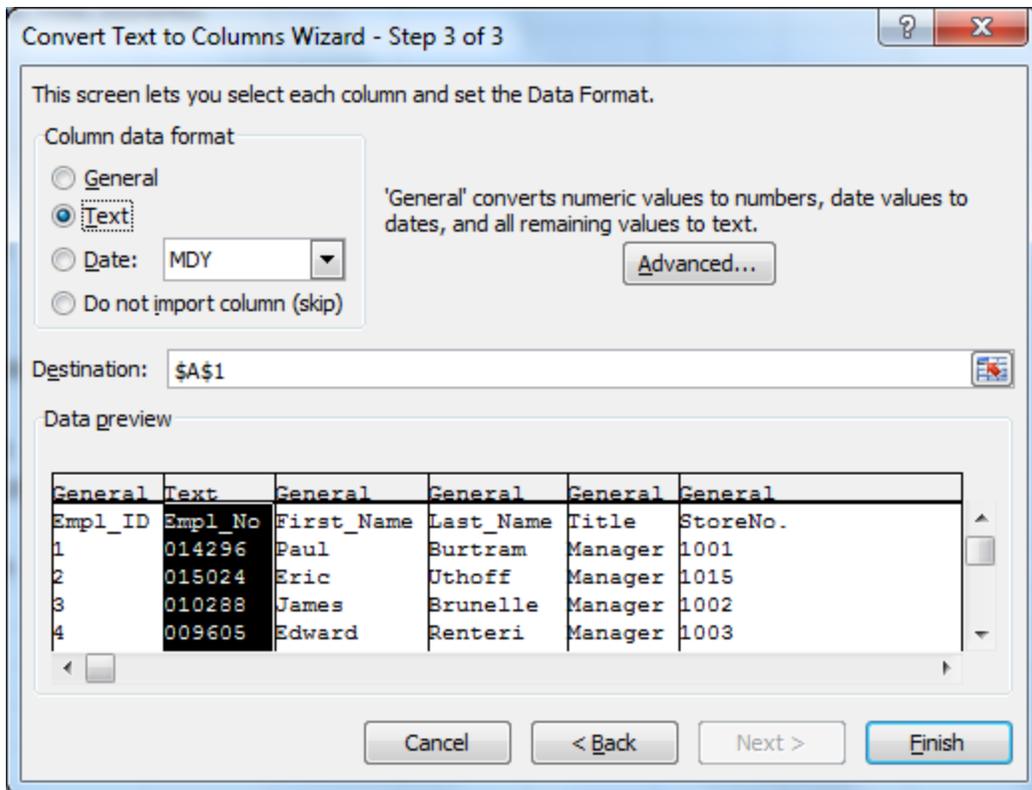
Figure 9.37

8. *Underline the titles and make sure the column widths are set appropriately.*

The data is now separated out into six columns.

Numbers vs. Text Strings in a VLOOKUP() Function

Sometimes you want to use numbers instead of text strings in your lookup values. For the next exercise, we need to clean up the file to be in a more useable format.

	A	B	C	D	E	F
1	Empl ID	Empl No	First Name	Last Name	Title	Store No.
2	1	014296	Paul	Burtram	Manager	1001
3	2	015024	Eric	Uthoff	Manager	1015
4	3	010288	James	Brunelle	Manager	1002
5	4	009605	Edward	Renteri	Manager	1003
6	5	007236	Veranda	Gaunt	Manager	1013
7	6	002715	Hailee	Hattaway	Manager	1004
8	7	007158	Sharon	Pahl	Manager	1005
9	8	015165	Neal	Garn	Manager	1021
10	9	003882	Norbert	Dreamer	Manager	1006
11	10	007386	Raman	Blank	Manager	1007
12	11	006204	Blair	Lafreniere	Manager	1008
13	12	003241	Nathan	Beacham	Manager	1020
14	13	009225	Joel	Marlette	Manager	1022

Figure 9.38

9. In **Cell G1**, *type:* **Full Name** *and underline the cell.*
10. *Write a formula in* **Cell G2** *that concatenates the first and last names to be the full name, copy to all cells below and resize all columns.*

G2 f_x =C2&" "&D2

	A	B	C	D	E	F	G
1	Empl ID	Empl No	First Name	Last Name	Title	Store No.	Full Name
2	1	014296	Paul	Burtram	Manager	1001	Paul Burtram
3	2	015024	Eric	Uthoff	Manager	1015	Eric Uthoff
4	3	010288	James	Brunelle	Manager	1002	James Brunelle
5	4	009605	Edward	Renteri	Manager	1003	Edward Renteri
6	5	007236	Veranda	Gaunt	Manager	1013	Veranda Gaunt
7	6	002715	Hailee	Hattaway	Manager	1004	Hailee Hattaway
8	7	007158	Sharon	Pahl	Manager	1005	Sharon Pahl
9	8	015165	Neal	Garn	Manager	1021	Neal Garn
10	9	003882	Norbert	Dreamer	Manager	1006	Norbert Dreamer
11	10	007386	Raman	Blank	Manager	1007	Raman Blank
12	11	006204	Blair	Lafreniere	Manager	1008	Blair Lafreniere
13	12	003241	Nathan	Beacham	Manager	1020	Nathan Beacham
14	13	009225	Joel	Marlette	Manager	1022	Joel Marlette

Figure 9.39

11. *In* **Cell I1**, *type:* **Empl_ID**
12. *In* **Cell I2**, *type:* **10**
13. *In* **Cell J1**, *type:* **Full Name**
14. *In* **Cell J2**, *write a formula that looks up the value in* **Cell I2** *in the database and returns the employee's full name.*
15. *Resize* **Column J** *if necessary.*

Figure 9.40

Now let's try the same VLOOKUP() using the Empl_No (**not** the Empl_ID).

16. *Replace the contents of* **Cell I1** *with:* **Empl_No**.
17. *Edit the range in the formula in* **Cell J2** *to be:*
    =VLOOKUP(I2,B2:G24,6,FALSE)

In the formula, we needed to change the range to start with Column B as those are the values we want to base our formula on. We also changed the 7 to a 6 because now the data we want to return is in the sixth column of the table if we begin with Column B. The formula right now should return an error, because Cell I2 still contains the number 10 which is an employee ID and not the employee number.

18. *In* **Cell I2**, *enter:* **007386**

Figure 9.41

It still returns a #N/A error. Why? This one problem has been the cause of hours of frustrations for me and many other Excel users. When you input "007386", Excel recognized that as a number and consequently changed it to a number format and eliminated the leading zeros. The data in Column B is formatted as text, not numbers.

You can tell it is text because of the leading zeros. Another way to tell if numbers are formatted as text is to select the numbers in question and look to see if the AutoSum feature is working. You can also try to write a SUM() function using those numbers. If it returns an error or doesn't add up, chances are the numbers are formatted as text.

In this case, we can do one of two things. The fastest and easiest way (but **not** recommended by me) is to change the data in Column B (the Empl_No field) to numbers. You can do this very easily by selecting the entire column, and choose Text to Columns and walk through the Convert Text to Columns Wizard. Let's do that.

1. *Select* **Column B**.
2. *Click on the* **Text to Columns** *button in the* **Data Tools** *group of the* **Data tab**.
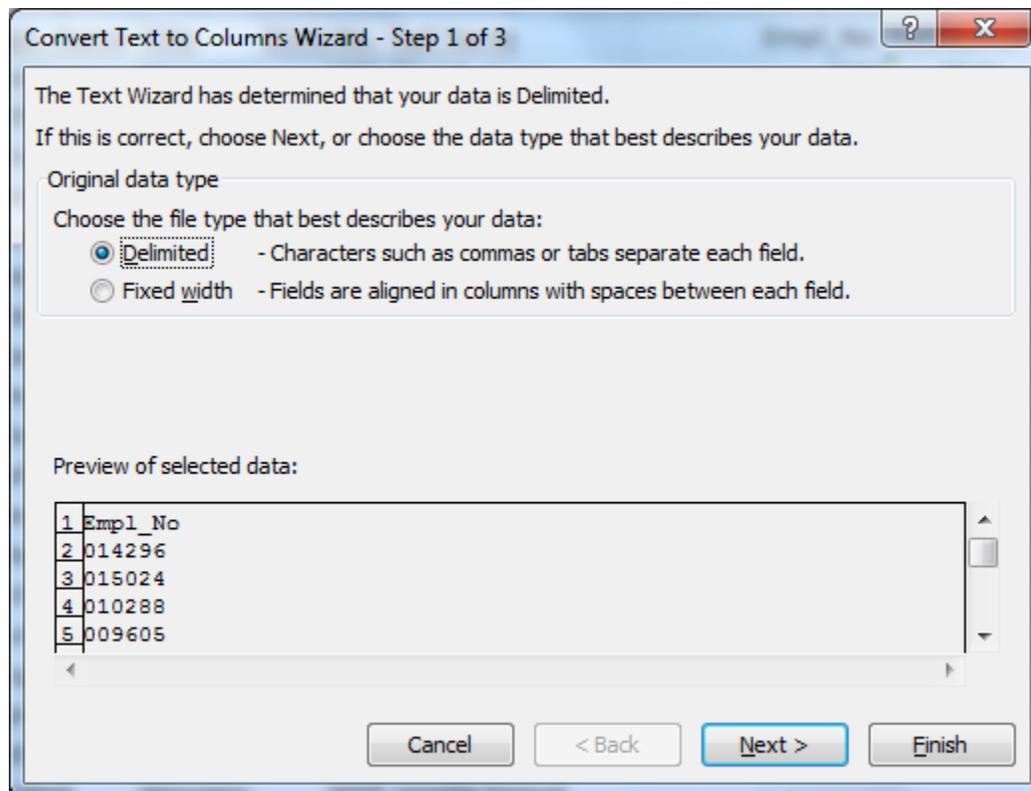
Figure 9.42

3. *Leave the* **Delimited** *data type checked and click* **Next >**
4. *In* **Step 2** *of the* **Wizard**, *uncheck all boxes in the* **Delimiters** *section (if there are no boxes checked, check and uncheck any box) and click* **Next >.**
5. *In* **Step 3** *of the* **Wizard**, *make sure the* **General** *radio button is selected and click* **Finish**.

The values in Column B are changed to numbers and the formula in Cell J2 works. Although this way works, I do not suggest doing it. I often set up my spreadsheets so I can easily update the data, and if I were to refresh this table with new data, the Empl_no

values would come in again as text and I would have to go through the motions again of converting the text values to numbers. I try to program my spreadsheets to have as little human intervention as possible.

6. *Click the* **Undo** *icon* ↩.

The Text to Columns procedure was undone and the values in Column B are now converted back to text.

7. *Edit the formula in* **Cell J2** *to be as follows:*
    =VLOOKUP(RIGHT("000000"&I2,6),B2:G24,6,FALSE)

Now stay with me on this one. I PROMISE you will love this trick once you understand the logic. This is an example of a nested function, or a function within a function. At Nitey-Nite, the Empl_No is always a six-digit number with leading zero's. The concatenation string "000000"&I2 will take the number that is in Cell I2 and add six leading zero's. RIGHT("000000"&I2,6) will return the **right** six-most characters from that string. Remember that whenever you use a Text function, it turns the number into a text string. In this case, that is exactly what we want.

	J2		▾ (		*fx*	=VLOOKUP(RIGHT("000000"&I2,6),B2:G24,6,FALSE)			
◢	A	B	C	D	E	F	G	H	I	J
1	Empl_ID	Empl_No	First_Name	Last_Name	Title	Store No.	Full Name		Empl_No	Full Name
2	1	014296	Paul	Burtram	Manager	1001	Paul Burtram		7386	Raman Blank
3	2	015024	Eric	Uthoff	Manager	1015	Eric Uthoff			
4	3	010288	James	Brunelle	Manager	1002	James Brunelle			
5	4	009605	Edward	Renteri	Manager	1003	Edward Renteri			
6	5	007236	Veranda	Gaunt	Manager	1013	Veranda Gaunt			
7	6	002715	Hailee	Hattaway	Manager	1004	Hailee Hattaway			
8	7	007158	Sharon	Pahl	Manager	1005	Sharon Pahl			
9	8	015165	Neal	Garn	Manager	1021	Neal Garn			
10	9	003882	Norbert	Dereamer	Manager	1006	Norbert Dereamer			
11	10	007386	Raman	Blank	Manager	1007	Raman Blank			
12	11	006204	Blair	Lafreniere	Manager	1008	Blair Lafreniere			
13	12	003241	Nathan	Beacham	Manager	1020	Nathan Beacham			
14	13	009225	Joel	Marlette	Manager	1022	Joel Marlette			

Figure 9.43

Sometimes you may want to go the other way and convert a text string into a number. Let's add a column beside the Empl_No column which will convert the Empl_No's from text strings to numbers.

8. *Insert a column after* **Column B**.
9. *In* **Cell C1**, *type:* **Empl_No #** *and resize the column.*

There are different functions that you can use for this procedure, but I found a formula that works perfectly. In Chapter 6, we saw that we could use the VALUE() function to do this conversion, but there is another way. I'll ask you not to tell this trick to any programmers, as they will tell you it won't work, but just between you and me, it will.

*Note: The formula may return the value =B2+0. If it does that, don't worry. It did that because it inherited the **data format** of Column B. This happened when you inserted the column. You may have also seen this in some of your spreadsheets. To fix it, just do a **Text to Columns** exercise on that new column.*

10. In **Cell C2**, *type:* **=B2+0**
11. *Copy the formula to all cells below.*

	C2			f_x	=B2+0			
	A	B	C	D	E	F	G	H
1	Empl_ID	Empl_No	Empl No #	First_Name	Last_Name	Title	Store No.	Full Name
2	1	014296	14296	Paul	Burtram	Manager	1001	Paul Burtram
3	2	015024	15024	Eric	Uthoff	Manager	1015	Eric Uthoff
4	3	010288	10288	James	Brunelle	Manager	1002	James Brunelle
5	4	009605	9605	Edward	Renteri	Manager	1003	Edward Renteri
6	5	007236	7236	Veranda	Gaunt	Manager	1013	Veranda Gaunt
7	6	002715	2715	Hailee	Hattaway	Manager	1004	Hailee Hattaway
8	7	007158	7158	Sharon	Pahl	Manager	1005	Sharon Pahl
9	8	015165	15165	Neal	Garn	Manager	1021	Neal Garn
10	9	003882	3882	Norbert	Dereamer	Manager	1006	Norbert Dereamer
11	10	007386	7386	Raman	Blank	Manager	1007	Raman Blank

Figure 9.44

12. *Right-align the numbers.*

That's it? Yep, that's it. All you have to do is to add zero to a text string of numbers to convert it to a number. Of course, there can be only numbers (no alpha characters) in the text string. Since I believe LOOKUP formulas are critically important, we will continue the discussion of LOOKUP formulas in the next chapter and introduce the last set of functions, Logical Functions.

13. *Save and close the file.*

*   **Review Questions***: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 9, Section 4 of 4** *option and complete the review questions.*

Conclusion

In this chapter, you learned about Date Functions, and used the NOW(), TODAY(), MONTH(), DAY(), YEAR(), DATE() and WEEKDAY() functions in many formulas. You learned about Statistical Functions in formulas, including the COUNT(), AVERAGE(), MEDIAN(), MODE(), MAX(), MIN(), COUNTIF() and RANK() functions. You used these functions to create a summary and an item-by-item margin

analysis. You learned about database functions and wrote formulas using the DSUM() and DCOUNT() functions. You learned about one of the most important types of functions, Lookup Functions. Additionally, you used the Data Validation functionality to create drop down menus and validation rules and you used the Text to Columns functionality several times. You used the Circle Invalid Data functionality to help identify formulas that didn't meet specific criteria. Finally, you saw how to switch back and forth between using numbers and text strings by using the +0 trick.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER TEN – ADVANCED LOOKUP AND LOGICAL FUNCTIONS

In this chapter, you will:

- Use absolute references in a VLOOKUP() Function.
- Create formulas using the LOOKUP() Function.
- Create formulas using the MATCH() Function.
- Nest a MATCH() Function within a VLOOKUP() Function.
- Create formulas using Logical Functions, including:
    - CELL()
    - ISERROR()
    - AND()
    - OR()
- Find and check for errors.
- Build a complex spreadsheet that calculates a bonus based on multiple criteria.

Once I was teaching an Excel class to a group of accountants. The primary purpose of the class was to show them how to connect an Excel file to an OLAP cube (an external database) and pull in data. Once the data was in the spreadsheet, I showed them how to write a complex VLOOKUP() function to bring the data to different parts of the spreadsheet. One of the participants was bored with the class, as she already knew how to do all of that. Then I showed them the trick on how to turn a text string to a number by simply adding zero and nesting that formula in a VLOOKUP() function. Her eyes almost popped out of her head and she said, "*No way! It CAN'T be that easy!*" She jumped up out of her chair, ran out of the room and into her office, and was back within two minutes shouting, "*IT WORKS! IT WORKS!*" Writing formulas is what Excel is all about, and I sincerely hope you've found this course to be useful so far.

Advanced Lookup Functions

Sometimes you will run into a situation where you need to look up a number that falls between a range of numbers. In Chapter 6, I introduced you to the IF() function and showed you how to write this formula:

=IF(G2<=50000,"Paper",IF(G2<=70000,"Scissors","Rock"))

This formula tells us if the value in Cell G2 is less than or equal to 50,000, then return the word "Paper". If Cell G2 is less than or equal to 70,000, return "Scissors", and for all other values, return "Rock". The IF() function works very well in this situation, as there are only three options: Paper, Scissors and Rock. In Excel 2003, you could nest only seven IF() functions in one formula. However, in Excel 2007 and 2010, you can nest up to 64 IF() functions in one formula. Honestly, I don't know why Microsoft allowed so many IF() functions in one formula, because it would be a full time job just keeping track of all those conditions. In the first part of this chapter, I'll introduce you to some alternative methods of looking up values where many IF() statements could be used.

Over the years, I have been given many schedules like the following on which to calculate bonuses:

% of Budget	Bonus %
Below 100%	0.00%
100%	0.50%
105%	0.75%
110%	1.00%
125%	1.50%
150%	2.00%
200%	3.00%
250%	4.00%

In this case, the Store Manager has a budgeted amount of sales he/she should attain every month. If the store manager reaches 100% of that budgeted number, they begin to receive a bonus based on the percentage over budget on his/her actual sales. Depending on the amount of their sales to budget determines their bonus amount: the higher the sales, the higher the bonus amount.

1. *Open the file located at* **C:\ExcelCEO\Excel 2010\Chapter10\Bonus.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter10\myBonus.xlsx.**

	A	B
1	% of Budget	Bonus %
2	0%	0.00%
3	100%	0.50%
4	105%	0.75%
5	110%	1.00%
6	115%	1.25%
7	125%	1.50%
8	150%	2.00%
9	200%	3.00%
10	250%	4.00%
11	300%	5.00%

Figure 10.1

Let's review this file. On the Assumptions tab is a schedule similar to the one above. This schedule means that if the Store Manager (SM) is below 100% of budget, he/she gets no bonus. If the SM is between 100% and 105%, he/she gets a bonus equal to 0.50% of actual sales. Once the SM reaches 105%, the bonus percentage increases to 0.75%, going back to dollar one. So if the SM sells $104,000 and has a $100,000 budget, his percent of budget is 104% (104,000 / 100,000) and he qualifies for a 0.50% bonus. The bonus equates to $520, or $104,000 x 0.50%. The Sep_10_Data tab contains the total mattress and pillow sales for each store in September 2010. The Managers tab contains the names of the managers for each store and the Budget tab contains the Budget numbers for each store.

Let's first organize the data where it is easier to work with.

3. *Copy the* **Sep_10_Data** *tab and rename the new tab* **Bonus***.*

It's always good practice to save the original data and perform calculations in a copied version of the data, just in case you need to start over.

4. *In the* **Managers** *tab,* **Cell E1***, type:* **Full Name**
5. *Format* **Cell E1** *like* **Cell D1***.*
6. *Write a formula in the* **Full Name** *column that creates the manager's full name for all rows. Resize column if necessary.*

	E2			f_x	=B2&" "&C2	
	A	B	C	D	E	
1	Store	First_Name	Last_Name	Empl_No	Full Name	
2	1027	Paul	Burtram	014296	Paul Burtram	
3	1029	Eric	Uthoff	015024	Eric Uthoff	
4	1059	James	Brunelle	010288	James Brunelle	
5	1060	Edward	Renteri	009605	Edward Renteri	
6	1026	Veranda	Gaunt	007236	Veranda Gaunt	
7	1040	Hailee	Hattaway	002715	Hailee Hattaway	
8	1045	Sharon	Pahl	007158	Sharon Pahl	
9	1021	Neal	Garn	015165	Neal Garn	
10	1019	Norbert	Dereamer	003882	Norbert Dereamer	
11	1005	Raman	Blank	007386	Raman Blank	

Figure 10.2

7. In the **Bonus** *tab,* **Cell D1**, *type:* **Total Sales**
8. *Format* **Cell D1** *like* **Cell C1**.
9. *Calculate the total sales for each store in* **Column D**.
10. *Format the* **Mattress Sales**, **Pillow Sales** *and* **Total Sales** *fields as* **Number**, *no decimal places, Use 1000 Separator (,).*

	D2			f_x	=B2+C2
	A	B	C	D	
1	Store	Mattress_Sales	Pillow_Sales	Total Sales	
2	1001	101,337	9,197	110,533	
3	1002	89,886	8,183	98,068	
4	1005	123,629	3,222	126,851	
5	1009	87,475	3,511	90,987	
6	1011	138,193	9,476	147,669	
7	1012	112,942	9,948	122,890	
8	1018	172,614	9,747	182,361	
9	1019	132,269	8,758	141,027	
10	1021	32,062	4,010	36,071	
11	1024	140,251	8,137	148,388	
12	1026	116,726	4,631	121,357	

Figure 10.3

11. *Insert a column between* **Store** *and* **Mattress_Sales**.
12. *In* **Cell B1**, *type:* **Manager**

VLOOKUP() and Absolute References

Remember that when you copy a formula down, up or over, the cell references shift as well. This will also happen to a range in a VLOOKUP() function unless 1) the range is named or 2) the range is in absolute references. As you learned in Chapter 2, you can press the [F4] key to toggle between absolute, mixed, and relative references. In our case here, we will use an absolute reference in our VLOOKUP() function.

13. *In* **Cell B2**, *write a* **VLOOKUP()** *formula to lookup the full name of the manager from the* **Managers** *tab, based on the store number.*
14. *Make the range in the* **VLOOKUP()** *function be an* **Absolute Reference**.
15. *Copy the formula down to all cells below.*
16. *If any of the rows grow in size, format all rows in the tab to be* **15.00** *in height.*
17. *Left-justify all manager names and adjust the column width to fit.*

	B2			f_x	=VLOOKUP(A2,Managers!$A$2:$E$30,5,FALSE)	
	A	B	C	D	E	F
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	
2	1001	Rasheda Webber	101,337	9,197	110,533	
3	1002	Julianne Ashby	89,886	8,183	98,068	
4	1005	Raman Blank	123,629	3,222	126,851	
5	1009	Rick Tuggle	87,475	3,511	90,987	
6	1011	Curt Scherbarth	138,193	9,476	147,669	
7	1012	Michael Suits	112,942	9,948	122,890	
8	1018	Eva Roseman	172,614	9,747	182,361	
9	1019	Norbert Dereamer	132,269	8,758	141,027	
10	1021	Neal Garn	32,062	4,010	36,071	
11	1024	Blair Lafreniere	140,251	8,137	148,388	
12	1026	Veranda Gaunt	116,726	4,631	121,357	

Figure 10.4

Note that when you refer to cells in another tab, the name of the tab and the data range in the formula are separated by an exclamation point, as in this VLOOKUP() function. If you refer to a different workbook, the name of the workbook appears in brackets (like =[Book1.xlsx]Sheet1!$A$1). This type of a reference is called a **3-D reference**, as it refers to the three parts of the link's path. If there are spaces in the name of the workbook or in the tab name, the name will be surrounded by apostrophes. As such, when writing formulas that refer to ranges or cells in different tabs and/or workbooks, it is usually easier to choose the range with your mouse rather than manually typing the entire formula.

18. *In* **Cell F1**, *type:* **Budget**
19. *Format* **Cell F1** *like* **Cell E1**.
20. *In* **Cell F2**, *write a* **VLOOKUP()** *formula to look up the budget number in the* **Budget** *tab based on the* **Store** *number.*

21. *Copy* **Cell F1** *down to all cells and format as* **Number, no decimal places, Use 1000 Separator (,).**

	F2			f_x	=VLOOKUP(A2,Budget!$A$2:$B$30,2,FALSE)	
	A	B	C	D	E	F
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000
4	1005	Raman Blank	123,629	3,222	126,851	169,000
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000
7	1012	Michael Suits	112,942	9,948	122,890	119,000
8	1018	Eva Roseman	172,614	9,747	182,361	99,000
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000
10	1021	Neal Garn	32,062	4,010	36,071	37,000
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000

Figure 10.5

22. *In* **Cell G1**, *type:* **% Budget**
23. *Format* **Cell G1** *appropriately.*
24. *In* **Cell G2**, *calculate the percent of budget by dividing the* **Total Sales** *by* **Budget**.
25. *Format* **Cell G2** *as* **Percent**, **one decimal place**, *and copy down to all cells below.*

	G2			f_x	=E2/F2		
	A	B	C	D	E	F	G
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%

Figure 10.6

The LOOKUP() Function

Now we're ready to do the actual bonus calculations. The first thing we need to do is to find out what bonus percentage each Store Manager qualified at. We will do this with a **LOOKUP() function**. The LOOKUP() function has two arguments in the way we use it: the value to look up and the range. Remember, the lookup value and the left-most column in the range must be the same numbers. Let's go forward.

26. *In* **Cell H1***, type:* **Bonus %**
27. *Format* **Cell H1** *accordingly.*
28. *Select the range* **A2** *to* **B11** *on the* **Assumptions** *tab and name that range* **Bonus_Table***.*
29. *In the* **Bonus** *tab,* **Cell H2***, type the following formula:*
    =LOOKUP(G2,Bonus_Table)
30. *Format* **Cell H2** *as* **Percent***,* **two decimal places** *and copy down to all cells below.*

	H2			f_x	=LOOKUP(G2,Bonus_Table)			
	A	B	C	D	E	F	G	H
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	5.00%
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	0.00%

Figure 10.7

You should spot check some of these numbers with the Bonus Table on the Assumptions tab to make sure the bonus percentages are correct.

The MATCH() Function

Another function you can use in this scenario is the **MATCH() function**. I use this function more frequently than the LOOKUP() function as it is more versatile. The MATCH() function returns the relative position of an item in a table or array that matches a specified value in a specified order. You should use the MATCH() instead of one of the LOOKUP functions when you need to see the position of an item in a range instead of the item itself.   The MATCH() function has two required arguments and one optional argument. The two required arguments are the lookup value and the lookup array (which

is the database range or table). It is important to know that the table or array must be sorted by the lookup value. Let's try an example.

1. *In* **Cell I1**, *type:* **Match**
2. *Format* **Cell I1** *appropriately.*
3. *In* **Cell I2**, *type the following formula:*
    =MATCH(G2,Assumptions!$A$2:$A$11)
4. *Copy to all cells below.*

	I2				*fx*	=MATCH(G2,Assumptions!$A$2:$A$11)			
	A	B	C	D	E	F	G	H	I
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %	Match
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%	1
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%	7
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%	1
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%	1
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%	7
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%	2
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%	7
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%	6
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%	1
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	5.00%	10
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	0.00%	1

Figure 10.8

The MATCH() function returns the position of the lookup value. The first lookup value, 72.7%, is positioned between 0% and 100% in the database range and is in the first position. The next value, 155.7%, is between 150% and 200%, in the seventh position, and so forth. To find the Bonus % value in the table, we need to edit the Assumptions tab a bit.

5. *On the* **Assumptions** *tab, insert a column to the left of the* **% of Budget** *column.*
6. *In* **Cell A1**, *type:* **Position**
7. *Underline* **Cell A1**.
8. *Type the* **numbers 1 – 10** *in* **Cells A2** *through* **A11**.

	A	B	C
1	Position	% of Budget	Bonus %
2	1	0%	0.00%
3	2	100%	0.50%
4	3	105%	0.75%
5	4	110%	1.00%
6	5	115%	1.25%
7	6	125%	1.50%
8	7	150%	2.00%
9	8	200%	3.00%
10	9	250%	4.00%
11	10	300%	5.00%
12			

Figure 10.9

9. *On the* **Bonus** *tab,* **Cell J1***, type:* **Match Bonus %.**
10. *Format* **Cell J1** *like the others in* **Row 1** *and resize the column.*
11. *In* **Cell J2***, write a formula that looks up the value of* **Cell I2** *in the database range* **A2** *to* **C11** *on the* **Assumptions** *tab, and returns the value in the third column.*
12. *Format* **Cell J2** *as* **Percent***,* **two decimal places** *and copy to all cells below.*

J2   *fx* =VLOOKUP(I2,Assumptions!$A$2:$C$11,3,FALSE)

	A	B	C	D	E	F	G	H	I	J
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %	Match	Match Bonus %
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%	1	0.00%
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%	7	2.00%
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%	1	0.00%
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%	1	0.00%
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%	7	2.00%
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%	2	0.50%
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%	7	2.00%
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%	6	1.50%
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%	1	0.00%
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	5.00%	10	5.00%
12	1026	Veranda Gaunt	116.726	4.631	121.357	130.000	93.4%	0.00%	1	0.00%

Figure 10.10

Nesting MATCH() within a VLOOKUP()

The percentages in Column J should exactly match the percentages in Column H. To make the formula take up only one column instead of two, you can nest the MATCH() function in Column I into the VLOOKUP() formulas in Column J.

13. *Copy the formula in* **Cell I2** *(everything after the "=" sign) and replace the* **I2** *reference in the formula in* **Cell J2** *with it.*
14. *Copy to all cells below.*

15. *Delete* **Column I**.

	A	B	C	D	E	F	G	H	I	J
I2			=VLOOKUP(MATCH(G2,Assumptions!$B$2:$B$11),Assumptions!$A$2:$C$11,3,FALSE)							
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %	Match Bonus %	
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%	0.00%	
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%	2.00%	
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%	0.00%	
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%	0.00%	
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%	2.00%	
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%	0.50%	
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%	2.00%	
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%	1.50%	
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%	0.00%	
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	5.00%	5.00%	

Figure 10.11

Since we don't need two columns with the exact same data in them, you can delete one of the columns. Let's keep the column with the MATCH() function in it.

16. *Delete* **Column H**.
17. *Rename* **Cell H1 Bonus %** *and resize the column to fit*.

	A	B	C	D	E	F	G	H
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	5.00%
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	0.00%

Figure 10.12

Up to now, the formula is only calculating the percentage at which the SM earned a bonus. Now we have to write a formula that multiplies the Bonus % by the Total Sales column.

18. *In* **Cell I1**, *type:* **Bonus Earned**
19. *Format* **Cell I1** *like the others in* **Row 1** *and resize the columns.*
20. *In* **Cell I2**, *write a formula that multiplies the* **Match Bonus %** *by the* **Total Sales**.
21. *Format* **Cell I2** *to be* **Number**, **two decimal places**, *and copy to all cells below.*

	I2			f_x	=H2*E2				

	A	B	C	D	E	F	G	H	I
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Bonus %	Bonus Earned
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	0.00%	0.00
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	2.00%	1,961.37
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	0.00%	0.00
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	0.00%	0.00
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	2.00%	2,953.38
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	0.50%	614.45
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	2.00%	3,647.22
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	1.50%	2,115.41
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	0.00%	0.00
11	1024	Blair Lafreniere	140.251	8.137	148.388	45.000	329.8%	5.00%	7.419.39

Figure 10.13

22. *In the* **Assumptions** *tab,* **Cell E4**, *type:* **Bonus Earned**
23. *In* **Cell F4**, *write a* **SUM()** *formula that will sum the values in the* **Bonus** *tab,* **Column I**.
24. *Format* **Cell F4** *as* **Number**, **two decimal places**.
25. *Bold* **Cells E4** *and* **F4**.
26. *Resize* **Columns E** *and* **F**.

	F4			f_x	=SUM(Bonus!I:I)	

	A	B	C	D	E	F
1	Position	% of Budget	Bonus %			
2	1	0%	0.00%			
3	2	100%	0.50%			
4	3	105%	0.75%		Bonus Earned	37,204.06
5	4	110%	1.00%			
6	5	115%	1.25%			
7	6	125%	1.50%			
8	7	150%	2.00%			
9	8	200%	3.00%			
10	9	250%	4.00%			
11	10	300%	5.00%			
12						

Figure 10.14

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 10, Section 1 of 2** *option and complete the review questions.*

Now you can change the numbers in the Assumptions tab and see the total Bonus Earned number change accordingly. Too cool!

Logical Functions

Let's talk a little about **Logical functions**. Logical functions are the essence of writing formulas. All of the functions and formulas that you have previously written can be incorporated into logical functions. The most common logical function by far is the IF() function. You have already experimented a little with the IF() function in Chapter 6. We will expand on that knowledge and introduce some other logical functions in the next few exercises.

The CELL() Function

How many times have you printed a report and then months or even years later someone shows you the report and wants you to update it? It happens more often than you realize. When I create spreadsheets, I like to put the name of the file and its path onto the report. There is a function you can use to help with this: **the CELL() function**. The CELL() function displays information about the formatting, location, or contents of the upper-left cell in a reference. There is one argument in a CELL() function, info_type. Following is a list of all the available info_types in the CELL() function.

Info_type	Returns
"address"	Reference of the first cell in reference, as text.
"col"	Column number of the cell in reference.
"color"	1 if the cell is formatted in color for negative values; otherwise returns 0 (zero).
"contents"	Value of the upper-left cell in reference; not a formula.
"filename"	Filename (including full path) of the file that contains reference, as text. Returns empty text ("") if the worksheet that contains reference has not yet been saved.
"format"	Text value corresponding to the number format of the cell. The text values for the various formats are shown in the following table. Returns "-" at the end of the text value if the cell is formatted in color for negative values. Returns "()" at the end of the text value if the cell is formatted with parentheses for positive or all values.
"parentheses"	1 if the cell is formatted with parentheses for positive or all values; otherwise returns 0.
"prefix"	Text value corresponding to the "label prefix" of the cell. Returns single quotation mark (') if the cell contains left-aligned text, double quotation mark (") if the cell contains right-aligned text, caret (^) if the cell contains centered text, backslash (\) if the cell contains fill-aligned text, and empty text ("") if the cell contains anything else.
"protect"	0 if the cell is not locked, and 1 if the cell is locked.
"row"	Row number of the cell in reference.
"type"	Text value corresponding to the type of data in the cell. Returns "b" for blank if the cell is empty, "l" for label if the cell contains a text constant, and "v" for value if the cell contains anything else.
"width"	Column width of the cell rounded off to an integer. Each unit of column width is equal to the width of one character in the default font size.

The most common argument in the CELL() function I use is **filename**. Let's use this function in the spreadsheet we just modified.

1. *In* **Cell A16** *of the* **Assumptions** *tab, type the following formula:*
   =CELL("filename")
2. *Italicize* **Cell A16***.*
3. *Select* **Cells A15** *through* **D15** *and draw a line at the bottom of the cell using the* **Border** *icon.*

	A	B	C	D	E	F	G
1	Position	% of Budget	Bonus %				
2	1	0%	0.00%				
3	2	100%	0.50%				
4	3	105%	0.75%		Bonus Earned	37,204.06	
5	4	110%	1.00%				
6	5	115%	1.25%				
7	6	125%	1.50%				
8	7	150%	2.00%				
9	8	200%	3.00%				
10	9	250%	4.00%				
11	10	300%	5.00%				
12							
13							
14							
15							
16	C:\ClineSys\Excel 2010\Chapter10\[myBonus.xlsx]Assumptions						
17							

Figure 10.15

4. *Save and close the file.*

Since I create SO MANY spreadsheets, I like to use this function if for no other purpose to help me find the file when someone has a printout.

Let's open another file so we can practice with Logical Functions a little more.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter10\Bonus2.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter10\myBonus2.xlsx.**
3. *Click in the* **Assumptions** *tab.*

	A	B	C	D	E	
1	Paper			Min. Budget	Level	
2	% of Budget	Bonus %			0	Paper
3	0%	0.00%		80,000	Scissors
4	100%	0.50%		120,000	Rock
5	110%	1.00%				
6	120%	1.50%				
7	150%	2.00%				
8	200%	3.00%				
9						
10	Scissors					
11	% of Budget	Bonus %				
12	0%	0.00%				
13	95%	0.50%				
14	105%	1.00%				
15	115%	1.25%				
16	125%	1.50%				
17	175%	2.00%				
18						
19	Rock					
20	% of Budget	Bonus %				
21	0%	0.00%				
22	90%	0.50%				
23	100%	0.75%				
24	110%	1.25%				
25	120%	1.50%				
26	150%	2.00%				

Figure 10.16

This is the same file as the Bonus.xlsx file you just worked with, except I've added in a little more data. The first change is that there are different levels of bonus percentages. The levels (Paper, Scissors, Rock) are based on the Budget for each location. I've already taken the liberty of naming the % of budget ranges appropriately (Paper, Scissors, and Rock). The range name for the Budget Levels, found on the **Assumptions** tab Cells D2 through Cell E4, is **Bgt_Levels**, and the named range for the Budgets found in the Budget tab is **Budget**. Your job is to complete the bonus calculations with the available data. Let's get started.

The first thing we have to do is to bring in the Budget numbers into the Bonus tab.

4. Click on the **Bonus** *tab.*
5. *In* **Cell F2***, write a* **VLOOKUP()** *formula that brings the* **Budget** *numbers by store number from the* **Budget** *tab.*
6. *Copy down.*

	F2		▼	fx	=VLOOKUP(A2,Budget,2,FALSE)			
	A	B	C	D	E	F	G	H
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Leve
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000		
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000		
4	1005	Raman Blank	123,629	3,222	126,851	169,000		
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000		
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000		
7	1012	Michael Suits	112,942	9,948	122,890	119,000		
8	1018	Eva Roseman	172,614	9,747	182,361	99,000		
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000		
10	1021	Neal Garn	32,062	4,010	36,071	37,000		
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000		
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000		
13	1027	Paul Burtram	176,812	10,196	187,008	118,000		
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000		
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000		
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000		
17	1036	Joel Marlette	35,934	4,438	40,373	36,000		
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000		
19	1042	Charley Harthun	85,669	3,198	88,867	85,000		
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000		
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000		
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000		
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000		
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000		
25	1053	Glenn Hudson	42,831	2,060	44,892	#N/A		
26	1055	Nora Peirce	104,691	10,422	115,113	111,000		

Figure 10.17

We already have a problem. Look at Store No. 1053 on Row 25. We're getting an #N/A error message. Why is that? If you look in the Budget tab, you will see that there is no budget for Store 1053. This is a new store that we haven't established a budget for yet. Our manager tells us that if there is no budget, just make it 0. That store manager won't qualify for a bonus this month.

The ISERROR() Function

The **ISERROR() function** is one solution to error handling. We can write a formula using the IF() and ISERROR () functions to make the formula that produces an error return something other than the ugly #N/A or #DIV/0! messages, like 0. Let's first write the formula in an adjacent cell, then we'll combine the two.

7. In **Cell G2**, write the following formula: **=IF(ISERROR(F2),0,F2)** and copy down.

	G2		fx	=IF(ISERROR(F2),0,F2)			
	A	B	C	D	E	F	G	H
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Leve
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	152,000	
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	63,000	
4	1005	Raman Blank	123,629	3,222	126,851	169,000	169,000	
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	93,000	
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	77,000	
7	1012	Michael Suits	112,942	9,948	122,890	119,000	119,000	
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	99,000	
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	112,000	
10	1021	Neal Garn	32,062	4,010	36,071	37,000	37,000	
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	45,000	
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	130,000	
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	118,000	
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000	42,000	
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000	113,000	
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000	155,000	
17	1036	Joel Marlette	35,934	4,438	40,373	36,000	36,000	
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000	150,000	
19	1042	Charley Harthun	85,669	3,198	88,867	85,000	85,000	
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000	122,000	
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000	147,000	
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000	43,000	
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000	64,000	
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000	204,000	
25	1053	Glenn Hudson	42,831	2,060	44,892	#N/A	0	

Figure 10.18

This formula says that if the value in Cell F2 is an error, return a 0, otherwise, return the value of Cell F2. Now we will incorporate the formulas in Cells F2 and G2 into one cell.

8. Copy the formula in **Cell F2** and replace both **F2** references in the formula in **Cell G2**.
9. Move **Cell G2** to **Cell F2**.
10. Copy down to all cells in **Column F** and delete the formulas in **Column G**.

	F2			f_x	=IF(ISERROR(VLOOKUP(A2,Budget,2,FALSE)),0,VLOOKUP(A2,Budget,2,FALSE))				

	A	B	C	D	E	F	G	H	I	J
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bonus Earned
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000				
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000				
4	1005	Raman Blank	123,629	3,222	126,851	169,000				
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000				
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000				
7	1012	Michael Suits	112,942	9,948	122,890	119,000				
8	1018	Eva Roseman	172,614	9,747	182,361	99,000				
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000				
10	1021	Neal Garn	32,062	4,010	36,071	37,000				
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000				
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000				
13	1027	Paul Burtram	176,812	10,196	187,008	118,000				
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000				
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000				
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000				
17	1036	Joel Marlette	35,934	4,438	40,373	36,000				
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000				
19	1042	Charley Harthun	85,669	3,198	88,867	85,000				
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000				
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000				
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000				
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000				
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000				
25	1053	Glenn Hudson	42,831	2,060	44,892	0				
26	1055	Nora Peirce	104,691	10,422	115,113	111,000				

Figure 10.19

The Budget for Cell F25 now reads "0" instead of the error message.

> 11. In **Cell G2**, *write the following formula:* =**E2/F2**
> 12. *Format as* **Percent**, **one decimal place** *and copy down.*

	G2			f_x	=E2/F2			
	A	B	C	D	E	F	G	H
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Leve
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	158.5%	
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000	80.9%	
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000	119.7%	
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000	101.3%	
17	1036	Joel Marlette	35,934	4,438	40,373	36,000	112.1%	
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000	117.5%	
19	1042	Charley Harthun	85,669	3,198	88,867	85,000	104.5%	
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000	72.1%	
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000	67.1%	
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000	163.3%	
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000	99.5%	
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000	79.6%	
25	1053	Glenn Hudson	42,831	2,060	44,892	0	#DIV/0!	
26	1055	Nora Peirce	104,691	10,422	115,113	111,000	103.7%	

Figure 10.20

Notice in Cell G53 there is a #DIV/0! message. As you learned previously, this happens when you try to divide a number by zero. In this case, you could use an ISERROR() function to correct it, but I usually try to keep things simple, so we'll use an IF() function to solve when the denominator is 0.

13. *Edit the formula in* **Cell G2** *to read:* **=IF(F2=0,0,E2/F2)**
14. *Copy down.*

	A	B	C	D	E	F	G	H	I
		G2		fx	=IF(F2=0,0,E2/F2)				
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%		
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%		
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%		
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%		
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%		
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%		
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%		
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%		
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%		
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%		
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%		
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	158.5%		
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000	80.9%		
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000	119.7%		
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000	101.3%		
17	1036	Joel Marlette	35,934	4,438	40,373	36,000	112.1%		
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000	117.5%		
19	1042	Charley Harthun	85,669	3,198	88,867	85,000	104.5%		
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000	72.1%		
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000	67.1%		
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000	163.3%		
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000	99.5%		
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000	79.6%		
25	1053	Glenn Hudson	42,831	2,060	44,892	0	0.0%		
26	1055	Nora Peirce	104,691	10,422	115,113	111,000	103.7%		

Figure 10.21

Problem solved. Note that there are other functions like ISNA() that will help you find errors. I tend to use the ISERROR() function as it will handle all errors, not just the #N/A error. Let's continue on.

15. Write a formula in **Cell H2** that brings in the **Budget Levels** using the named range **Bgt_Levels**.
16. Copy to all cells below and resize the column.

	A	B	C	D	E	F	G	H	I	
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bon
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	Rock		
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	Paper		
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	Rock		
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	Scissors		
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	Paper		
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	Scissors		
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	Scissors		
9	1019	Norbert Dreamer	132,269	8,758	141,027	112,000	125.9%	Scissors		
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	Paper		
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	Paper		
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	Rock		
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	158.5%	Scissors		
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000	80.9%	Paper		
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000	119.7%	Scissors		
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000	101.3%	Rock		
17	1036	Joel Marlette	35,934	4,438	40,373	36,000	112.1%	Paper		
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000	117.5%	Rock		

Figure 10.22

Now comes another tricky part. The bonus calculation depends on the level. If the level is Paper, then use the Paper range. If it is Scissors, use the Scissors range, and if it is Rock, use the Rock range. Let's try it.

> 17. *In* **Cell I2***, write the following formula:*
>   **=IF(H2="Paper",LOOKUP(G2,Paper),IF(H2="Scissors",LOOKUP(**
>   **G2,Scissors),LOOKUP(G2,Rock)))**
> 18. *Format as* **Percent***,* **two decimal places** *and copy down.*

This formula says that if the Level is Paper, then do a LOOKUP() function on Cell G2 using the range called Paper; otherwise, if the Level is Scissors, then do a LOOKUP() function on Cell G2 using the range called Scissors. For everything else (only the Rock Level remains), do a LOOKUP() function on Cell G2 using the range called Rock. This is another example of a nested IF() statement, or an IF() function within an IF() function.

	I2			*fx*	=IF(H2="Paper",LOOKUP(G2,Paper),IF(H2="Scissors",LOOKUP(G2,Scissors),LOOKUP(G2,Rock)))					
	A	B	C	D	E	F	G	H	I	J
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bonus Earned
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	Rock	0.00%	
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	Paper	2.00%	
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	Rock	0.00%	
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	Scissors	0.50%	
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	Paper	2.00%	
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	Scissors	0.50%	
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	Scissors	2.00%	
9	1019	Norbert Dreamer	132,269	8,758	141,027	112,000	125.9%	Scissors	1.50%	
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	Paper	0.00%	
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	Paper	3.00%	
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	Rock	0.50%	
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	158.5%	Scissors	1.50%	

Figure 10.23

To complete the project, calculate the bonus.

19. In **Cell J2**, *write a formula that calculates the bonus by multiplying* **Cell I2** *by* **Cell E2**.
20. *Format as* **Number**, *two decimal places,* **Use 1000 Separator (,)** *and copy down.*

	J2	▾ (͡	f_x	=I2*E2						
⊿	A	B	C	D	E	F	G	H	I	J
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bonus Earned
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	Rock	0.00%	0.00
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	Paper	2.00%	1,961.37
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	Rock	0.00%	0.00
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	Scissors	0.50%	454.93
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	Paper	2.00%	2,953.38
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	Scissors	0.50%	614.45
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	Scissors	2.00%	3,647.22
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	Scissors	1.50%	2,115.41
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	Paper	0.00%	0.00
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	Paper	3.00%	4,451.63
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	Rock	0.50%	606.78

Figure 10.24

The total bonus payable should be $33,093.47.

The AND() and OR() Functions

The last two logical functions we will cover are **AND()** and **OR()**. The AND() function returns TRUE if **all** of the conditions in the statement are true, and FALSE **if any one** of the statements is not true. The OR() function behaves in a similar manner, except that it returns TRUE if **any** of the statements are true and FALSE if **all** of them are false.

For example, let's say you want to include a column of Yes/No values indicating whether or not the store is a "Rock" store AND they qualified for a bonus. You can have up to 30 logical conditions in an AND() or OR() function, but please don't put that many in. That will drive you crazy trying to find an error.

21. In **Cell K1**, *type:* **Rock Qualifiers** *and format accordingly.*
22. In **Cell K2**, *type:* **=IF(AND(H2="Rock",I2<>0),"Yes","No")**
23. *Copy down to all cells.*

| | K2 | | | *fx* | =IF(AND(H2="Rock",I2<>0),"Yes","No") | | | | | | |

	A	B	C	D	E	F	G	H	I	J	K
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bonus Earned	Rock Qualifiers
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	Rock	0.00%	0.00	No
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	Paper	2.00%	1,961.37	No
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	Rock	0.00%	0.00	No
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	Scissors	0.50%	454.93	No
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	Paper	2.00%	2,953.38	No
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	Scissors	0.50%	614.45	No
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	Scissors	2.00%	3,647.22	No
9	1019	Norbert Dreamer	132,269	8,758	141,027	112,000	125.9%	Scissors	1.50%	2,115.41	No
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	Paper	0.00%	0.00	No
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	Paper	3.00%	4,451.63	No
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	Rock	0.50%	606.78	Yes

Figure 10.25

There should be three "Yes" values: Store numbers. 1026, 1034 and 1040.

Now let's work on an example using the OR() function. Upper management wants to send letters of congratulations to all of the Store Managers who made equal to or above 125% of budget, and inquiry letters to all managers whose stores were below 75% of budget. You want to know how many letters will be sent out, irrespective of the type of letter.

> 24. *In* **Cell L1**, *type:* **Letter List** *and format appropriately.*
> 25. *In* **Cell L2**, *write the following formula:*
>   **=IF(OR(G2>=1.25,G2<0.75),"Yes","No")**
> 26. *Copy down to all cells below.*

	A	B	C	D	E	F	G	H	I	J	K	L
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget	% Budget	Level	Bonus %	Bonus Earned	Rock Qualifiers	Letter List
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000	72.7%	Rock	0.00%	0.00	No	Yes
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000	155.7%	Paper	2.00%	1,961.37	No	Yes
4	1005	Raman Blank	123,629	3,222	126,851	169,000	75.1%	Rock	0.00%	0.00	No	No
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000	97.8%	Scissors	0.50%	454.93	No	No
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000	191.8%	Paper	2.00%	2,953.38	No	Yes
7	1012	Michael Suits	112,942	9,948	122,890	119,000	103.3%	Scissors	0.50%	614.45	No	No
8	1018	Eva Roseman	172,614	9,747	182,361	99,000	184.2%	Scissors	2.00%	3,647.22	No	Yes
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000	125.9%	Scissors	1.50%	2,115.41	No	Yes
10	1021	Neal Garn	32,062	4,010	36,071	37,000	97.5%	Paper	0.00%	0.00	No	No
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000	329.8%	Paper	3.00%	4,451.63	No	Yes
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000	93.4%	Rock	0.50%	606.78	Yes	No
13	1027	Paul Burtram	176,812	10,196	187,008	118,000	158.5%	Scissors	1.50%	2,805.12	No	Yes
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000	80.9%	Paper	0.00%	0.00	No	No
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000	119.7%	Scissors	1.25%	1,691.38	No	No
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000	101.3%	Rock	0.75%	1,178.15	Yes	No
17	1036	Joel Marlette	35,934	4,438	40,373	36,000	112.1%	Paper	1.00%	403.73	No	No
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000	117.5%	Rock	1.25%	2,203.33	Yes	No
19	1042	Charley Harthun	85,669	3,198	88,867	85,000	104.5%	Scissors	0.50%	444.33	No	No
20	1044	Sheri Lohman	80,061	7,943	88,004	122,000	72.1%	Rock	0.00%	0.00	No	Yes
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000	67.1%	Rock	0.00%	0.00	No	Yes

Figure 10.26

> 27. *Save and close the file.*

Error Finding and Checking

Let's talk a little bit about errors. Have you ever opened a workbook that was created by someone else and had trouble trying to follow how they created the analysis? Hopefully,

the last user kept the formulas in the worksheet so other users could try to follow the logic. Excel has some great error checking and auditing tools that make it visually easier to discover how the formulas were written and can help save a lot of time when you are trying to follow someone else's logic. You can see the cells that are active in a formula by tracing the cell's **precedents**. You can also find not-so-obvious **errors** in the calculations. Let's explore some of these tools.

1. Open the **Errors.xlsx** file at **C:\ExcelCEO\Excel 2010\Chapter10\.**

	A	B	C	D	E	F
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000
3	1002	Julianne Ashby	89,886	8,183	98,068	63,000
4	1005	Raman Blank	123,629	3,222	126,851	169,000
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000
7	1012	Michael Suits	112,942	9,948	122,890	119,000
8	1018	Eva Roseman	172,614	9,747	182,361	112,000
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000
10	1021	Neal Garn	32,062	4,010	36,071	37,000
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000
13	1027	Paul Burtram	176,812	10,196	187,008	118,000
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000
17	1036	Joel Marlette	35,934	4,438	40,373	36,000
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000
19	1042	Charley Harthun	85,669	3,198	88,867	85,000
20	1044	Sheri Lohman	80,061	7,943	93,611	122,000
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000
23	1050	Janelle Szmyd	59,640	4,027	63,667	64,000
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000
25	1053	Glenn Hudson	42,831	2,060	44,892	#N/A
26	1055	Nora Peirce	104,691	10,422	115,113	111,000
27	1057	Nathan Beacham	72,138	4,012	76,149	87,000
28	1059	James Brunelle	55,428	3,830	59,258	76,000
29	1060	Edward Renteri	120,402	9,548	129,950	178,000
30	1062	Tuong Pollari	156,858	9,365	166,223	83,000
31	1063	Neily Karban	143,019	7,491	150,510	119,000
32	Totals		3,167,500	202,623	3,375,730	#N/A

Figure 10.27

The file is a spreadsheet that contains the store number, the name of the manager, the mattress sales, pillow sales and total sales, along with the store's budget. There are two obvious errors in the table: Cells F25 and F32. You can see some of the errors because of the #N/A error messages. Let's first look at which cells make up the error in Cell F32.

2. *Click on* **Cell F32**.
3. *Click on the* **Formulas** *tab and then click on the* **Trace Precedents** *button in the* **Formula Auditing** *group.*

	F32		▾ ⌐	f_x	=SUM(F2:F31)	

◢	A	B	C	D	E	F
1	Store	Manager	Mattress_Sales	Pillow_Sales	Total Sales	Budget
2	1001	Rasheda Webber	101,337	9,197	110,533	152,000
3	1002	Julianne Ashby	89,886	8,183	98,068	53,000
4	1005	Raman Blank	123,629	3,222	126,851	169,000
5	1009	Rick Tuggle	87,475	3,511	90,987	93,000
6	1011	Curt Scherbarth	138,193	9,476	147,669	77,000
7	1012	Michael Suits	112,942	9,948	122,890	119,000
8	1018	Eva Roseman	172,614	9,747	182,361	112,000
9	1019	Norbert Dereamer	132,269	8,758	141,027	112,000
10	1021	Neal Garn	32,062	4,010	36,071	37,000
11	1024	Blair Lafreniere	140,251	8,137	148,388	45,000
12	1026	Veranda Gaunt	116,726	4,631	121,357	130,000
13	1027	Paul Burtram	176,812	10,196	187,008	118,000
14	1029	Eric Uthoff	29,200	4,766	33,966	42,000
15	1032	Vanna Smoller	126,821	8,490	135,310	113,000
16	1034	Darrell Salasky	148,114	8,972	157,086	155,000
17	1036	Joel Marlette	35,934	4,438	40,373	36,000
18	1040	Hailee Hattaway	172,886	3,380	176,267	150,000
19	1042	Charley Harthun	85,669	3,198	88,867	85,000
20	1044	Sheri Lohman	80,061	7,943	93,611	122,000
21	1045	Sharon Pahl	90,252	8,328	98,580	147,000
22	1047	Chloe Nicolette	65,975	4,254	70,229	43,000
23	1050	Janelle Szmyd	59,640	4,027	63,667	54,000
24	1051	Lourdes Matta	153,386	9,083	162,468	204,000
25	1053	Glenn Hudson	42,831	2,060	44,892	#N/A
26	1055	Nora Peirce	104,691	10,422	115,113	111,000
27	1057	Nathan Beacham	72,138	4,012	76,149	37,000
28	1059	James Brunelle	55,428	3,830	59,258	76,000
29	1060	Edward Renteri	120,402	9,548	129,950	178,000
30	1062	Tuong Pollari	156,858	9,365	166,223	83,000
31	1063	Neily Karban	143,019	7,491	150,510	119,000
32	Totals		3,167,500	202,623	3,37⊘30	#N/A

Figure 10.28

A red arrow appears going from Cell F2 through F32. These are the **precedent cells** for Cell F32. The cell range is also encircled by a blue line. Now you can visually see which cells are included in the formula, and you should see that Cell F25, which is included in the range, is the source of the error.

4. *Click on the* **Remove Arrows** *button.*

All arrows and the blue box are now removed.

> 5. *With your cursor on* **Cell F32**, *click on the drop down arrow next to the* **Error Checking** *button and choose* **Trace Error**.

21	1045 Sharon Pahl	90,252	8,328	98,580 147,000
22	1047 Chloe Nicolette	65,975	4,254	70,229 43,000
23	1050 Janelle Szmyd	59,640	4,0▦	63,667 64,000
24	1051 Lourdes Matta	153,386	9,083	162,468 204,000
25	•1053 Glenn Hudson	42,831	2,060	4 ⚠ 92 ▸#N/A
26	1055 Nora Peirce	104,691	10,422	115,113 111,000
27	1057 Nathan Beacham	72,138	4,012	76,149 87,000
28	1059 James Brunelle	55,428	3,830	59,258 76,000
29	1060 Edward Renteri	120,402	9,548	129,950 178,000
30	1062 Tuong Pollari	156,858	9,365	166,223 83,000
31	1063 Neily Karban	143,019	7,491	150,510 119,000
32	**Totals**	**3,167,500**	**202,623**	**3,375,730 #N/A**

Figure 10.29

Excel shows you the path to the source of the errors, which first goes to Cell F25, then to Cell A25. Cell F25 is a VLOOKUP() formula based on Cell A25.

> 6. *Click on the* **Remove Arrows** *button.*

We can easily identify those two errors because of the #N/A error message. But are there any other errors? An error message is very obvious, but there may be other errors in the spreadsheet that you can check for. Let's run a formula error check on the table.

> 7. *With your cursor on* **Cell F32**, *click on the* **Error Checking** *button (not the drop down menu).*
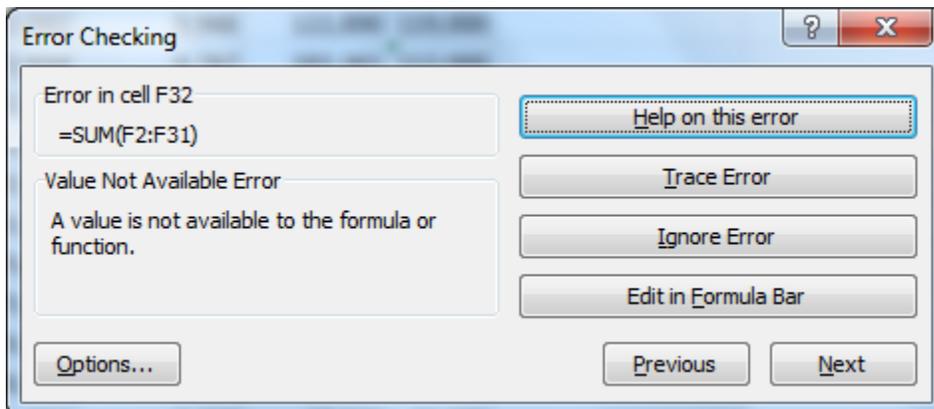
Error Checking

Error in cell F32
=SUM(F2:F31)

Value Not Available Error

A value is not available to the formula or function.

Help on this error

Trace Error

Ignore Error

Edit in Formula Bar

Options...   Previous   Next

Figure 10.30

The Error Checking dialog box appears. In the upper left corner of the dialog box you will see "Error in cell F32" with the cell's formula below it. It tells you what kind of an error is occurring as well. We won't do anything about this error for now, so let's continue.

8. *Click* **Next**.
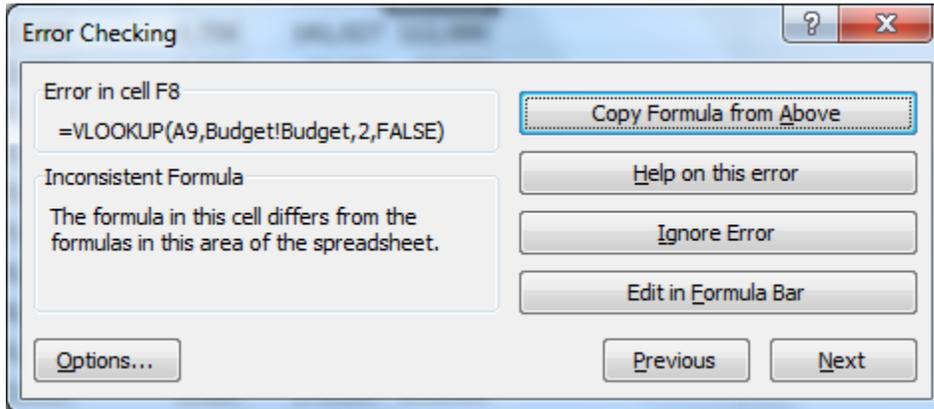
Figure 10.31

The dialog box goes to Cell F8 and finds an inconsistent formula, based on the cells surrounding it.   The formula "VLOOKUP(A9,Budget!Budget,2,FALSE)" should be referring to Cell A8 instead of Cell A9.

9. *Click the* **Copy Formula from Above** *button*.
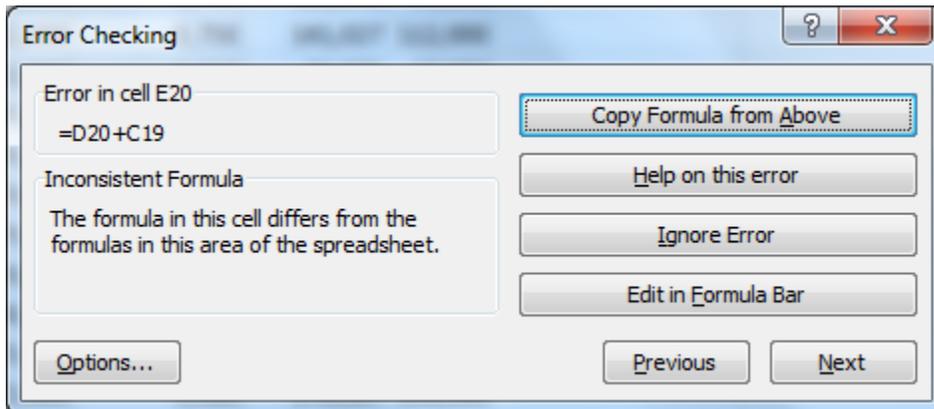
Figure 10.32

After you click the button, it takes you to another inconsistent cell, Cell E20.

10. *Click the* **Copy Formula from Above** *button again*.

Next, it takes you to Cell F25, which has the VLOOKUP() error. We'll skip that one.

11. *Click* **Next**.
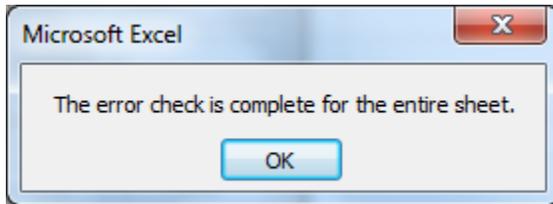
Figure 10.33

> *12. Click **OK**.*
> *13. Close the **Errors.xlsx** file without saving it.*

I would encourage you to continue to explore all of the auditing tools available in Excel. We only touched on a few of them here, but it gave you a good introduction to get you thinking about some tools that would be helpful to you.

Writing formulas is what Excel is all about. We reviewed a lot of functions and formulas in the last five chapters. It may have been painful, but most good medicine doesn't taste real good. I hope you will learn to use these functions in your everyday work. They can make your job MUCH easier and will result in better analyses and reports. I encourage you to make up some examples of your own using data in your world.   You will remember these concepts much easier that way.

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 10, Section 2 of 2** option and complete the review questions.*

Conclusion

In this chapter, you learned some of the advanced uses of LOOKUP functions. You learned why and how to use absolute references in a VLOOKUP() functions. You learned to use a LOOKUP() function and wrote a number of formulas using that function. You also learned how to use a MATCH() function. You worked examples of nesting a MATCH() function within a VLOOKUP() function.   You learned about Logical functions and wrote formulas containing the ISERROR(), CELL(), AND() and OR() functions.   You saw how to find and check for errors using Formula Auditing functionality. You also built a complex spreadsheet that calculates bonuses based on multiple criteria and set it up where the criteria could easily be changed.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same

computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

SECTION III: ADVANCED EXCEL 2010

One of my beliefs is that the developer of a report or analysis should make it as easy as possible for the user to manipulate. For example, I've written courses to train upper management personnel to manipulate PivotTables and use VLOOKUP() functions. I have found that some executives love the capability of manipulating PivotTables so they can find out the answers to the questions they have without having to ask me to run it for them each time. Others, however, lack the willingness to learn. Therefore, I try to make my spreadsheets very easy to use. The easier I make it for others to use, the harder it is on me and my staff. This section of the course will address various advanced topics whose goal it is to teach you some of the advanced tools I've found that are most helpful in making spreadsheets "user friendly", but very powerful We will also explore many procedures and functionalities that can assist you in analyzing data.

PivotTables was the major technological breakthrough with the release of Office 95. Before PivotTables, users could use Data Tables, but they were clunky to program. I remember thinking when I did my first PivotTable that this was the wave of the future. PivotTable technology has significantly improved the ease of manipulation of large amounts of data to the point where just about anyone can do it with minimal instruction. I believe that PivotTables are key to understanding grouping of data, not only in Excel, but in database programs like Access and SQL Server. If you understand the concept of PivotTables, the concepts of the GROUP BY statement in Access and writing transact SQL code will come much easier.

Chapter 11 introduces you to PivotTables. In that chapter, you will create a simple PivotTable, show and hide the Field List, add rows, columns and data fields to an existing PivotTable, filter fields, and move or "pivot" fields around in a PivotTable. You will create a calculated field, explore PivotTable Options and learn how to sort data within a PivotTable. In Chapter 12, you will explore more advanced functions of PivotTables. You will create complex calculated fields, set up a PivotTable with drill down capability, and learn about formatting PivotTable and PivotChart reports. You will start to work with external data sources, and finally pull external data containing hundreds of thousands of rows of data directly into a Pivot Table.

This remaining chapters of this section addresses various advanced topics whose goal it is to teach you some of the advanced tools I've found that are most helpful in making spreadsheets "user friendly", including charts and graphs, using graphics, analysis tools, protection and sharing, macros, using the Developer tab (which contains some very cool tools), and working with the Web.

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CHAPTER ELEVEN – INTRO TO PIVOTTABLES

In this chapter, you will:

- Create a simple PivotTable.
- Show and Hide the Field List.
- Add Row, Column and Data Fields to a PivotTable.
- Format fields in a PivotTable.
- Filter fields in a PivotTable.
- Add fields to an existing PivotTable.
- Add Page Fields to a PivotTable.
- Create Calculated Fields in a PivotTable.
- Work with the PivotTable Options dialog box.
- Sort data within a PivotTable.

Introduction to PivotTables

With the massive databases that exist in most companies, there is a desperate need to be able to capture that data and present it in a meaningful format, with the ability to extract, summarize, sort, filter and organize the data. Once you have captured data, you need to be able to create reports that analyze the data, make comparisons, detect patterns and relationships, and analyze trends. All of this is possible, and very easy to do, with PivotTables.

If there is any chapter in this course I want you to learn inside and out, it's this one. PivotTables are a pre-cursor to "grouping", or a "group by" statement in Access and SQL. PivotTables are simply subtotaling data by using different fields and filters. You can dynamically "pivot" a field as a row, column, or page filter and instantly see the results.

I speak three languages (English, which is my native language, Portuguese, and Spanish). When I speak in English, I think in English. When I speak in Portuguese, I think in Portuguese and I do the same when I speak in Spanish. People who speak only one language seem to have a hard time grasping how one can "think" in a different language, but it comes very easy to those who speak the language fluently. Similarly, it takes a change in thought pattern to understand grouping, and using PivotTables is a great way to introduce that concept.

A Simple PivotTable

There are many ways to manipulate data within a **PivotTable**, and data can come into an Excel spreadsheet in various manners, like copy and paste from an Access database, or link to a SQL Server table, import from a .CSV file, among other ways. In this chapter, I will assume that you don't have to worry about the source of the data. We covered that in previous chapters. We will assume the data is correct and your job is to manipulate and reorganize the information as necessary to present to upper management. Let's rock and roll!

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter11\Annual_Sales.xlsx.**
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter11\myAnnual_Sales.xlsx.**

	A	B	C	D	E	F	G	H	I
1	Store_No	City	State	Region	Year	Month	Merchandise Sales	Warranty Sales	Delivery Sales
2	1021	⚠ shington	DC	Southern Region	2008	1	18,950	595	900
3	1021	Washington	DC	Southern Region	2008	2	28,203	630	900
4	1021	Washington	DC	Southern Region	2008	3	27,251	560	750
5	1021	Washington	DC	Southern Region	2008	4	24,722	490	700
6	1021	Washington	DC	Southern Region	2008	5	31,286	630	850
7	1021	Washington	DC	Southern Region	2008	6	33,687	490	800
8	1021	Washington	DC	Southern Region	2008	7	38,006	525	650
9	1021	Washington	DC	Southern Region	2008	8	62,631	1,225	1,500
10	1021	Washington	DC	Southern Region	2008	9	24,720	350	650
11	1021	Washington	DC	Southern Region	2008	10	28,160	455	800
12	1021	Washington	DC	Southern Region	2008	11	24,527	350	800

Figure 11.1

This file is a table of sales by store. Fields in the table include the Store_No, City, State, Region, Year, Month, Merchandise Sales, Warranty Sales and Delivery Sales. The Region field is a geographic assignment that Nitey-Nite has created to make groups of stores easier to manage. Each Region has a Regional President. The Regional Presidents report to the President of the company. In this exercise, you will calculate the total sales for the Company by year.

> 3. Click on **Cell A2** *(or any **single** cell within the table), click on the **Insert** tab, and click on the **PivotTable** button (or choose **PivotTable** from the drop down menu) in the **Tables** group.*
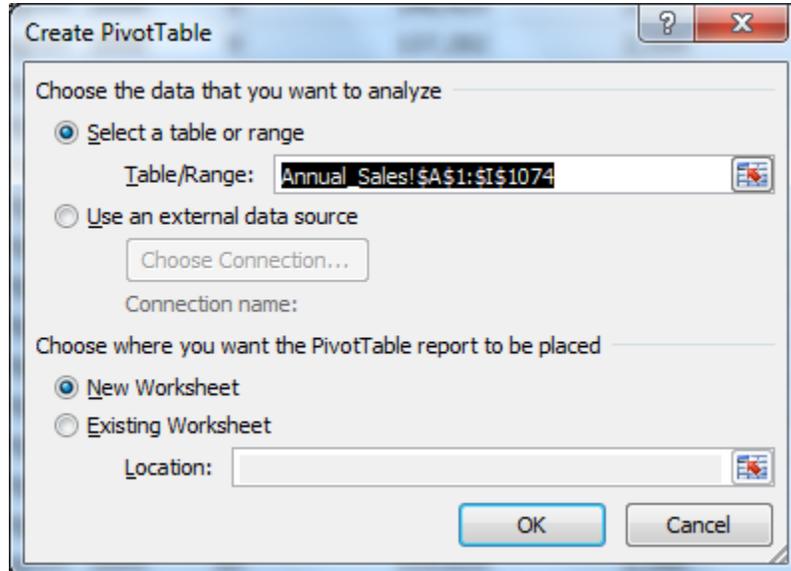
Figure 11.2

The Create PivotTable dialog box appears. In Excel 2003, a similar action launched the PivotTable Wizard, but in Excel 2010, there is no such wizard. For this and other reasons, I think you will prefer the way Excel 2010 handles PivotTables.

> 4. Click **OK**.
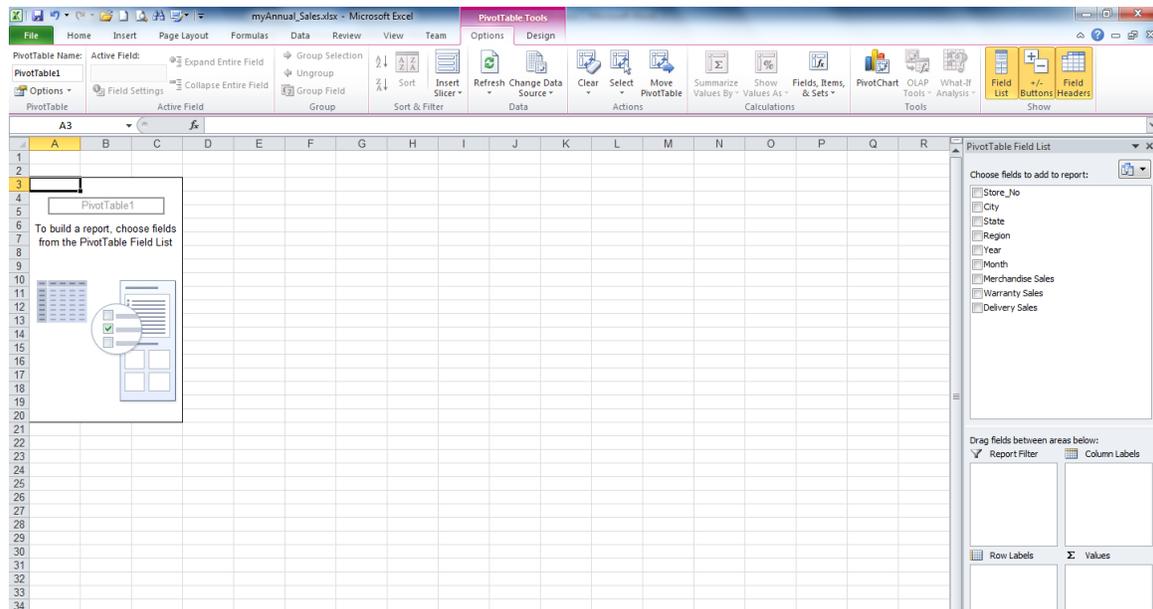
Figure 11.3

Since you began with a table in Excel, Excel automatically assumes you want to use the table where your cursor is. NOTE: Excel chooses all of the <u>contiguous</u> cells (columns and rows) in the table. Therefore, there should be no blank columns, rows or field names in the table you want to use.   The value in the Table/<u>R</u>ange: box should read $A$1:$I$1074, which is the range of our data.

The PivotTable Field List

When the shell of the PivotTable is created, you will see the **PivotTable Field List** usually on the right side of the screen. This list contains all of the column headings in the data tab (Excel automatically assumes that the first row of your database contains the correct headings, so it is important that the headings are appropriately named).   The Office Ribbon will automatically change to include a new grouping of contextual tabs called PivotTable Tools which contains two tabs: Options and Design.   We will be working extensively with these new tabs. You can click on the Field List button to hide or show the PivotTable Field List. Note that your cursor must be somewhere in the PivotTable (anywhere in the Page Fields, Column Fields, Row Fields or Data Fields) for the icons in the PivotTable Tools group to become active and useable.

Figure 11.4

Row, Column and Data Fields

Your task is to calculate the year-over-year sales for all data in this table, so let's start moving fields into the **row**, **column** and **data** areas of the PivotTable.

5. In the **PivotTable Field List**, *click on the checkbox beside the* **Region**
    field.

Excel automatically assumes that you will be using the Region field as a row item, so it places the two values for Region (Northern Region and Southern Region) as rows. If you don't want Excel to guess where you want the fields, you can drag them to the area you want them.

6. *Drag the* **Year** *field down to the* **Column Labels** *group of the* **PivotTable**
    Field List.
7. *Drag the* **Merchandise Sales** *field to the section in the* **PivotTable Field**
    List *called* **Values**.

Figure 11.5

8. *Click on the* **Sum of Merchandise Sales** *field in the* **PivotTable** *(it should*
    be on **Cell A3**).
9. *Click on the* **Field Settings** *button in the* **Active Field** *group of the*
    Options *tab.*
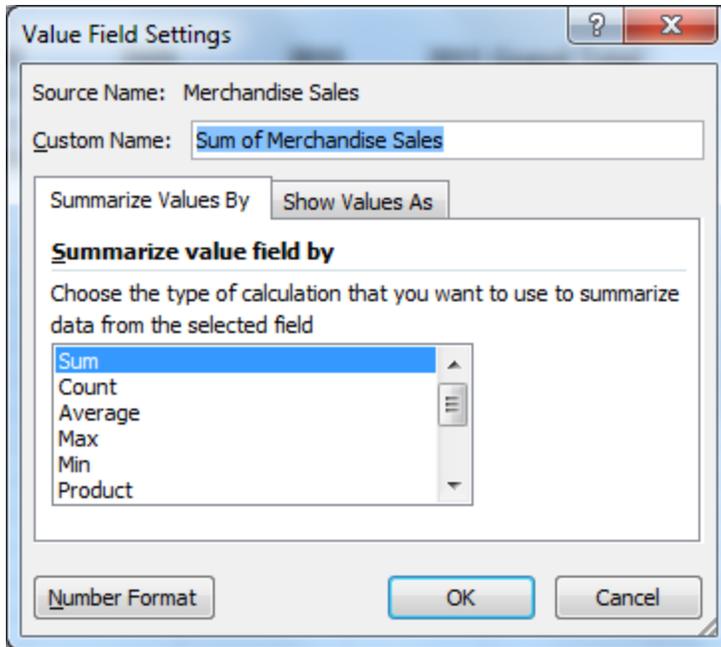
Figure 11.6

The Value Field Settings dialog box appears. With this dialog box, you can change the setting and formatting of a PivotTable field. It is already summing the data correctly (i.e., we don't want a COUNT or AVERAGE summarization), but we will format the field to be Number with zero decimal places.

   10. Click on the **Number Format** *button.*
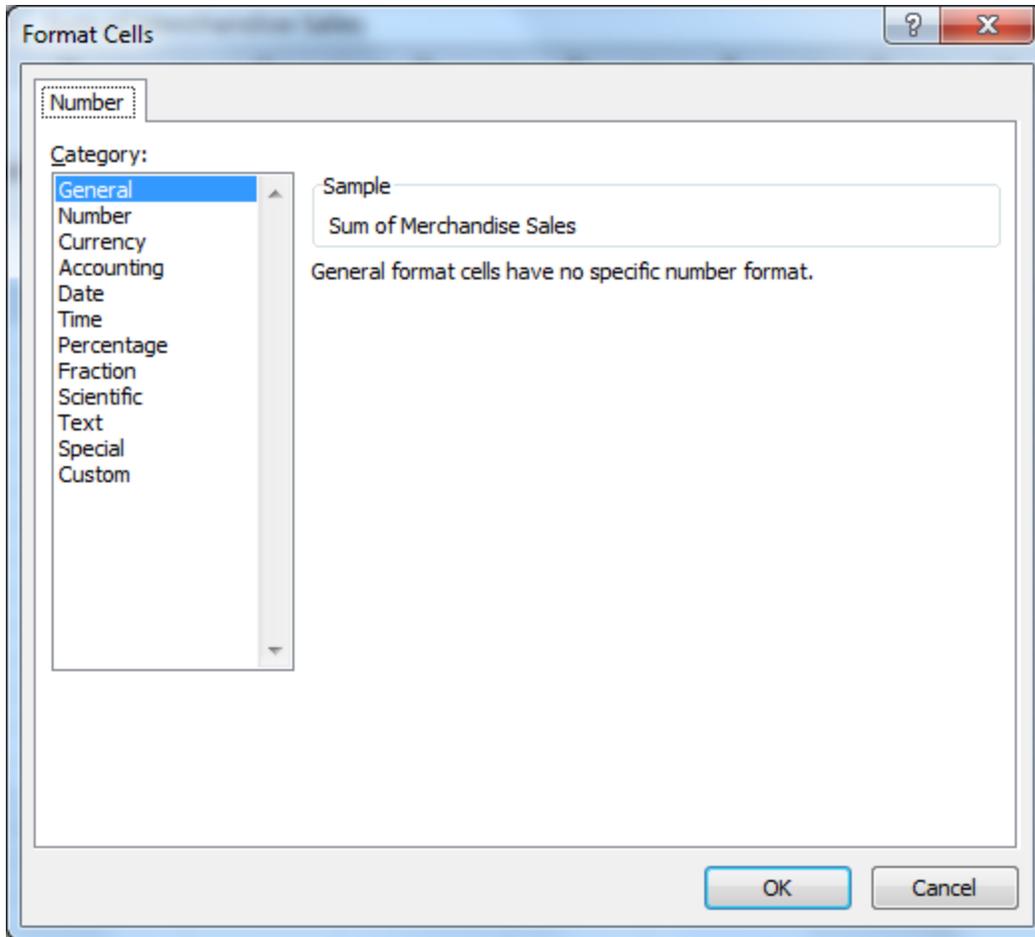
Figure 11.7

The Format Cells dialog box appears, but unlike the typical Format Cells dialog box, this one has only the Number tab.

> 11. *Format the field to be* **Number** *with* **zero decimal places** *with the* **Use 1000 separator (,)** *and click* **OK**.
> 12. *Click* **OK** *in the* **Value Field Settings** *dialog box.*

Your PivotTable should now look something like Figure 11.8:

Figure 11.8

When a field in the Field List box is used in a PivotTable, it appears bold and checked.

Filtering Fields

Per the PivotTable, there were Merchandise Sales of $95,602,924 for all years in the data. It also tells us what the corresponding Merchandise Sales for each year. Look at the amount for the Year 2011. It is significantly lower than the other years. That is because the data for the sales in 2011 stopped in January 2011. Most likely, this data was extracted from the system after 2010 had closed and picked up some data that had already been posted in 2011. We don't need the 2011 data in our PivotTable, so let's exclude it. The **filter** functionality in a PivotTable works very similar to a Data Filter you learned previously.

1. *In the **PivotTable**, click on the drop down arrow next to **Column Labels** and uncheck the **2011** checkbox.*
2. *Click **OK**.*

Figure 11.9

Once you click OK, the 2011 data is filtered out of the PivotTable. By default, the
(**Select All**) option is selected when filtering Row, Column and Data fields. Now you
have a list of Merchandise Sales for each region in each year, excluding 2011. That
wasn't too hard, was it?

Adding Fields

Now, upper management would like to see Merchandise Sales by state as well. Let's **add**
in the State field in our PivotTable.

   3. *In the* **PivotTable Field List***, drag the* **State** *field down to the* **Row**
       Labels *section under* **Region***.*

◢	A	B	C	D	E	
1						
2						
3	Sum of Merchandise Sales	Column Labels ⬛				
4	Row Labels ▾	2008	2009	2010	Grand Total	
5	⊟Northern Region	16,730,627	17,350,363	17,798,330	51,879,320	
6	NJ	3,846,112	3,985,368	4,046,592	11,878,072	
7	NY	3,558,589	3,678,761	3,835,358	11,072,707	
8	PA	9,325,926	9,686,235	9,916,381	28,928,541	
9	⊟Southern Region	13,750,092	14,331,137	14,856,035	42,937,264	
10	DC	5,352,897	5,633,789	5,763,205	16,749,891	
11	MD	5,300,489	5,483,555	5,682,893	16,466,937	
12	NC	3,096,706	3,213,794	3,409,937	9,720,436	
13	Grand Total	30,480,719	31,681,500	32,654,365	94,816,584	
14						
15						

Figure 11.10

Now you have columns for the Region, State, and Merchandise Sales for 2008, 2009 and 2010. Are you getting the picture now? Manipulating a PivotTable isn't much more difficult than that – just clicking and dragging the fields where you want the data to be organized.

Figure 11.10 shows what I consider to be one of the most significant changes from Excel 2003 to Excel 2007 and 2010. In Excel 2003, the State field would have shown up in its own column. In Excel 2007 and 2010, multiple columns of rows appear in a **compact** view, which has the show (+) and hide (-) buttons to the left of the field values.   You can switch between compact, outline and tabular views of a PivotTable by clicking on the Report Layout button in the Layout section of the Design tab.

4. *Click on the* **Report Layout** *button in the* **Layout** *group of the* **Design** *tab and choose* **Show in Outline Form***.*

	A	B	C	D	E	F
1						
2						
3	Sum of Merchandise Sales		Year			
4	Region	State	2008	2009	2010	Grand Total
5	⊟Northern Region		16,730,627	17,350,363	17,798,330	51,879,320
6		NJ	3,846,112	3,985,368	4,046,592	11,878,072
7		NY	3,558,589	3,678,761	3,835,358	11,072,707
8		PA	9,325,926	9,686,235	9,916,381	28,928,541
9	⊟Southern Region		13,750,092	14,331,137	14,856,035	42,937,264
10		DC	5,352,897	5,633,789	5,763,205	16,749,891
11		MD	5,300,489	5,483,555	5,682,893	16,466,937
12		NC	3,096,706	3,213,794	3,409,937	9,720,436
13	Grand Total		30,480,719	31,681,500	32,654,365	94,816,584
14						
15						
16						
17						
18						

Figure 11.11

Play around with the different layouts for a PivotTable. I prefer the Compact Layout as it saves on space (all of the row fields are contained in one column). Right now, our PivotTable includes only Merchandise Sales, but we also have Warranty Sales and Delivery Sales. We want to include those fields in our PivotTable as well.

5. *Set the* **PivotTable** *to a* **Compact form**.
6. *From the* **PivotTable Field List**, *drag the* **Warranty Sales** *field and drop it below the* **Sum of Merchandise Sales** *in the* **Values** *section.*
7. *Drag the* **Delivery Sales** *field and drop it below the* **Sum of Warranty Sales** *in the* **Values** *section.*

When you drag a second level of data into the Values sections, you will see the Σ Values field appear in the Column Labels sections. This tells you that the Values in the Values section will appear as Columns. We want the Values to appear as rows, so you need to move the Σ Values field into the Row Labels section.

8. *Move the* Σ Values *field from the* **Column Labels** *section to the* **Row Labels** *section of the* **PivotTable Field List**.
9. *Click on any one of the* **Sum of Warranty Sales** *cells in the* **PivotTable** *and set the format to* **Number, zero decimal places**.
10. *Apply the same formatting for* **Sum of Delivery Sales**.

Figure 11.12

> *Review Questions*: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 11, Section 1 of 2** *option and complete the review questions.*

Report Filter

As you can see, the PivotTable gets more complex each time you add a field. Let's suppose that upper management is not really interested (for this analysis) in a year-over-year analysis, but rather they want to see each year by itself with the corresponding sales figures. We can let them choose to see the year they want by making the Year field a **Report Filter**. A **Report Filter** filters the entire PivotTable for a chosen item.

1. *Drag the* **Year** *field from the* **Column Labels** *section to the* **Report Filter** *section.*

Figure 11.13

The Year indicator changes to (Multiple Items) since we had previously deselected 2011. To include all years, simply click on the Year drop down menu and check the 2011 checkbox.

2. *Click the* **Year** *drop down arrow, uncheck all boxes except for* **2008** *and click* **OK***.*

All of the data now changes to reflect only the sales in 2008. I think it's kind of clunky looking at the sales fields (Merchandise, Warranty and Delivery) on top of one another. Let's pivot the data around where the sales fields appear in columns rather than in rows.
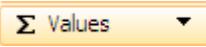
3. *Move the* | Σ Values ▼ | *field over to the* **Column Labels** *section of the* **PivotTable Field List.**
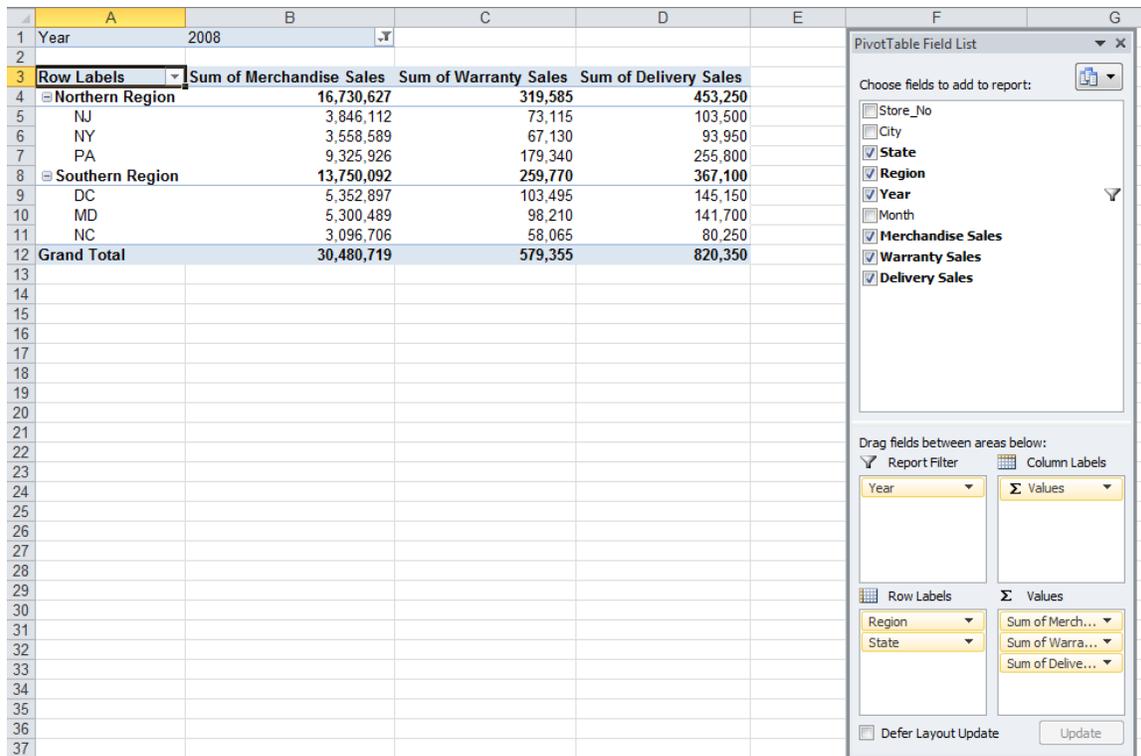
Figure 11.14

The columns are kind of wide, so let's rename the fields to save space.

4. *Click on* **Cell B3**, *which currently reads* **Sum of Merchandise Sales**.
5. *Replace* **Sum of Merchandise Sales** *with* **Merchandise.**
6. *Replace* **Sum of Warranty Sales** *with* **Warranty**, *and* **Sum of Delivery Sales** *with* **Delivery**.
7. *Adjust the column widths to fit.*
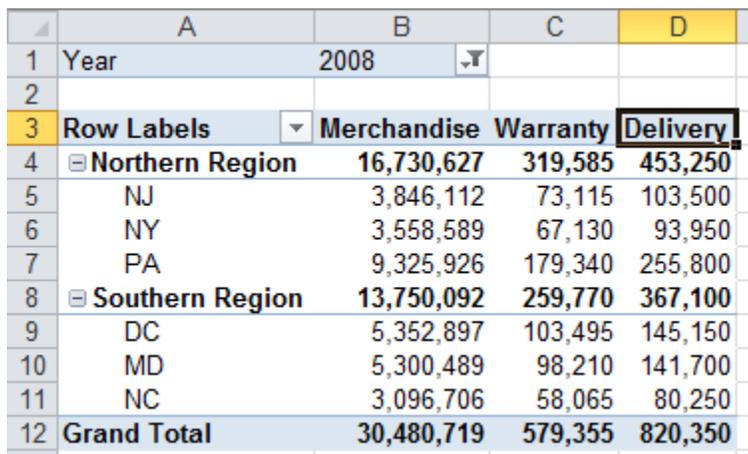
Figure 11.15

Calculated Fields

At this point, let's talk about calculated fields. There is not a field in the Annual_Sales tab or in the PivotTable that sums up all sales, so let's do that in the PivotTable itself.

1. *Make sure your cursor is somewhere on the* **PivotTable***, and click on the* **Fields, Items & Sets** *button in the* **Calculations** *group of the* **Options** *tab.*
2. *Choose* **Calculated Field…**
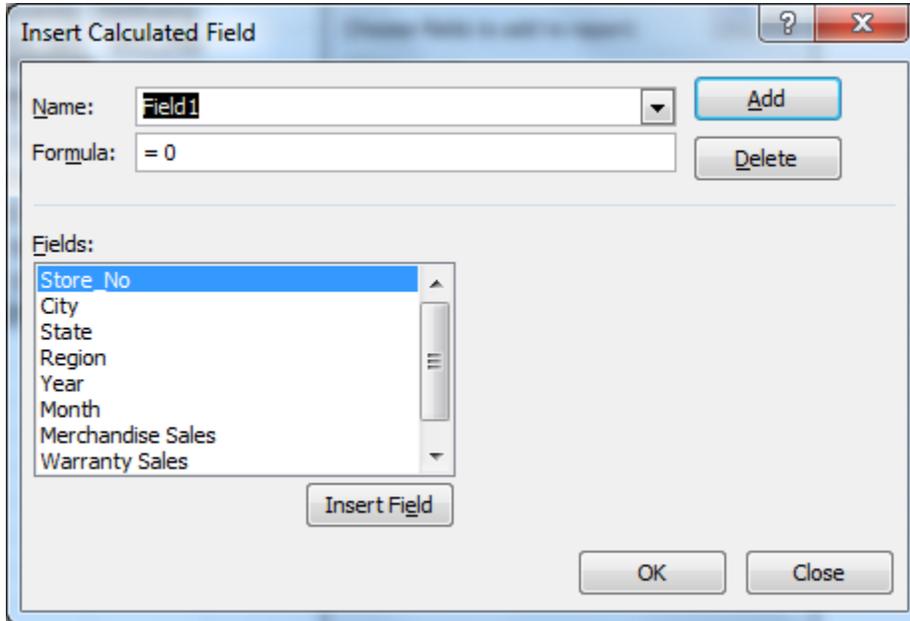
Figure 11.16

3. *In the* **Name:** *field in the* **Insert Calculated Field** *dialog box, type* **Total_Sales***.*
4. *Delete the* **0** *in the* **Formula:** *box*
5. *In the* **Fields:** *box, click on* **Merchandise Sales** *and click the* **Insert Field** *button.*
6. *In the* **Formula:** *box, to the right of '***Merchandise Sales'***, type the "***+***" key.*
7. *Double-click on the* **Warranty Sales** *field in the* **Fields:** *box.*
8. *Type the* **"+"** *key.*
9. *Double-click on the* **Delivery Sales** *field in the* **Fields:** *box.*
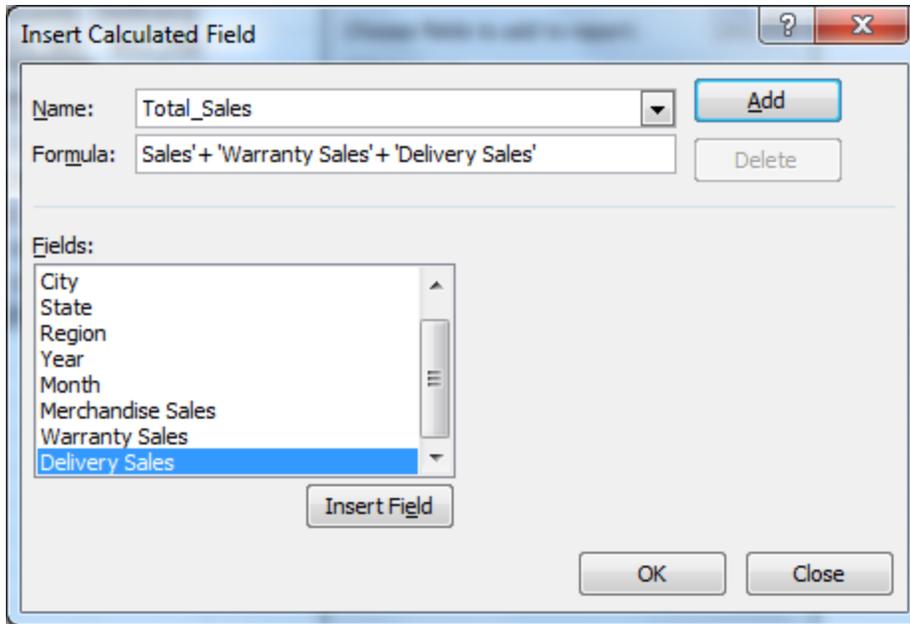
Figure 11.17

The formula should read =**'Merchandise Sales'+'Warranty Sales'+'Delivery Sales'**.

>   10. Click **OK**.

Figure 11.18

Now you have created a new field that calculates Total Sales. It is called Sum of Total_Sales. Again, that name is too long, so let's change it.

>   11. In the **PivotTable**, *change* **Sum of Total_Sales** *to* **Total**.
>   12. *Resize the column.*

	A	B	C	D	E
1	Year	2008			
2					
3	Row Labels	Merchandise	Warranty	Delivery	Total
4	⊟Northern Region	16,730,627	319,585	453,250	17,503,462
5	NJ	3,846,112	73,115	103,500	4,022,727
6	NY	3,558,589	67,130	93,950	3,719,669
7	PA	9,325,926	179,340	255,800	9,761,066
8	⊟Southern Region	13,750,092	259,770	367,100	14,376,962
9	DC	5,352,897	103,495	145,150	5,601,542
10	MD	5,300,489	98,210	141,700	5,540,399
11	NC	3,096,706	58,065	80,250	3,235,021
12	Grand Total	30,480,719	579,355	820,350	31,880,424

Figure 11.19

Now you have an analysis that means something. You send this to your manager and he loves it. Then he asks, "You know, we really do need to look at annual sales in one table, but it needs to show total sales, not the individual sales categories. Can your PivotTable do that?" Your response is "Yes, but it's REAL hard to do, and I'm the only one in the company who can do it." We'll keep the truth just between us.

To do what he requested, we need to get rid of the Merchandise, Warranty, and Delivery fields, keep the Total field and bring the Year field back down as a Column Label. That shouldn't be too hard, should it? Let's see.

1. Uncheck the **Merchandise Sales**, **Warranty Sales**, *and* **Delivery Sales** *fields from the* **PivotTable Field List** *(this takes those fields out of the* **PivotTable***), but leave the* **Total_Sales** *field there.*
2. *Drag the* **Year** *field from the* **Report Filter** *section to the* **Column Labels** *section.*
3. *Click on the* **Column Labels** *drop down menu in the* **PivotTable** *and select all years except* **2011**.

	A	B	C	D	E
1					
2					
3	Total	Column Labels			
4	Row Labels	2008	2009	2010	Grand Total
5	⊟Northern Region	17,503,462	18,162,863	18,654,220	54,320,545
6	NJ	4,022,727	4,173,788	4,240,692	12,437,207
7	NY	3,719,669	3,851,321	4,019,658	11,590,647
8	PA	9,761,066	10,137,755	10,393,871	30,292,691
9	⊟Southern Region	14,376,962	15,002,317	15,560,030	44,939,309
10	DC	5,601,542	5,901,019	6,040,275	17,542,836
11	MD	5,540,399	5,737,715	5,954,063	17,232,177
12	NC	3,235,021	3,363,584	3,565,692	10,164,296
13	Grand Total	31,880,424	33,165,180	34,214,250	99,259,854

Figure 11.20

PivotTable Options

The Grand Total column (Column E) really doesn't add anything to our analysis, so we can take it out. We do that by using PivotTable Options.

>   1. *Right-click anywhere in the* **PivotTable** *and choose* **PivotTable Options…**
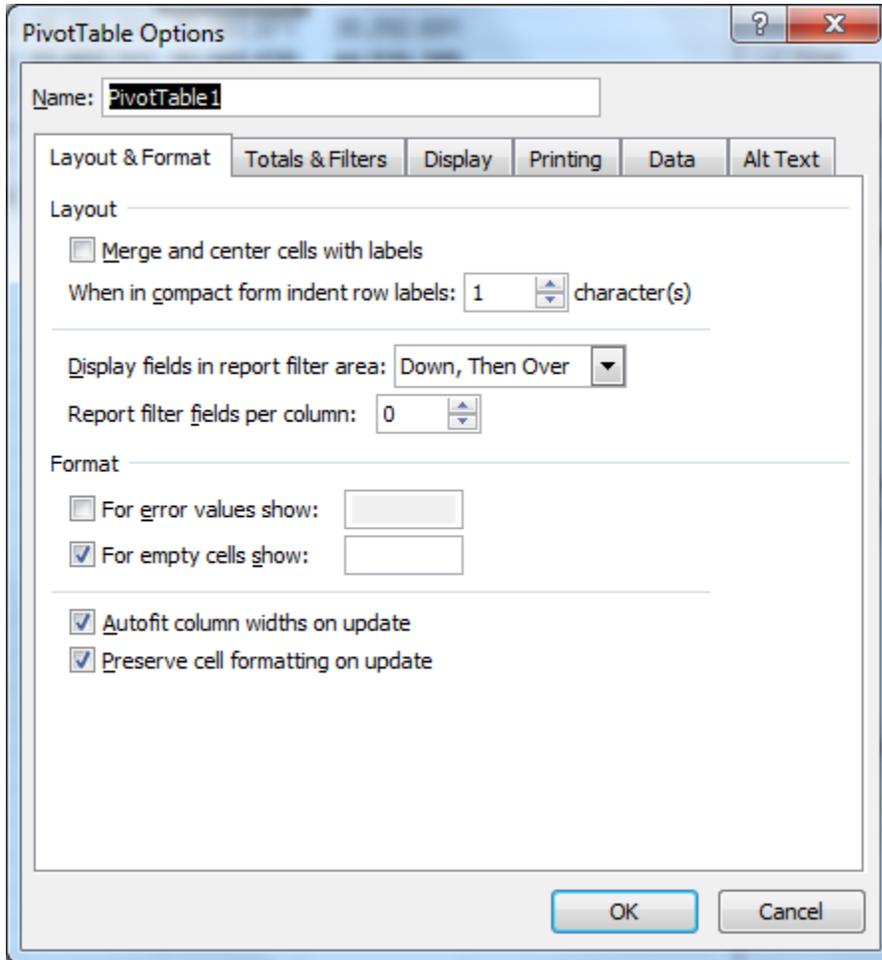
Figure 11.21

The PivotTable Options dialog box appears.

>   2. *Click on the* **Totals & Filters** *tab.*
>   3. *Uncheck the* **Show grand totals for rows** *box and click* **OK**.

You can also click on the Options button in the PivotTable section of the Options tab to display the PivotTable Options dialog box. After you click OK, the Grand Total column

in the PivotTable goes away. Take a moment and review the various options available in this dialog box. You will use many of them.

Sorting within a PivotTable

Now that we've created fields within our PivotTable and pivoted the information around a bit, let's do some **sorting**. Sorting a PivotTable in Excel 2003 was a bit cumbersome, as you had to use the Sort and Top 10 functionality. Excel 2010 provides a cool Sort section for sorting within a PivotTable. Let's suppose you want to sort the PivotTable to make the States with the most Total Sales appear on top (descending order) within each region.

> 4. *Click on any cell under the* **2010** *column.*
> 5. *Click on the* **Sort** *button in the* **Sort & Filter** *group of the* **Options** *tab.*
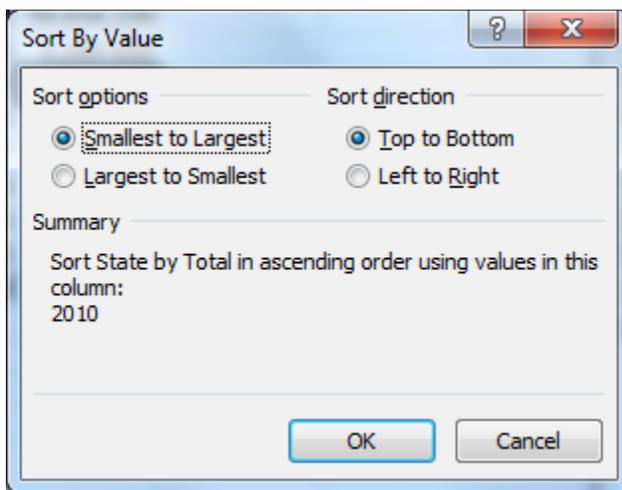
Figure 11.22

The Sort By Value dialog box appears. By default, the Smallest to Largest and Top to Bottom radio buttons are selected. The Summary section below reads that this will sort the State field by the Total in ascending order using the values in the 2010 column. Since we want to sort from high to low (or descending order), we need to click on the Largest to Smallest radio button.

> 6. *Click on the* **Largest to Smallest** *radio button.*
> 7. *Click* **OK**.

Your PivotTable should now look like Figure 11.23:

◢	A	B	C	D
1				
2				
3	Total	Column Labels ⏷		
4	Row Labels ⇅	2008	2009	2010
5	⊟Northern Region	17,503,462	18,162,863	18,654,220
6	PA	9,761,066	10,137,755	10,393,871
7	NJ	4,022,727	4,173,788	4,240,692
8	NY	3,719,669	3,851,321	4,019,658
9	⊟Southern Region	14,376,962	15,002,317	15,560,030
10	DC	5,601,542	5,901,019	6,040,275
11	MD	5,540,399	5,737,715	5,954,063
12	NC	3,235,021	3,363,584	3,565,692
13	Grand Total	31,880,424	33,165,180	34,214,250
14				

Figure 11.23

The data is now sorted by State. Easy, huh?

8. *Rename the sheet containing the* **PivotTable** *to* **Pivot***.*
9. *Save and close* **myAnnual_Sales.xlsx.**

As you can see, PivotTables are very useful tools for organizing, slicing and dicing your data. Go over the exercises in this chapter again and again until you thoroughly understand the concepts of PivotTables. It will greatly ease your future understanding of the "group by" clause in SQL. We'll explore more about PivotTables in the next chapter.

> *Review Questions: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 11, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you began your introduction to PivotTables. First, you created a simple PivotTable. You learned how to show and hide the PivotTable Field list, and added rows, columns, and values to the PivotTable. You learned how to format fields and filter fields within a PivotTable. You added fields, moved fields around, added a Report Filter and even calculated a new field. You learned how to work with the PivotTable Options dialog box. Finally, you learned how to sort data within a PivotTable.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same

computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER TWELVE – ADVANCED PIVOTTABLES

In this chapter, you will:

- Change a field's settings.
- Create complex calculated fields in PivotTables.
- Set up a PivotTable with drill down capability.
- Create PivotChart Reports.
- Connect to an external data source.
- Pull external data into a PivotTable.

Advanced PivotTables

Once I received a phone call from a financial manager in another state. She had a database of personnel information and wanted to roll it up to various management levels within our organization. This manager had heard of PivotTables but understood they were very complex and wanted to know the name of a good consultant to do the PivotTable for us. I said, "*Yes. You.*" I asked why she couldn't do the PivotTable for herself. Her response was that she didn't have the time to learn how to use PivotTables before the report had to be ready. I asked her to send me the database via email, and then I spent about 15 minutes showing her how to manipulate a PivotTable on the phone. She was fascinated with how easy it was to create and manipulate PivotTables, as I hope you are as well.

Now that you have a taste of PivotTables, we'll have a little more fun with them. Again, the main concept I want you to learn here is how to pivot fields within the database to group and summarize the data. You can use just about any of the fields in the database for such a summary and you can do just about any calculation.

Let's suppose that your manager wants to look at annual sales activity and wants to see a percentage growth year-over-year, by state. He also wants the capability to drill down to find out which stores are the lower performers. Remember, sometimes you receive data in different ways, from different files, and in different formats. In this chapter, I used the same base data as in Chapter 11, but I've changed it around a little, so you can experience the different data formats. Instead of having a Year field and each category of sales in columns, the Category is one column and the Year is contained in four different columns with the sale amounts. Let's review that file.

1. *Open the* **C:\ExcelCEO\Excel 2010\Chapter12\Sales_Summary.xlsx** *file.*
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter12\mySales_Summary.xlsx.**

	A	B	C	D	E	F	G	H	I	J
1	Store_No	City	State	Region	Month	Category	2008	2009	2010	2011
2	1055	w York	NY	Northern Region	4	Merchandise	99,959	84,278	91,007	
3	1009	Philadelphia	PA	Northern Region	2	Delivery	1,350	1,450	1,595	
4	1018	New York	NY	Northern Region	6	Merchandise	125,034	103,929	127,385	
5	1045	Raleigh	NC	Southern Region	9	Merchandise	83,624	93,910	81,539	
6	1018	New York	NY	Northern Region	6	Warranty	2,100	2,440	2,240	
7	1012	Philadelphia	PA	Northern Region	5	Merchandise	103,203	121,008	99,977	
8	1012	Philadelphia	PA	Northern Region	12	Merchandise	173,345	169,513	173,517	
9	1002	Jersey City	NJ	Northern Region	2	Merchandise	48,639	57,246	54,798	36,141
10	1005	Philadelphia	PA	Northern Region	1	Merchandise	47,523	58,448	51,581	14,258
11	1062	Washington	DC	Southern Region	5	Warranty	2,275	2,320	2,560	
12	1044	Raleigh	NC	Southern Region	11	Delivery	1,800	2,100	2,090	

Figure 12.1

In this file, the amount fields are called 2008, 2009, 2010 and 2011. These are amounts that correspond with each Store, Month, and Category. Note that the data under the 2011

column is mostly blanks, as there are no sales recorded yet for March 2011 and beyond. Also in this data, Store No. 1009 was closed in September 2010, and that store consequently has blanks from September 2010 forward in its sales data. You will now create a PivotTable that shows sales by state by year from 2008 to 2010.

3. Create a new **PivotTable** by clicking on the **Insert** tab, **PivotTable** button, and click **OK**.
4. Drag the **State** field and use as a **Row Label**.
5. Drag the **2008** and **2009** fields and drop them in the **Values** section.
6. Make sure the **Values** field appears in the **Column Labels** section.
7. Double-click on the **Sum of 2008** cell in the **PivotTable** (to display the **Value Field Settings** dialog box) and format the field for **Number, zero decimal places.**
8. Apply the same formatting to the **Sum of 2009** field.

Row Labels	Sum of 2008	Sum of 2009
DC	5,601,542	5,901,019
MD	5,540,399	5,737,715
NC	3,235,021	3,363,584
NJ	4,022,727	4,173,788
NY	3,719,669	3,851,321
PA	9,761,066	10,137,755
Grand Total	31,880,424	33,165,180

Figure 12.2

9. Drag the **2010** field and place it in the **Values** section.

Figure 12.3

Change a Field's Settings

When you brought in the data for 2010, you got some odd results. Since some of the fields within the 2010 data are blank, Excel tried to count the cells rather than sum them, resulting in much lower numbers than in Years 2008 and 2009. Notice that the name of that column is "Count of 2010" instead of "Sum of 2010". Let's fix that.

> 10. *Right-click on the* **Count of 2010** *cell (it should be* **Cell D3***).*
> 11. *On the pop-up menu, choose* **Value Field Settings…**
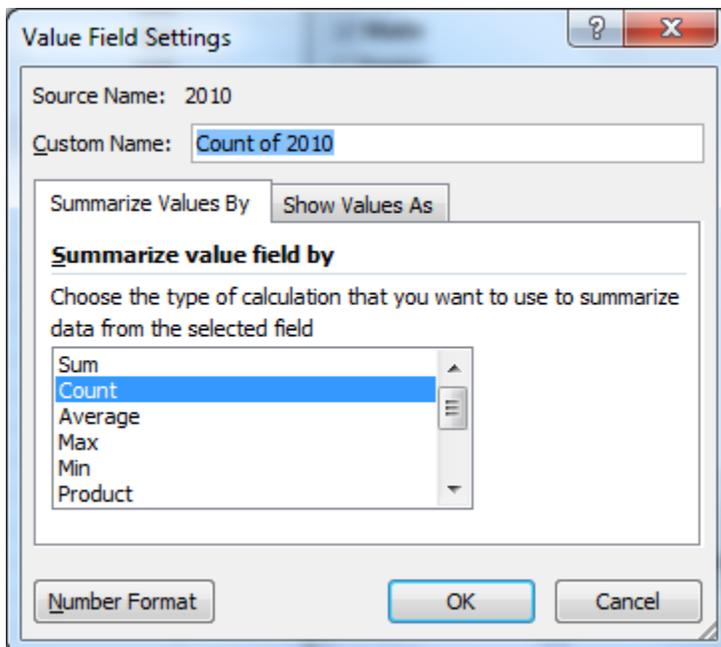
Figure 12.4

> 12. *In the* **Value Field Settings** *dialog box, choose* **Sum***.*
> 13. *Click on the* **Number Format** *command button and format the field as* **Number, zero decimal places***.*

Let's rename the fields to something that looks better than Sum of 2008, etc. When you rename a field within a PivotTable, you can't use the exact name as it appears in the data. In this example, you can name the 2008 column anything except 2008.

> *14. Rename the* **Column** *fields* **2008 Sales***,* **2009 Sales** *and* **2010 Sales***.*

	A	B	C	D
1				
2				
3	Row Labels ▾	2008 Sales	2009 Sales	2010 Sales
4	DC	5,601,542	5,901,019	6,040,275
5	MD	5,540,399	5,737,715	5,954,063
6	NC	3,235,021	3,363,584	3,565,692
7	NJ	4,022,727	4,173,788	4,240,692
8	NY	3,719,669	3,851,321	4,019,658
9	PA	9,761,066	10,137,755	10,029,111
10	Grand Total	31,880,424	33,165,180	33,849,490
11				

Figure 12.5

Complex Calculated Fields

Now we'll do a more **complex calculation** and calculate the percentage growth from one year to the next.

> 1. *In the* **Options** *tab, click on* **Fields, Items & Sets** *and create a new calculated field.*
> 2. *Name the* **Calculated Field 09/08_Chg***.*
> 3. *Create the formula: =('2009'-'2008')/ABS('2008')*
> 4. *Click* **OK***.*
> 5. *Format the new field as* **Percent***,* **one decimal place***.*
> 6. *Rename the new field* **09/08 Change***.*
> 7. *Move the new* **09/08 Change** *field to the left of* **2009 Sales** *(click on the* **09/08 Change** *field in the* **Values** *section and move it to between the* **2009 Sales** *and* **2010 Sales** *fields).*
> 8. *Create a similar calculated field for the* **10/09** *change.*
> 9. *Resize columns as needed.*

◢	A	B	C	D	E	F
1						
2						
3	Row Labels ▾	2008 Sales	2009 Sales	09/08 Change	2010 Sales	10/09 Change
4	DC	5,601,542	5,901,019	5.3%	6,040,275	2.4%
5	MD	5,540,399	5,737,715	3.6%	5,954,063	3.8%
6	NC	3,235,021	3,363,584	4.0%	3,565,692	6.0%
7	NJ	4,022,727	4,173,788	3.8%	4,240,692	1.6%
8	NY	3,719,669	3,851,321	3.5%	4,019,658	4.4%
9	PA	9,761,066	10,137,755	3.9%	10,029,111	-1.1%
10	Grand Total	31,880,424	33,165,180	4.0%	33,849,490	2.1%
11						

Figure 12.6

Drill Down in a PivotTable

Now there's an analysis you can sink your teeth into. Although we see similar changes between states from 2008 to 2009 (ranging from 3.5% to 5.3%), the more current data (2010) shows we may have concerns about at least two states, NJ and PA. The PA data even shows sales are declining, when we know there was an overall price increase. We need to look at more detail about these states to see if there is a problem we need to address with local management. But how do you get down to the detail? Before you get on the phone and start screaming at the field management, let's analyze the data a little further. We may need to **drill down** to the Store level and then maybe down to the Category and/or Month level. Let's set it up.

1. *From the **PivotTable Field List**, drag the **Store_No** field to below the **State** field.*
2. *Click on the first **Row Label** (it should be **DC** in **Cell A4**), and click on the **Collapse Entire Field** button ▀≣ in the **Active Field** group of the **Options** tab.*
3. *Drag the **Category** field below the **Store_No** field.*
4. *Drag the **Month** field below the **Category** field.*

Figure 12.7

Clicking on the Show Detail icon (the + button) displays all of the data below it, and the Show Detail (+) button turns to the Hide Detail (-) button. Since we want to see what's going on in PA, let's drill down on that state first.

5. *Click on the* **Show Detail (+)** *button next to* **PA***.*

All of the data below PA displays. To collapse the data at the Store No level, click on any Store No and click on the Collapse button in the Active Field group.

6. *Click on* **Store No 1005** *and click on the* **Collapse Entire Field** *button in the* **Active Field** *group of the* **Options** *tab.*

	A	B	C	D	E	F
1						
2						
3	Row Labels ▾	2008 Sales	2009 Sales	09/08 Change	2010 Sales	10/09 Change
4	⊞DC	5,601,542	5,901,019	5.3%	6,040,275	2.4%
5	⊞MD	5,540,399	5,737,715	3.6%	5,954,063	3.8%
6	⊞NC	3,235,021	3,363,584	4.0%	3,565,692	6.0%
7	⊞NJ	4,022,727	4,173,788	3.8%	4,240,692	1.6%
8	⊞NY	3,719,669	3,851,321	3.5%	4,019,658	4.4%
9	⊟PA	9,761,066	10,137,755	3.9%	10,029,111	-1.1%
10	⊞1005	1,416,373	1,441,799	1.8%	1,487,992	3.2%
11	⊞1009	787,500	849,320	7.9%	535,940	-36.9%
12	⊞1012	1,334,767	1,342,901	0.6%	1,351,260	0.6%
13	⊞1024	1,472,433	1,518,529	3.1%	1,595,366	5.1%
14	⊞1032	1,459,453	1,483,435	1.6%	1,566,050	5.6%
15	⊞1036	384,801	419,649	9.1%	435,548	3.8%
16	⊞1051	1,479,636	1,564,187	5.7%	1,548,591	-1.0%
17	⊞1063	1,426,101	1,517,935	6.4%	1,508,364	-0.6%
18	Grand Total	31,880,424	33,165,180	4.0%	33,849,490	2.1%

Figure 12.8

You now see that Store No 1009 has a 36.9% decrease in sales in 2010 from the 2009 levels. Why is that? Let's drill down on that store.

7. *Click the + sign (or double-click on the* **Store** *number) on* **Store 1009** *to expand it.*

	A	B	C	D	E	F
1						
2						
3	**Row Labels** ▾	**2008 Sales**	**2009 Sales**	**09/08 Change**	**2010 Sales**	**10/09 Change**
4	⊞DC	5,601,542	5,901,019	5.3%	6,040,275	2.4%
5	⊞MD	5,540,399	5,737,715	3.6%	5,954,063	3.8%
6	⊞NC	3,235,021	3,363,584	4.0%	3,565,692	6.0%
7	⊞NJ	4,022,727	4,173,788	3.8%	4,240,692	1.6%
8	⊞NY	3,719,669	3,851,321	3.5%	4,019,658	4.4%
9	⊟PA	9,761,066	10,137,755	3.9%	10,029,111	-1.1%
10	⊞1005	1,416,373	1,441,799	1.8%	1,487,992	3.2%
11	⊟1009	787,500	849,320	7.9%	535,940	-36.9%
12	⊟Delivery	21,850	20,450	-6.4%	12,760	-37.6%
13	1	750	650	-13.3%	495	-23.8%
14	2	1,350	1,450	7.4%	1,595	10.0%
15	3	1,550	1,300	-16.1%	1,705	31.2%
16	4	1,300	1,300	0.0%	1,375	5.8%
17	5	1,600	1,600	0.0%	1,485	-7.2%
18	6	1,450	1,450	0.0%	1,485	2.4%
19	7	1,600	1,600	0.0%	2,090	30.6%
20	8	2,700	2,400	-11.1%	2,530	5.4%
21	9	2,500	2,400	-4.0%		-100.0%
22	10	2,000	1,350	-32.5%		-100.0%
23	11	2,350	2,050	-12.8%		-100.0%
24	12	2,700	2,900	7.4%		-100.0%
25	⊟Merchandise	750,705	812,190	8.2%	513,260	-36.8%
26	1	34,147	32,890	-3.7%	28,460	-13.5%
27	2	52,699	64,107	21.6%	57,474	-10.3%
28	3	64,018	67,458	5.4%	63,240	-6.3%

Figure 12.9

Now we're getting somewhere. For the months of September through December, there is no data in any of the Delivery, Merchandise or Warranty categories. Remember? Store No. 1009 was closed in September 2010, so it won't have any sales thereafter. It looks kind of strange to have cells in the PivotTable with null or no values – it should at least have a zero. Remember that a zero is a number, but this data has no values for this store from September through December, and is thus returning nothing. There is a table option where you can make null values become zeros, just to make the report look better.

8. *Right-click anywhere in the* **PivotTable** *and choose* **PivotTable Options…**
9. *In the* **Layout & Format** *tab of the* **PivotTable Options** *dialog box, make sure the* **For empty cell, show:** *checkbox is checked, and type* **0** *in the text box.*
10. *Click* **OK**.

Those cells that were null are now populated with 0s, but remember that Store 1009 was closed in September 2010, and as such we should probably exclude that store from our

analysis to get a true year-over-year picture. Since the Store No. field is a couple of levels down in the PivotTable, we'll have to find it first then filter out Store No 1009.

> 11. *Click on the* **Row Labels** *drop down menu, and then under the* **Select Field** *drop down menu, choose* **Store_No**.
> 12. *Uncheck* **Store No 1009** *and click* **OK**.

The PivotTable now collapses to show only the Store numbers, and Store No 1009 is not there.   PA now shows a 2.2% increase over the prior year, which is much more reasonable than the -1.1% figure. It looks like the state of NJ also has some issues. Let's look into that.

> 13. *Expand* **NJ**.

In reviewing the data, we see that Store No. 1002 has a -1.0% change from 2010 as compared with 2009. Typically, we shouldn't see any stores with negative sales growth from one year to the next, so let's drill down on that store to see what happened there. Remember in analyses like this, you can sort by value fields and have the best or worst numbers on top or bottom.

> 14. *Drill into* **Store No 1002**.

	A	B	C	D	E	F
1						
2						
3	**Row Labels** ⊤	**2008 Sales**	**2009 Sales**	**09/08 Change**	**2010 Sales**	**10/09 Change**
4	⊞DC	5,601,542	5,901,019	5.3%	6,040,275	2.4%
5	⊞MD	5,540,399	5,737,715	3.6%	5,954,063	3.8%
6	⊞NC	3,235,021	3,363,584	4.0%	3,565,692	6.0%
7	⊟NJ	4,022,727	4,173,788	3.8%	4,240,692	1.6%
8	⊟1002	1,018,112	1,084,234	6.5%	1,072,907	-1.0%
9	⊟Delivery	26,550	26,750	0.8%	29,755	11.2%
10	1	1,000	850	-15.0%	990	16.5%
11	2	1,400	1,450	3.6%	1,705	17.6%
12	3	2,600	2,250	-13.5%	3,410	51.6%
13	4	2,100	2,000	-4.8%	2,365	18.3%
14	5	2,300	2,550	10.9%	2,475	-2.9%
15	6	2,450	2,250	-8.2%	2,090	-7.1%
16	7	1,650	1,550	-6.1%	1,485	-4.2%
17	8	3,000	3,250	8.3%	3,190	-1.8%
18	9	2,200	2,100	-4.5%	2,530	20.5%
19	10	2,400	2,600	8.3%	2,530	-2.7%
20	11	2,050	2,100	2.4%	2,530	20.5%
21	12	3,400	3,800	11.8%	4,455	17.2%
22	⊟Merchandise	973,047	1,034,764	6.3%	1,022,392	-1.2%
23	1	25,189	32,852	30.4%	23,619	-28.1%
24	2	48,639	57,246	17.7%	54,798	-4.3%
25	3	94,728	85,168	-10.1%	104,375	22.6%
26	4	86,266	84,516	-2.0%	86,412	2.2%
27	5	83,961	90,144	7.4%	92,466	2.6%
28	6	93,670	102,024	8.9%	83,052	-18.6%
29	7	43,972	73,073	66.2%	51,813	-29.1%
30	8	104.732	113.671	8.5%	120.014	5.6%

Figure 12.10

As you can see, there were several months at Store No. 1002 that had Merchandise and other sales that were lower than the 2009 levels. Now is the time to get on the phone with the store manager to see what's going on. You can continue to drill down to various levels – any level of data available in your database.

PivotTable Styles

At this point, you should get the picture on PivotTables. You should now be able to set up data in a PivotTable and be able to drill down to find any level of detail available. Calculated fields make it very easy to analyze your data to facilitate drill down analyses. However, the report looks, kind of, bland. Let's work through some examples on making the PivotTable report look a little better.

1. Hide the detail in the **PivotTable** *by double-clicking* **NJ** *and* **PA**.
2. *Click on the* **Design** *tab under* **PivotTable Tools**.

3. *In the* **PivotTable Styles** *group, click on the* **More** *down arrow* .

Figure 12.11

A menu appears that shows all of the pre-formatted PivotTable styles. In addition to the styles provided, you can create your own style by clicking on the New PivotTable Style… button. Since there are so many professionally designed styles available here, I like to use them.

4. *Move your cursor over any of the* **PivotTable Style** *options.*

When you move your cursor over a style, you can see the style being applied to the PivotTable in the background. I really like this feature in Excel 2010 as it allows you to

see what the PivotTable Report will look like without actually clicking on the style. You can move your cursor relatively quickly through all the different styles and see in the background which one you like the best.

> 5. *Click on* **PivotTable Style Medium 19**.

	A	B	C	D	E	F
1						
2						
3	Row Labels	2008 Sales	2009 Sales	09/08 Change	2010 Sales	10/09 Change
4	⊞DC	5,601,542	5,901,019	5.3%	6,040,275	2.4%
5	⊞MD	5,540,399	5,737,715	3.6%	5,954,063	3.8%
6	⊞NC	3,235,021	3,363,584	4.0%	3,565,692	6.0%
7	⊞NJ	4,022,727	4,173,788	3.8%	4,240,692	1.6%
8	⊞NY	3,719,669	3,851,321	3.5%	4,019,658	4.4%
9	⊞PA	8,973,565	9,288,435	3.5%	9,493,171	2.2%
10	Grand Total	31,092,924	32,315,861	3.9%	33,313,550	3.1%

Figure 12.12

> 6. *Rename the tab containing the* **PivotTable** *as* **Pivot**.

Search Filters in PivotTables

The last topic I want to cover in this section is Search Filters. In Chapter Four, I showed you a new feature in Excel 2010 called Search Filters. These are filters that you can use to limit the items that appear in the filter list. In PivotTables, not only can you use this feature, but you can also toggle between different row or column fields within one filter. Let's do an example of that.

> 7. *Click on the* **Row Labels** *filter arrow.*

Figure 12.13

The Search box here works just like the one we did in Chapter Four, but the one difference here is that you can use any fields that is set up as a Row Label.

8. *Click on the drop down arrow under* **Select Field:** *(it should have* **State** *currently displayed).*
9. *Click on* **Store_No**.

Figure 12.14

It now shows the filter items for Store_No. Notice that Store_No 1009 is unchecked, as we did previously. If you type "09" in the Search box, it will filter the list to include Store_No 1009. The trick here is that the Select Field: items must already be set up as a Row Label in the PivotTable Field list.

> 10. Click **Cancel**, *then save and close the file.*
>
> > **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 12, Section 1 of 2** *option and complete the review questions.*

External Data Sources

Let's pause our PivotTable discussion for a while and talk about data sources. Up to now, all of the data that you have used has been contained in spreadsheets. In reality, data can come from various sources. One time, a prestigious East Coast consulting firm I

was working with had an Excel model that was designed very well. However, one of the things about it that bugged me was that the user had to copy data from an Access database and paste it into the Excel file and then run a PivotTable based on that data. I showed them how to create a connection directly to that Access database (or any other database for that matter). It was kind of fun consulting the consultants.

Now we'll do a simple example of bringing data into an Excel file from an **external data source**. It's actually very easy to do, IF you know the right buttons to push. In the Chapter12 folder is an **Access** database called Data.mdb. Access is a very good desktop relational database program that Microsoft created. I strongly encourage you to continue to the next course in this series so you can learn about Access. For now, we will simply open the Access database and view the data in the table. The following screenshots are from Access 2010.

1. *Open a blank workbook in* **Excel***.*
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter12\myAccess.xlsx***.*
3. *Open* **Microsoft Access***.*

*Note: Depending on the version of Microsoft Office you have installed on your computer, you may not have Microsoft Access available. If this fits your situation, **don't panic!** You can still follow along with the majority of the following exercise hands-on, and understand the concepts at very least. The ability to work with external databases is a powerful skill, so if you can find a way to use Access for this project, I would encourage you to try. Otherwise, you can skip to Step 13, if you don't have Microsoft Access available to you.*

Figure 12.13

4. *In* **Access***, click the* **Open** *icon on the left side of the screen and navigate to* **C:\ExcelCEO\Excel 2010\Chapter12\data.accdb** *and open it.*

A Microsoft Access 2007 database is stored as a .accdb file.

Figure 12.14

5. *If the* **Security Warning** *line appears, click on the* **Enable content***.*
6. *Double-click on the* **Employee** *table to open it.*

Figure 12.15

This table lists all of the current and terminated employees of Nitey-Nite. An employee who is currently employed with Nitey-Nite has an End_Date of 1/1/2099. For now, we want to import the data from this table into an Excel spreadsheet. The easiest way to copy records from an Access table or query into an Excel file is to select all of the records in the table, then copy and paste them into Excel. Let's try that.

7. *Select all records in the* **Employee** *table by clicking in the gray box with the white triangle to the left of the* **Employee_ID** *field.*
8. *Type* **[Ctrl]+c** *to copy the data into memory.*
9. *Toggle over to the blank* **Excel** *spreadsheet (click on the* **Excel** *window at the bottom of your screen).*
10. *Click on* **Cell A1** *of* **Sheet1** *and type* **[Ctrl]+v**.

	A	B	C	D	E	F
1	mployee_I	Empl_No	First_Name	Last_Name	Start_Date	End_Date
2	1	004406	Padraic	Curlin	10-Oct-06	05-Jun-07
3	2	009935	Wainwright	Kurek	########	01-Jan-99
4	3	015603	Nanci	Gonano	########	01-Jan-99
5	4	013573	Owen	Chagani	23-Jul-07	01-Jan-99
6	5	006714	Maggie	McElwain	########	01-Jan-99
7	6	006290	Jeana	Bados	07-Jul-07	01-Jan-99
8	7	005123	Nury	Dejean	15-Jul-07	01-Jan-99
9	8	014853	Lynsie	McKenzie	########	########
10	9	002227	Ashleigh	Felicitas	10-Jun-06	27-Jun-06
11	10	014851	Melanie	Patry	########	########
12	11	006944	Rachmiel	Guzman	########	01-Jan-99
13	12	011089	Blaise	Rogalski	10-Oct-06	02-Jun-07
14	13	009079	Zoe	Diodato	########	01-Jan-99
15	14	001455	Madhur	Joneas	06-Jun-06	01-Jan-99
16	15	007441	Merlene	Awalt	########	01-Jan-99

Figure 12.16

11. *Click on the* **Wrap Text** *icon in the* **Alignment** *group of the* **Home** *tab twice.*
12. *Resize all columns to fit.*

	A	B	C	D	E	F
1	Employee_ID	Empl_No	First_Name	Last_Name	Start_Date	End_Date
2	1	004406	Padraic	Curlin	10-Oct-06	05-Jun-07
3	2	009935	Wainwright	Kurek	21-Sep-05	01-Jan-99
4	3	015603	Nanci	Gonano	07-Nov-07	01-Jan-99
5	4	013573	Owen	Chagani	23-Jul-07	01-Jan-99
6	5	006714	Maggie	McElwain	20-Aug-08	01-Jan-99
7	6	006290	Jeana	Bados	07-Jul-07	01-Jan-99
8	7	005123	Nury	Dejean	15-Jul-07	01-Jan-99
9	8	014853	Lynsie	McKenzie	11-Mar-07	09-Dec-07
10	9	002227	Ashleigh	Felicitas	10-Jun-06	27-Jun-06
11	10	014851	Melanie	Patry	09-Sep-05	01-Nov-06
12	11	006944	Rachmiel	Guzman	12-Dec-08	01-Jan-99
13	12	011089	Blaise	Rogalski	10-Oct-06	02-Jun-07
14	13	009079	Zoe	Diodato	19-Mar-07	01-Jan-99
15	14	001455	Madhur	Joneas	06-Jun-06	01-Jan-99

Figure 12.17

Now you have a table in Excel that contains all of the Employees at Nitey-Nite. You can manipulate this table in any way you want. However, what happens when an employee leaves or a new employee is hired? The table in Access will change (assuming that table is the primary database for employee data), but then you have to copy it over to your Excel file in again and repeat the process every time the data changes, which may be every day or even multiple times during the day. You can write a macro to do the formatting in Excel, but it would be nice if you could create a direct link to that data. You can do that by using an **External Data Source** link.

In this next exercise, you will create a link to a Microsoft Access database. In the Access course, you will learn **much** more about external data sources and will create a Data Source Name (DSN) tied to a SQL Server database. But in the Excel course, we'll stick to a simple example linking to an Access database.

One important concept when linking to an Access database in Excel is that you should not have the Access file you're linking to open at the same time with the Excel file that contains the link. You should have only Excel OR Access open at the same time.

1. *Close the* **data.accdb** *database and* **Access**. *(Choose* **No** *if a warning messages asks if you want to keep the copied data in memory.)*
2. *Click on* **Cell A1** *of* **Sheet2** *of the* **Excel** *file.*
3. *Click on the* **Data** *tab, then click on the* **From Access** *button in the* **Get External Data** *group.*
4. *Navigate to the* **C:\ExcelCEO\Excel 2010\Chapter12** *folder and choose* **data.accdb** *and click* **Open**.
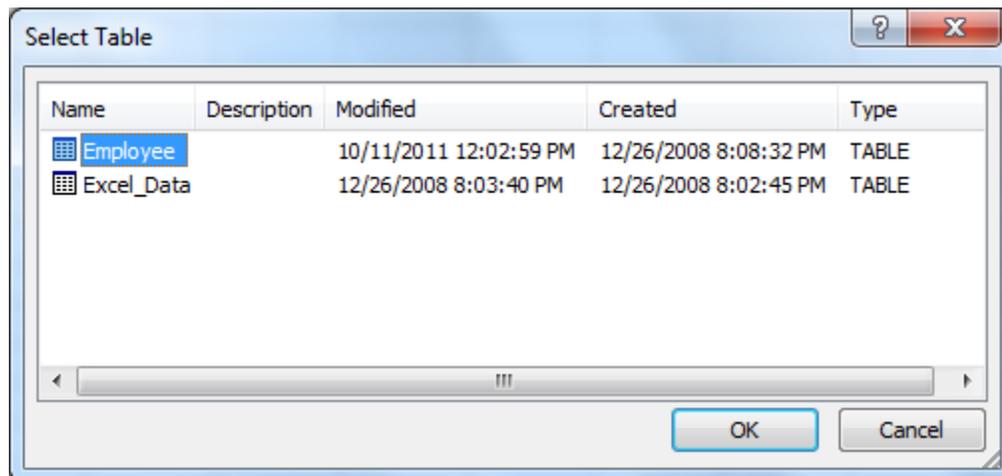
Figure 12.18

You want to link to the Employee table.

5. *Make sure the* **Employee** *is selected and click* **OK**.
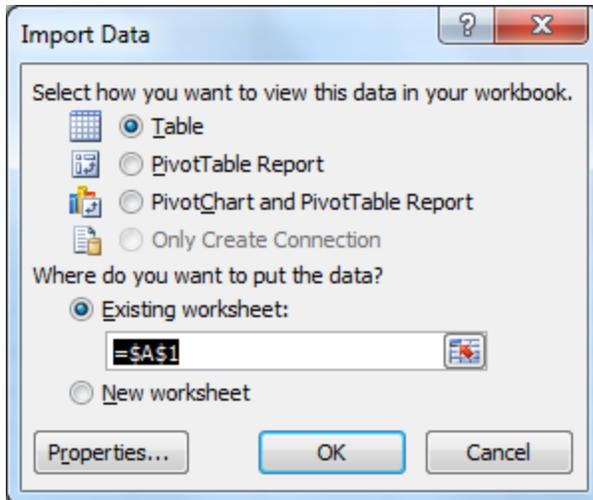
Figure 12.19

The Table radio should be selected in the Import Data dialog box.

> 6. *Accept the default values (***Table, Existing worksheet in Cell A1***) and
> click* **OK***.*

	A	B	C	D	E	F
1	Employee_ID	Empl_No	First_Name	Last_Name	Start_Date	End_Date
2	1	004406	Padraic	Curlin	10/10/2006	6/5/2007
3	2	009935	Wainwright	Kurek	9/21/2005	1/1/2099
4	3	015603	Nanci	Gonano	11/7/2007	1/1/2099
5	4	013573	Owen	Chagani	7/23/2007	1/1/2099
6	5	006714	Maggie	McElwain	8/20/2008	1/1/2099
7	6	006290	Jeana	Bados	7/7/2007	1/1/2099
8	7	005123	Nury	Dejean	7/15/2007	1/1/2099
9	8	014853	Lynsie	McKenzie	3/11/2007	12/9/2007
10	9	002227	Ashleigh	Felicitas	6/10/2006	6/27/2006
11	10	014851	Melanie	Patry	9/9/2005	11/1/2006
12	11	006944	Rachmiel	Guzman	12/12/2008	1/1/2099
13	12	011089	Blaise	Rogalski	10/10/2006	6/2/2007
14	13	009079	Zoe	Diodato	3/19/2007	1/1/2099
15	14	001455	Madhur	Joneas	6/6/2006	1/1/2099
16	15	007441	Merlene	Awalt	12/20/2008	1/1/2099
17	16	014659	Emeterio	Irizarry	6/22/2006	7/9/2006

Figure 12.20

> 7. *Save the* **Excel** *file.*

Excel imports the data into Sheet2 beginning at Cell A1. Let's try opening the Access
database with this link established and see what happens.

8. *Open* **Access.**
9. *In* **Access***, open the file at* **C:\ExcelCEO\Excel 2007\ Chapter12\ data.accdb***.*

Note: If you do not have a copy of Microsoft Access, you can skip Steps 10-19.
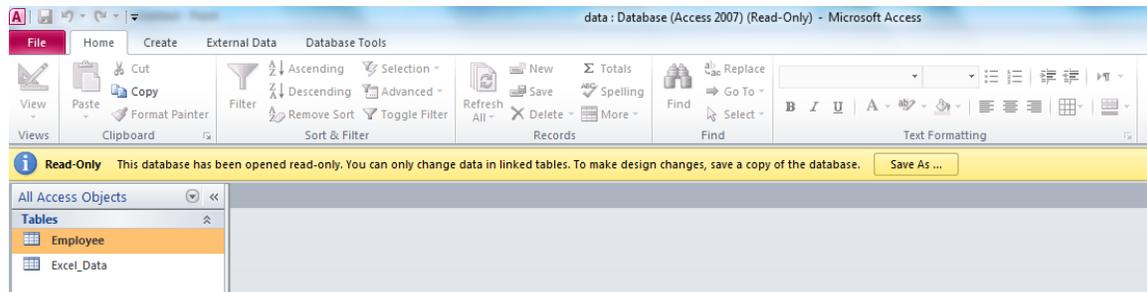
Figure 12.21

A security warning appears, telling you that the database has been opened in read only mode. This is because the Excel file that is linked to the Access database is open. As such, you can't make any changes to the Access database. Let's make a change in the Access database, but first we have to close it.

10. *Close the* **data.accdb** *database.*
11. *Close the* **myAccess.xlsx** *file (it should already be saved).*
12. *Open the* **data.accdb** *database.*
13. *Open the* **Employee** *table.*
14. *On the first record on the* **Employee_ID** *table, change the* **First_Name** *to* **Padraic1***.*

Employee_II	Empl_No	First_Name	Last_Name	Start_Date	End_Date
1	004406	Padraic1	Curlin	10/10/2006	6/5/2007
2	009935	Wainwright	Kurek	9/21/2005	1/1/2099
3	015603	Nanci	Gonano	11/7/2007	1/1/2099
4	013573	Owen	Chagani	7/23/2007	1/1/2099
5	006714	Maggie	McElwain	8/20/2008	1/1/2099
6	006290	Jeana	Bados	7/7/2007	1/1/2099
7	005123	Nury	Dejean	7/15/2007	1/1/2099
8	014853	Lynsie	McKenzie	3/11/2007	12/9/2007
9	002227	Ashleigh	Felicitas	6/10/2006	6/27/2006
10	014851	Melanie	Patry	9/9/2005	11/1/2006
11	006944	Rachmiel	Guzman	12/12/2008	1/1/2099
12	011089	Blaise	Rogalski	10/10/2006	6/2/2007
13	009079	Zoe	Diodato	3/19/2007	1/1/2099
14	001455	Madhur	Ioneas	6/6/2006	1/1/2099

Figure 12.22

15. *Click anywhere outside of that record and close* **Access***.*
16. *Open the* **myAccess.xlsx** *file.*

Figure 12.23

> 17. If you get the **Security Warning**, *click on the* **Enable Content** *button.*
> 18. *Right-click anywhere in the table and choose* **Refresh***.*

To refresh a link, you can also use the Refresh All button on the Data tab.

Figure 12.24

The data that you updated in the Access table (Padraic1) is now updated in Excel. Again, you will learn more about external data connections in the Access course, but this exercise should at least get you thinking about what kinds of data you can connect to in Excel.

    19. Save and close the **myAccess.xlsx** *file.*

Let's do another example just to make sure you're ready to enter the PivotTable world on your own. This one will be the ultimate analysis with PivotTables – you'll see why in a few minutes.

Using External Data in a PivotTable

Having over 1,000,000 rows of data available in Excel 2010 can be a double-edged sword. It would be great to have that many rows in which to work, but once you start to get a lot of rows of data, Excel starts to slow down. Particularly if you have a lot of formulas in the spreadsheet, refreshing those formulas can take a long time. If your spreadsheet seems to take a long time to calculate, I'll suggest a couple of things.

> 1) The VLOOKUP() function, although it is a very useful function, can be a resource hog. See if you can use another function, like SUMIF() or INDEX() to accomplish the same thing. Those functions take up much less resources and work much faster than VLOOKUP(). The VLOOKUP() function is many times the culprit of a worksheet that takes a long time to refresh.
>
> 2) Try keeping large amounts of data in databases like Access, SQL Server or Oracle (databases designed to hold voluminous information), and link to them in an Excel PivotTable for your analysis.

In this next example, you will link a PivotTable to an database with almost 300,000 rows of data, and Excel will fly through it like it was 20 rows of data. Before you begin this example, I must warn you. If you've previously worked with large amounts of data and have found Excel to be very limiting, you may get too excited. What I am about to show you could possibly cause your heart to start racing too fast, which could lead to other injuries, and I don't want that on my conscience. So, before you start this example, get a drink of water, take your medication, do whatever you have to do to get settled down before this wild ride. Done? Good. Let's get started.

What we are going to create here is the ultimate financial statement analysis tool. The data is contained in the same Access database we used in the previous example, so let's open up that database again.

    Note: If you do not have a copy of Microsoft Access, you can skip Steps 1-4.

    1. Open the **Access** *database at* **C:\ExcelCEO\Excel 2010\Chapter12\data.accdb**.

    2. Click **Enable this content** *in the* **Security Alert** *(if necessary).*

3. *Open the* **Excel_Data** *table.*

Figure 12.25

Feel free to scroll up and down through the data. Let me explain the table. It is a table that was created by one of Nitey-Nite's accountants for analysis of General Ledger activity for 2008 – 2010. It actually combines three tables. From the General_Ledger table, she brought in the Month, Account and the three Year columns (2008, 2009 and 2010).   She retrieved the Store and Region fields from the Stores table and the Lv11_Acct_desc, Lv12_Acct_desc and Lv13_Acct_desc fields came from an account rollup table. With the data in this format, it is easy to put it into a PivotTable. Notice that there are 293,068 records of data in the table. Even though it's possible to use that many rows of data in Excel, it can be very slow depending on your computer. One solution to analyze this data is to bring the data directly into a PivotTable without first dumping it onto a spreadsheet. This way, the data is in memory behind the spreadsheet. You won't be able to see all of the individual records, but you don't need to. All you want to do is to summarize the data, and that can be done in the PivotTable. And let me tell you, it's REAL EASY to do. Let's do it.

4. *Close the* **Excel_Data** *table and the* **data.accdb** *database.*
5. *Open a new workbook in* **Excel**.
6. *Save the workbook as* **C:\ExcelCEO\Excel 2010\Chapter12\myGL_Summary.xlsx**
7. *Click on the* **Data** *tab, then click on the* **From Access** *button.*
8. *In the* **Select Data Source** *dialog box, navigate to* **C:\ExcelCEO\Excel 2010 \Chapter12\data.accdb**, *and double-click on that file.*
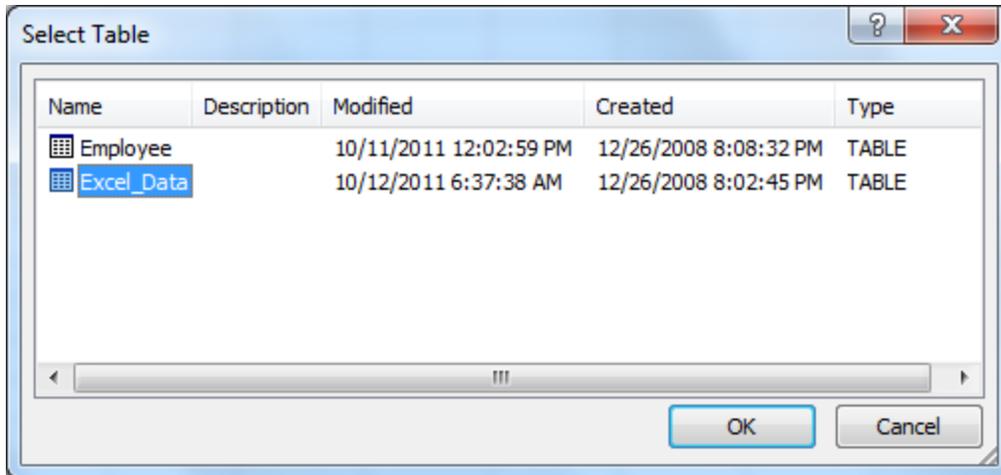
Figure 12.26

9. *Click on the* **Excel_Data** *table and click* **OK**.
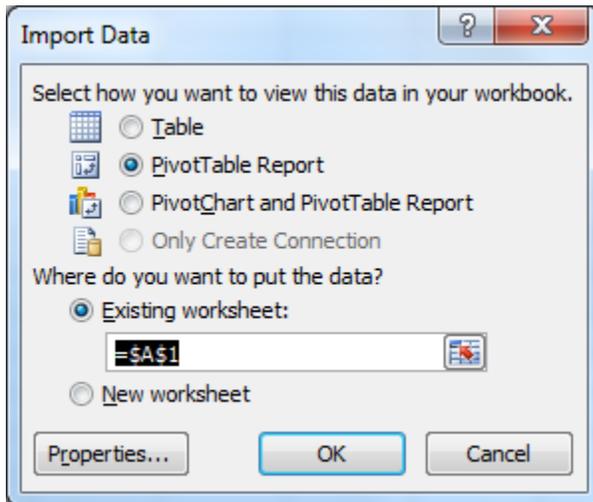
Figure 12.27

10. *In the* **Import Data** *dialog box, choose* **PivotTable Report**, *leave the* **Existing worksheet** *set to =$A$1 and click* **OK**.
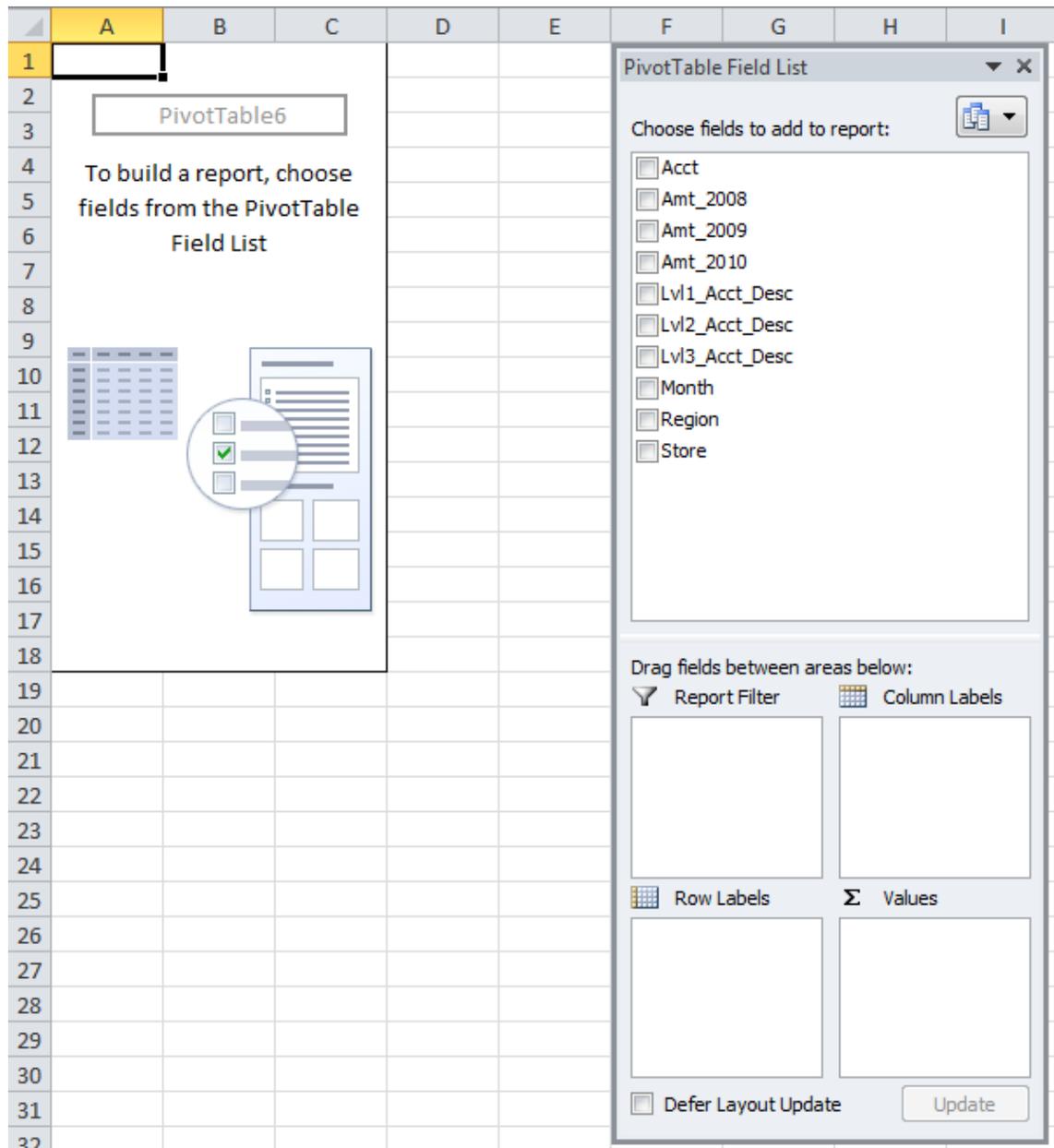
Figure 12.28

> *Note: At the bottom of the PivotTable Field List, there is a check box called* **Defer Layout Update**. *If you have a PivotTable that is connected to a very large database and it takes a lot of time to update the PivotTable each time you add or take away a field, you can check this check box and it will not update the PivotTable until you uncheck it. This can be a huge time saver when working with large databases.*

It may take a few seconds to make the connection, and then you will see the shell of the PivotTable. Let's analyze the data.

> *11. Set* **Region***,* **Store** *and* **Month** *as* **Report Filters** *fields.*

12. *Set* **Lvl1_Acct_Desc***,* **Lvl2_Acct_Desc***,* **Lvl3_Acct_Desc** *and* **Acct** *as*
    Row Label *fields.*
13. *Bring in the* **Amt_2010***,* **Amt_2009** *and* **Amt_2008** *fields in as* **Value**
    fields.
14. *Rename the* **Value** *fields* **2010***,* **2009** *and* **2008***.*
15. *Format the amount data in the* **PivotTable** *to be* **Number***,* **zero decimal**
    places *and* **use 1000 separator (,)**
16. *Click on* **308-0, Rent Expense** *and click the* **Collapse Entire Field** *icon in*
    the **Active Field** *group of the* **Options** *tab.*

After all of that, you should get a PivotTable that looks Figure 12.29:

	A	B	C	D
1	Region	(All)		
2	Store	(All)		
3	Month	(All)		
4				
5	Row Labels	2010	2009	2008
6	⊟ Net Income	-10,431,394	-10,016,417	-7,898,920
7	⊟ Expenses	20,810,808	18,894,242	17,402,270
8	⊞ Fixed Expenses	10,356,757	9,307,629	8,961,305
9	⊞ Variable Expenses	10,454,051	9,586,613	8,440,965
10	⊟ Revenue	-31,242,202	-28,910,659	-25,301,190
11	⊞ Discounts	1,109,495	1,049,482	897,346
12	⊞ Mattress Revenue	-27,577,658	-25,481,692	-22,440,065
13	⊞ Other Revenue	-3,089,184	-2,864,788	-2,445,483
14	⊞ Pillow Revenue	-1,684,855	-1,613,661	-1,312,987
15	Grand Total	-10,431,394	-10,016,417	-7,898,920

Figure 12.29

Remember that you can click on the Expand/Collapse icons to Show or Hide any level of detail you want. Keep in mind that this data comes directly from the General Ledger so the data carries GAAP signs (i.e., revenues are credits, or minus signs). If you set up your workbook in this manner, you can now write any formula you want to analyze year over year changes. Your limit depends on your imagination.

In this PivotTable, Expenses shows up before Revenue, and in a typical Income Statement, Revenue appears before Expenses. Reordering this data is easy to do – just click and drag.

17. *Click on the cell that contains the word* **Revenue***.*
18. *Place your cursor over the top edge of the cell and it will turn to a four-*
    sided arrow.
19. *Click on the cell and drag it above the cell containing* **Expenses** *and*
    release.

You will see a gray horizontal bar appear as you move the Revenue cell. Once you release it, the PivotTable is reordered to where Revenue appears on top.

	A	B	C	D
1	Region	(All) ▾		
2	Store	(All) ▾		
3	Month	(All) ▾		
4				
5		Values		
6	Row Labels ▾	2007	2006	2005
7	⊟Net Income	-10,431,394	-10,016,417	-7,898,920
8	⊟Revenue	-31,242,202	-28,910,659	-25,301,190
9	⊞Discounts	1,109,495	1,049,482	897,346
10	⊞Mattress Revenue	-27,577,658	-25,481,692	-22,440,065
11	⊞Other Revenue	-3,089,184	-2,864,788	-2,445,483
12	⊞Pillow Revenue	-1,684,855	-1,613,661	-1,312,987
13	⊟Expenses	20,810,808	18,894,242	17,402,270
14	⊞Fixed Expenses	10,356,757	9,307,629	8,961,305
15	⊞Variable Expenses	10,454,051	9,586,613	8,440,965
16	Grand Total	-10,431,394	-10,016,417	-7,898,920
17				

Figure 12.30

Let's say you now want to look only at the first quarter (January, February and March) data for all those years. The Month is contained in a Report Filter, and Report Filters were historically (before Excel 2007) set up to handle only one filter. In Excel 2007 and 2010, you can select multiple values in a Report Filter field.

20. *Click on the* **Month** *drop down arrow in* **Cell B3***.*
21. *Click on the* **Select Multiple Items** *checkbox (all the months will have check boxes beside them and all are checked.)*
22. *Deselect the* **(All)** *checkbox, then check* **Months 1***,* **2** *and* **3***.*

Figure 12.31

23. Click **OK**.

Figure 12.32

The Month report filter now reads "(Multiple Items)", since it can't display all of the months chosen in Cell B3.

Slicers

Although this feature is very cool, it has its limitations. Just by looking at the PivotTable, you can't tell which months were selected. To help with managing multiple selected

items in a PivotTable, Excel 2010 offers a new feature called **slicers**. A slicer is simply a view of what is selected in the PivotTable, or a change in the PivotTable's state. Inputting a slicer is really easy – just click on the Insert Slicer icon.

1. *In the* **Sort & Filter** *group of the* **PivotTable Tools Options** *contextual tab, click on* **Insert Slicer**.

Figure 12.33

2. *Click on the* **Month** *checkbox and click* **OK**.

	A	B	C	D	E	F	G	H
1	Region	(All) ▼						
2	Store	(All) ▼						
3	Month	(Multiple Items) ⫧						
4								
5	Row Labels ▼	2010	2009	2008				
6	⊟ Net Income	-1,298,467	-1,222,418	-909,703				
7	⊟ Revenue	-5,863,332	-5,343,020	-4,683,541				
8	⊞ Discounts	170,858	156,904	138,075				
9	⊞ Mattress Revenue	-5,150,234	-4,667,745	-4,139,243				
10	⊞ Other Revenue	-574,371	-536,875	-449,235				
11	⊞ Pillow Revenue	-309,586	-295,304	-233,138				
12	⊟ Expenses	4,564,865	4,120,602	3,773,838				
13	⊞ Fixed Expenses	2,595,386	2,337,276	2,249,751				
14	⊞ Variable Expenses	1,969,479	1,783,325	1,524,087				
15	Grand Total	-1,298,467	-1,222,418	-909,703				
16								

Month slicer: 1, 2, 3 selected; 4, 5, 6, 7, 8 not selected.

Figure 12.34

The Month slicer appears with the months 1, 2 and 3 selected, because those are the selections we did previously. To change the month, just click on the month you want in the slicer.

> 3. Click on **Month 4** *in the slicer.*

	A	B	C	D	E	F	G
1	Region	(All) ▼					
2	Store	(All) ▼					
3	Month	4 ⫧					
4							
5	Row Labels ▼	2010	2009	2008			
6	⊟ Net Income	-716,723	-731,040	-520,110			
7	⊟ Revenue	-2,410,306	-2,193,169	-1,855,953			
8	⊞ Discounts	34,877	32,369	22,432			
9	⊞ Mattress Revenue	-2,087,687	-1,898,293	-1,606,797			
10	⊞ Other Revenue	-234,954	-213,136	-179,361			
11	⊞ Pillow Revenue	-122,542	-114,109	-92,227			
12	⊟ Expenses	1,693,583	1,462,130	1,335,843			
13	⊞ Fixed Expenses	904,921	753,386	728,057			
14	⊞ Variable Expenses	788,662	708,744	607,786			
15	Grand Total	-716,723	-731,040	-520,110			

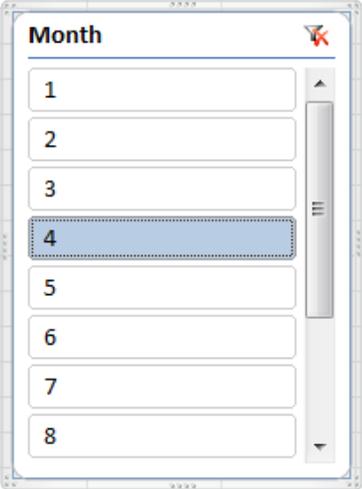Month slicer: 4 selected; 1, 2, 3, 5, 6, 7, 8 not selected.

Figure 12.35

Notice that Month 4 in the slicer is selected and the Month Report Filter in the PivotTable reflects 4, and the data in the PivotTable changes.

> 4. Click on **Month 1** *in the slicer, hold down the* **[Ctrl]** *key and click on* **Month 2** *and* **3**, *and release the* **[Ctrl]** *key.*

Note when you selected value while holding down the [Ctrl] key, the values in the PivotTable don't change, but as soon as you release the [Ctrl] key, all the values in the PivotTable change and the Month Report Filter reads "Multiple Items".

Other PivotTable Tricks

Let me show you a few other things that you can do with PivotTables that will help out in certain situations. This first exercise doesn't apply very well to the data we have in our current PivotTable, but it will show you the power of right-clicking.

1. *Right-click anywhere under the* **2009** *field in the* **PivotTable***, point to* **Summarize Values By** *and click on* **Average***.*

The values for 2009 now reflect an average numbers instead of a summation. Make sure to review all of the options available in the right-click menu. It can greatly speed up your development of a PivotTable.

2. *Click on the* **Undo** *button.*
3. *Click on the* **PivotTable Tools Design** *contextual tab.*
4. *Click on the* **Banded Rows** *checkbox of the* **PivotTable Styles Options** *group.*

◢	A	B		C	D
1	Region	(All)	▼		
2	Store	(All)	▼		
3	Month	(Multiple Items)	▼		
4					
5	**Row Labels** ▼	2010		2009	2008
6	⊟**Net Income**	-1,298,467		-1,222,418	-909,703
7	⊟**Revenue**	-5,863,332		-5,343,020	-4,683,541
8	⊞Discounts	170,858		156,904	138,075
9	⊞Mattress Revenue	-5,150,234		-4,667,745	-4,139,243
10	⊞Other Revenue	-574,371		-536,875	-449,235
11	⊞Pillow Revenue	-309,586		-295,304	-233,138
12	⊟**Expenses**	4,564,865		4,120,602	3,773,838
13	⊞Fixed Expenses	2,595,386		2,337,276	2,249,751
14	⊞Variable Expenses	1,969,479		1,783,325	1,524,087
15	**Grand Total**	-1,298,467		-1,222,418	-909,703

Figure 12.36

The PivotTable now displays banded rows. This is useful when there are many rows of data and you want to make it more readable.

Lastly, remember when you were using the old style of PivotTables and the row labels didn't repeat? That drove me nuts when I was trying to do a VLOOKUP() on data within a PivotTable.   Excel 2010 now has the functionality to repeat items in a PivotTable. We'll first set up the PivotTable in a tabular form (the old style), then I'll show you how to repeat items.

> 5. *In the* **PivotTable Tools Design** *contextual tab,* **Layout** *group, click on the* **Report Layout** *icon and click on* **Show in Tabular Form***.*
> 6. *Move the* **Slicer** *out of the way if necessary.*

	A	B	C	D	E	F	G
1	Region	(All)					
2	Store	(All)					
3	Month	(Multiple Items)					
4							
5	Lvl1_Acct_Desc	Lvl2_Acct_Desc	Lvl3_Acc	Acct	2010	2009	2008
6	⊟Net Income	⊟Revenue	⊞Discounts		170,858	156,904	138,075
7			⊞Mattress Revenu		-5,150,234	-4,667,745	-4,139,243
8			⊞Other Revenue		-574,371	-536,875	-449,235
9			⊞Pillow Revenue		-309,586	-295,304	-233,138
10		Revenue Total			-5,863,332	-5,343,020	-4,683,541
11		⊟Expenses	⊞Fixed Expenses		2,595,386	2,337,276	2,249,751
12			⊞Variable Expense		1,969,479	1,783,325	1,524,087
13		Expenses Total			4,564,865	4,120,602	3,773,838
14	Net Income Total				-1,298,467	-1,222,418	-909,703
15	Grand Total				-1,298,467	-1,222,418	-909,703

Figure 12.37

> 7. *Click on the* **Report Layout** *icon again and choose* **Repeat All Item Labels***.*

	A	B		C	D	E	F	G
1	Region	(All)	▼					
2	Store	(All)	▼					
3	Month	(Multiple Items)	⊤					
4								
5	Lvl1_Acct_Desc	▼	Lvl2_Acct_Desc	▼	Lvl3_Ac ▼	Acct ▼	2010	2009	2008
6	⊟Net Income		⊟Revenue		⊞Discounts		170,858	156,904	138,075
7	Net Income		Revenue		⊞Mattress Revenu	-5,150,234	-4,667,745	-4,139,243
8	Net Income		Revenue		⊞Other Revenue		-574,371	-536,875	-449,235
9	Net Income		Revenue		⊞Pillow Revenue		-309,586	-295,304	-233,138
10	Net Income		Revenue Total				-5,863,332	-5,343,020	-4,683,541
11	Net Income		⊟Expenses		⊞Fixed Expenses		2,595,386	2,337,276	2,249,751
12	Net Income		Expenses		⊞Variable Expense	1,969,479	1,783,325	1,524,087
13	Net Income		Expenses Total				4,564,865	4,120,602	3,773,838
14	Net Income Total						-1,298,467	-1,222,418	-909,703
15	Grand Total						-1,298,467	-1,222,418	-909,703

Figure 12.38

8. *Save and close the file.*

Whew! Are you ready for a break? That was an intense chapter, but one that will help you tremendously as you start to use PivotTables in your work. You are now ready to manipulate just about any field in a PivotTable. Please make note of a few more notes:

1. Right-click is your friend. If you are in a PivotTable and you want to do something but you don't know how, try right-clicking within the PivotTable and you may find the answer to your question.
2. Double-clicking makes things fast and easy. If you make a mistake, you can always use the Undo button. Don't worry about screwing it up. Have fun with it!

   Review Questions*: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 12, Section 2 of 2** option and complete the review questions..*

Conclusion

In this chapter, you changed a PivotTable field setting from Count to Sum. You created a complex formula using the ABS() function in a PivotTable calculated field. You set up a PivotTable to include drill down capability by using the Show Detail (+) or Hide Detail (-) buttons or by double-clicking on the value you want to drill down on. You formatted a PivotTable Report using the available standard styles. You connected to an external data source to bring data onto a spreadsheet, and you pulled data from an Access database directly into a PivotTable. Lastly, you learned about Slicers and the various options available in the PivotTable Tools Options and Design contextual tabs.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER THIRTEEN – CHARTS, GRAPHICS, AND OBJECTS

In this chapter, you will:

- Create a basic chart.
- Edit an existing chart.
- Position (move) and resize a chart.
- Create a Sparkline.
- Add a Trendline to a chart.
- Create a pie chart.
- Tie a PivotTable to a chart (PivotCharts).
- Create and modify diagrams.
- Import objects to and export objects from Excel.

It is said "A picture paints a thousand words." Truer words have never been spoken. However, they can also be deceiving. Consider the following charts:

Chart A: Sales
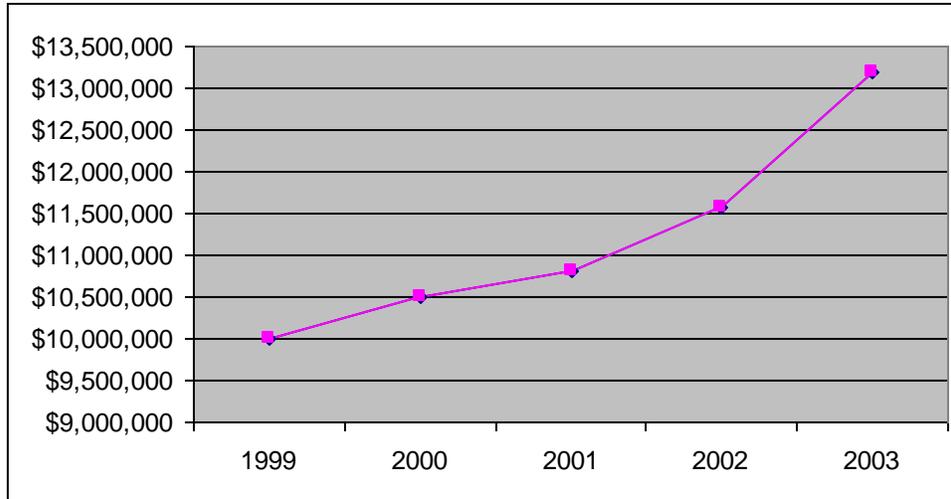
Chart B: Sales
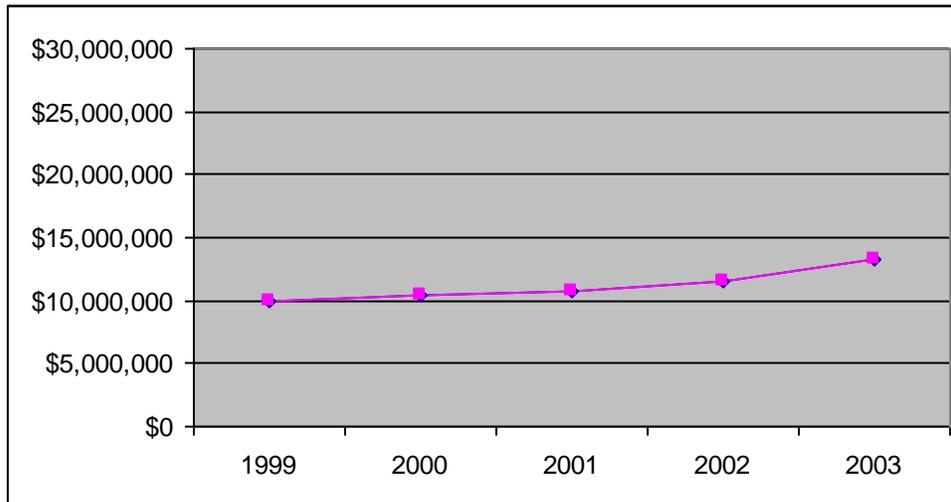
Which one would you choose for your company, Chart A or Chart B? Most people would choose Chart A. It appears that sales in Chart A are going through the roof. The sales in Chart B appear to be increasing, but not by much. However, both charts contain exactly the same information. The only thing I did different was to change the scaling of the chart. The bottom range of Chart A is $9,000,000 and the upper range of the scale is set at $13,500,000. In Chart B, the bottom value is $0 and the top level is $30,000,000. Thus, the higher the range, the less dramatic the lines appear to be. So even though charts can tell a lot, they can also be deceiving. For that reason, you should design charts in a way that presents accurate information that allows management to make solid business decisions based on the underlying data.

In its simplest form, a chart is a visual representation of a collection of data. As the developer of the chart, you have the ultimate control over how that chart is created. You can change the scale, colors, series, formatting, etc. You can estimate future activity by adding a trendline. In this chapter, you will learn how to create and customize various types of charts, add a trendline based on data in a spreadsheet, and tie a chart to a PivotTable.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter13\Annual_Sales.xlsx.**
2. *Save as* **C:\ExcelCEO\Excel 2010\Chapter13\myAnnual_Sales.xlsx.**

	A	B	C	D	E	F
1	Annual Sales 2006 - 2010					
2						
3		2006	2007	2008	2009	2010
4	Northern Region	17,742,860	18,086,504	18,778,830	18,889,759	19,456,452
5	Southern Region	14,132,548	15,304,903	15,739,308	17,245,116	17,613,654

Figure 13.1

Basic Charts

This is a very simple table. It shows annual sales for each of the two regions in the company. Let's put this data into a chart to visually show the sales activity over these five years.

3. *Click on* **Cell A4** *(Actually, you can click on any cell in the chart).*
4. *Click on the* **Insert** *tab.*
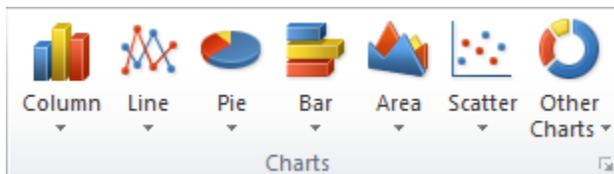
Figure 13.2

In the Charts group of the Insert tab, Excel allows you to pick the type of chart you want, then build it. Excel 2003 forced you to go through a multi-step wizard to create a chart, but Excel 2007 and 2010 allows you to first create the chart then modify it. Let's create a basic column chart.

5. *Click on the* **Column** *button and choose the first* **2-D Column** *called a* **Cluster Column**.
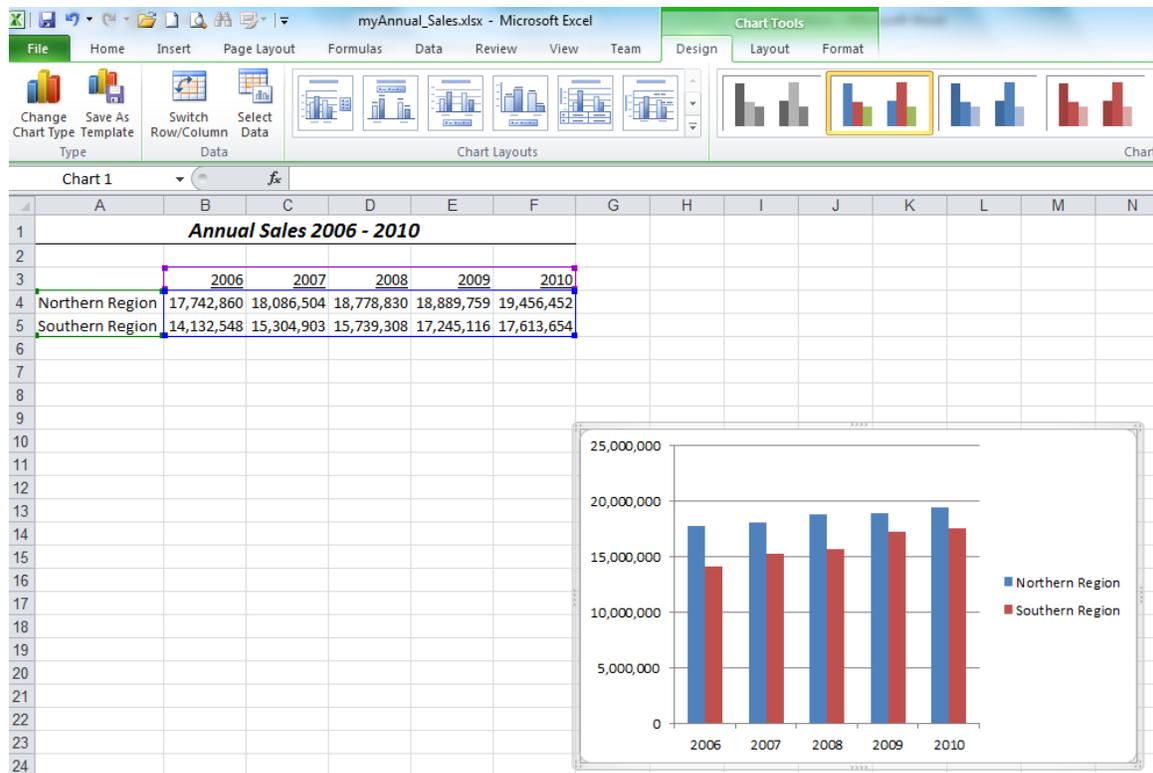
Figure 13.3

Excel does a couple of things. First, it creates a chart and places it in the middle of the spreadsheet. Second, it activates a new contextual tab called Chart Tools. Under Chart Tools, there are three sub-tabs: Design, Layout and Format. Excel provides SO MANY different options when creating charts that it is impossible to explore each of the tools in these exercises. As with other exercises, I encourage you to explore the different options on your own.

Edit an Existing Chart

In this next exercise, we will add a title to the chart.

6. *Click on the* **Layout** *tab under the* **Chart Tools** *tab.*
7. *Click on the* **Chart Title** *button and choose* **Centered Overlay Title**.
8. *Click inside the* **title box**, *replace* **Chart Title** *with* **Annual Sales 2006 – 2010** *and click outside the chart.*
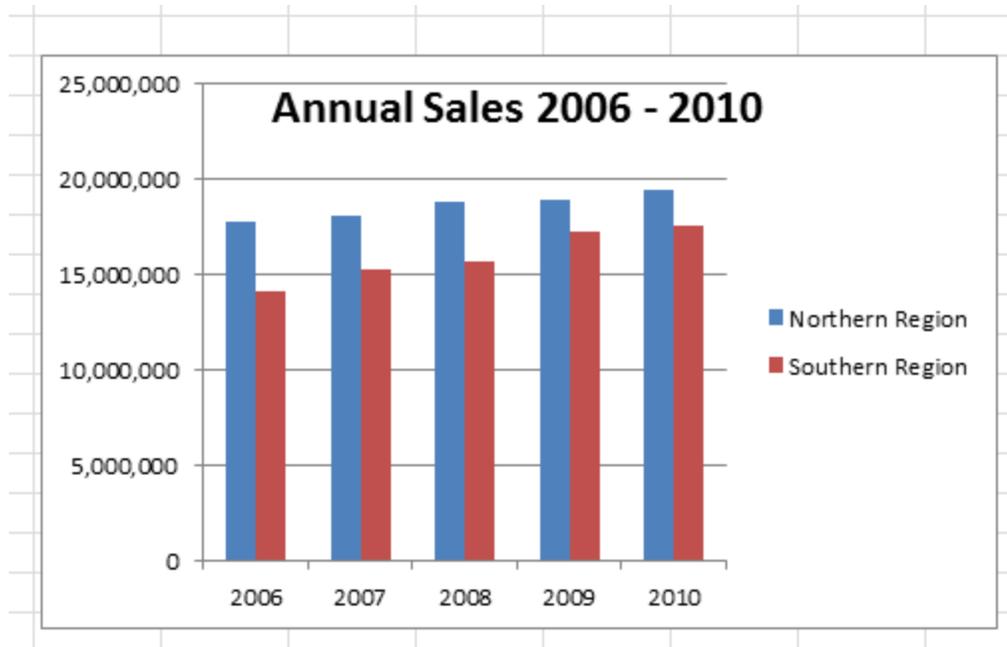
Figure 13.4

Excel creates a title for the chart. But, as you can see, the title appears within the chart itself. To fix this, we need to resize the chart.

9. *Click in the chart's white space to the right of the title (to select the chart).*
10. *Place your mouse over the left side of the chart to the left of the title and just right of the vertical line between the* **0 – 25,000,000** *values and click.*

Your cursor should turn to a four-sided arrow before you click. Just like selecting a text box or other object, this action selected the chart itself. And also just like text boxes, the chart is identified with handles on the outer edges.

11. *Click and drag the top center handle until the chart is placed below the title.*
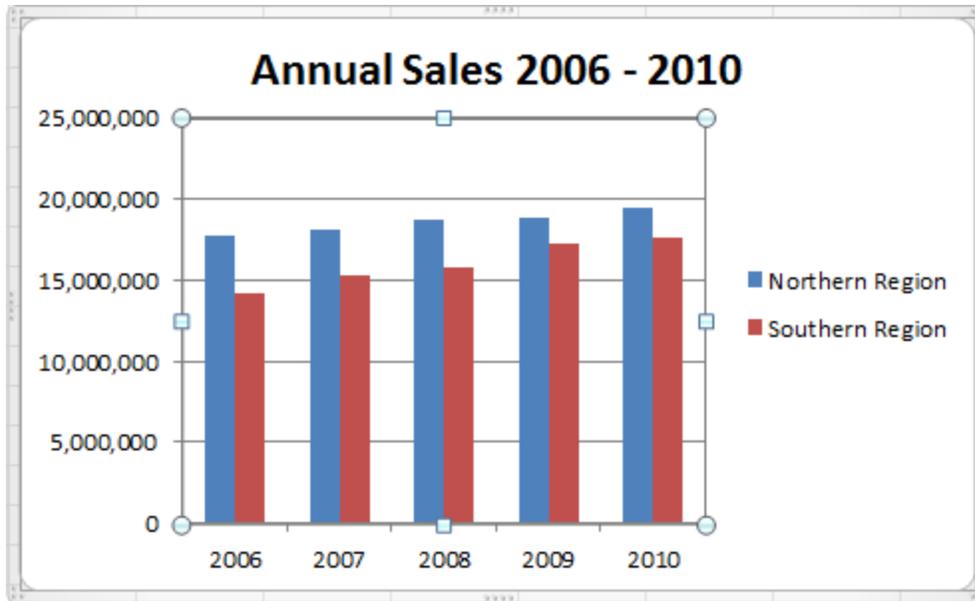
Figure 13.5

Now let's add some titles for the horizontal and vertical axes. In Excel 2010 charts, the axis on the bottom of the chart (formerly called the X axis in Excel 2003) is called the Horizontal or Category axis. The axis on the left side of the chart (formerly called the Y axis in Excel 2003) is called the Vertical or Value axis.

> 12. *Click on the* **Axis Titles** *button in the* **Layout** *tab,* **Labels** *group, point to* **Primary Horizontal Axis Title** *and choose* **Title below axis**.
> 13. *In the* **Axis Title** *box, type* **Year**.
> 14. *Click on the* **Axis Title** *button, point to* **Primary Vertical Axis Title** *and choose* **Vertical Title**.
> 15. *In the* **Title** *box, type* **Sales.**
> 16. *Select the chart again and resize it to where the* **Year** *and* **Sales** *titles show up appropriately.*
> 17. *Click anywhere outside the chart to deselect it.*
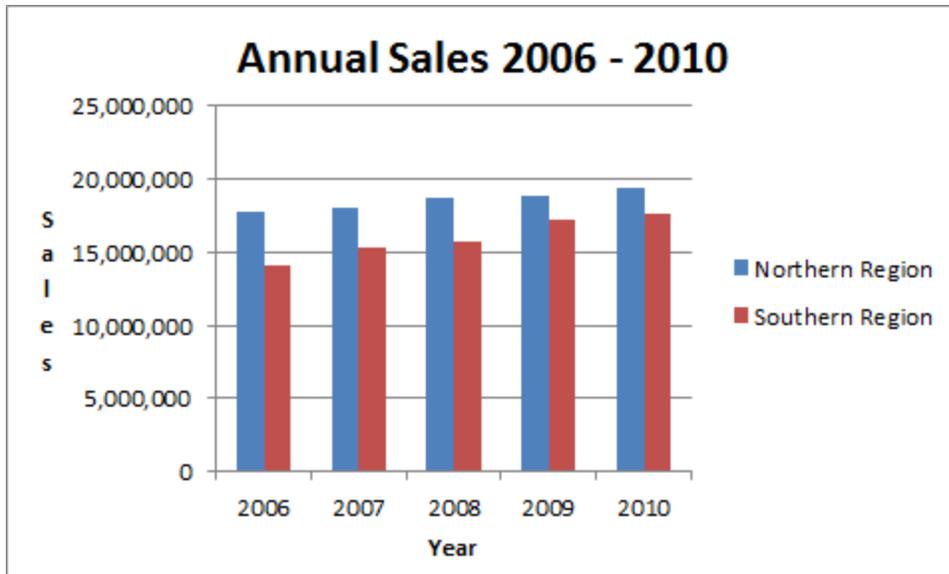
Figure 13.6

Now that our chart is done, we show it to the boss. His first reaction is *"It looks great, but it doesn't look like sales are going up much in either region. I'd like to see it where the sales growth in every year is more pronounced within the chart. Also, I don't like the names "Northern Region" and "Southern Region" in the legend. Make them say "North" and South". Can you do that?"* Again, your answer is, "*I can do anything*", and you get to work.

First, let's change the names in the legend. Changing the names of the regions is easy:

> 1. *Click on* **Cell A4** *and change the name to* **North**.

Since the chart is tied to the chart, the name in the cell AND the name in the chart automatically change to North.

> 2. *Click on* **Cell A5** *and change the name to* **South**.
> 3. *Select the chart and expand the right side over to fill up more space.*

The names are changed and the chart is reformatted to accommodate the shorter names.
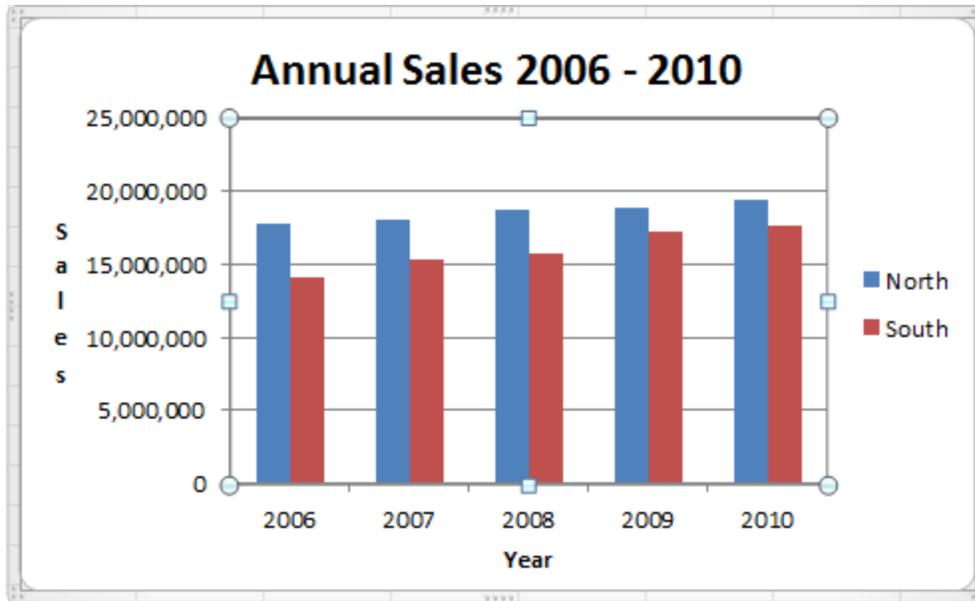
Figure 13.7

Making the sales more "pronounced" is a little more challenging, but we can do it. Probably the best thing to do is to change the Sales scale by starting the sales figures at say $12,000,000 instead of at zero.

4. *Right-click on any number in the* **Vertical** *axis and choose* **Format Axis…**
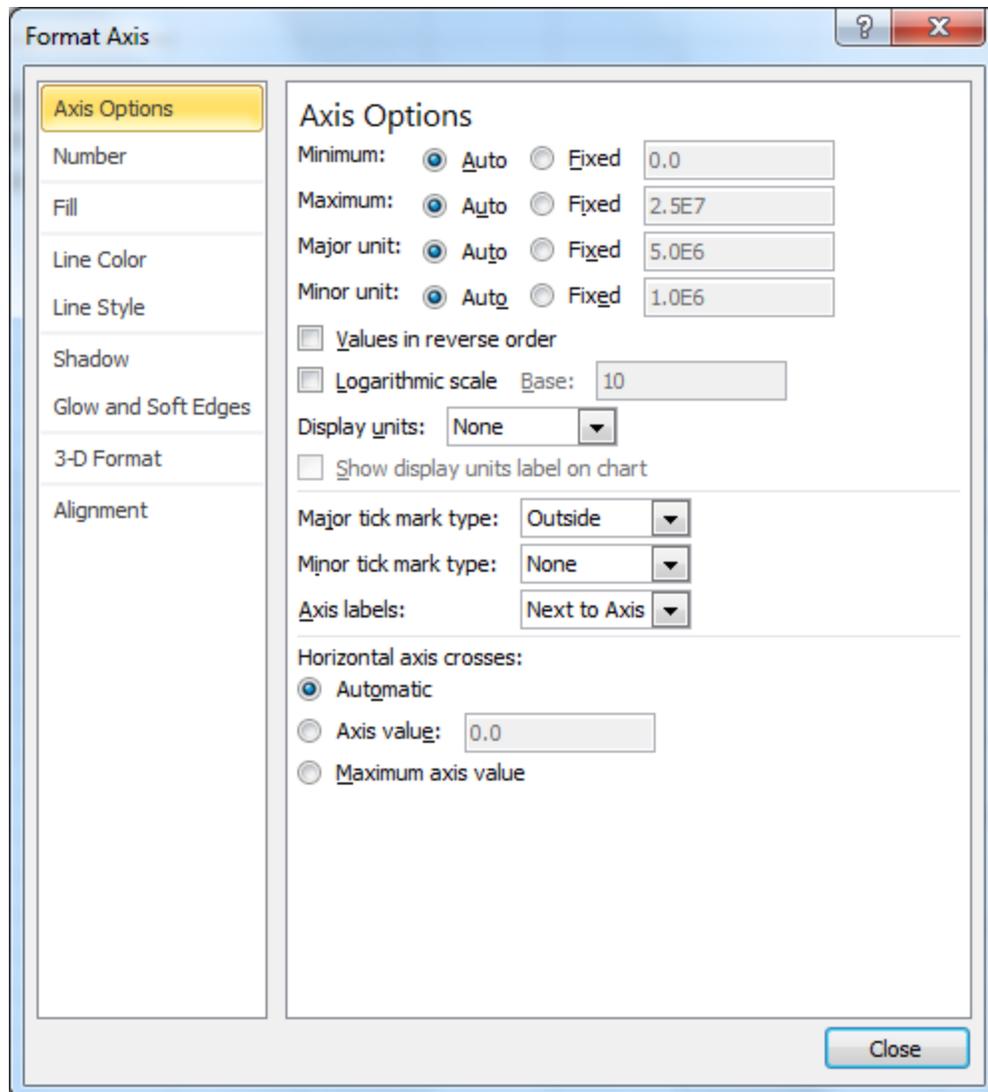
Figure 13.8

The Format Axis dialog box appears. There are numerous options in this dialog box, way too many for us to review in this exercise. You can explore the different options on your own. For now, we will change the Minimum option to be $12,000,000 and the Maximum option to $22,000,000.

> 5. *Click the* **Fixed** *radio button next to* **Minimum**.
> 6. *In the text box, replace* **0.0** *with* **12000000**.
> 7. *Change the* **Maximum** *box to be* **22000000** *and change the* **Major Unit** *to be* **2000000**.
> 8. *Click* **Close**.
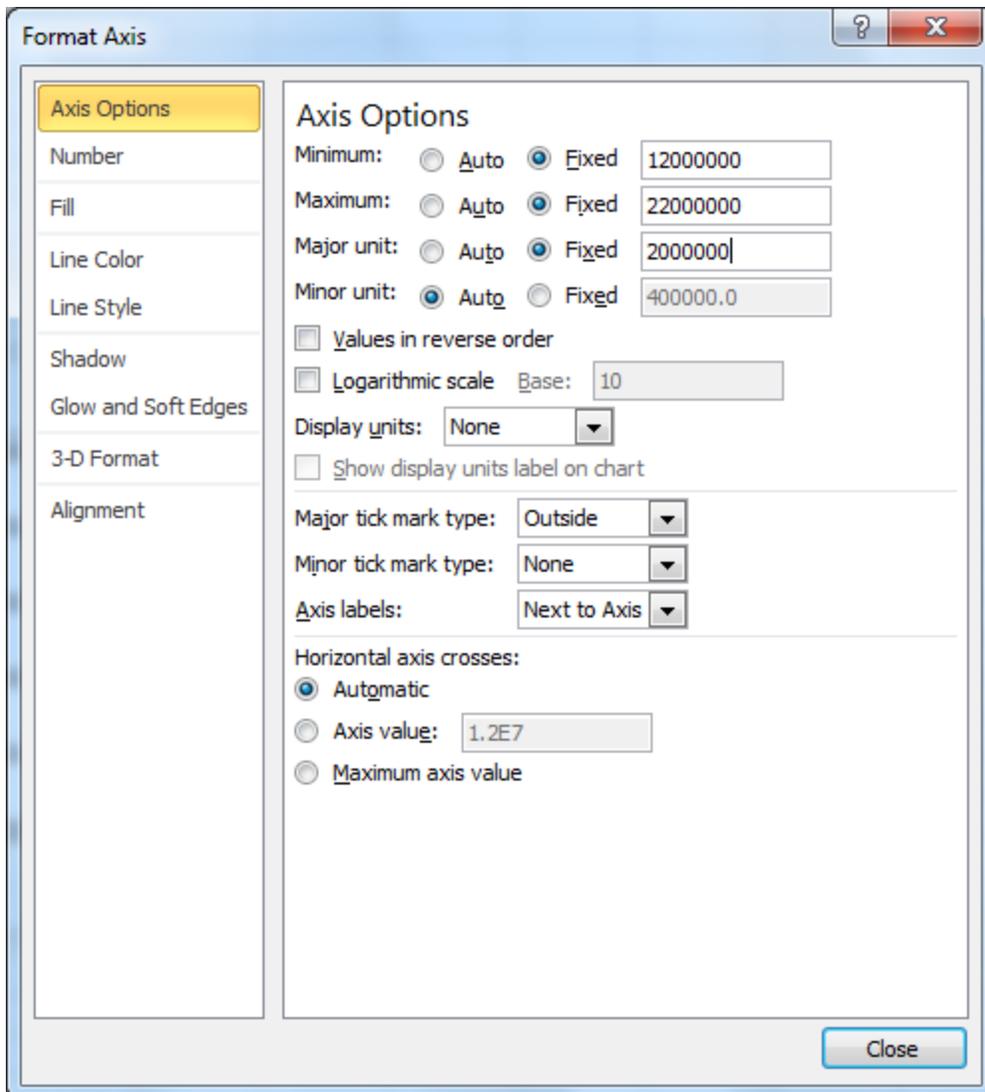
Figure 13.9
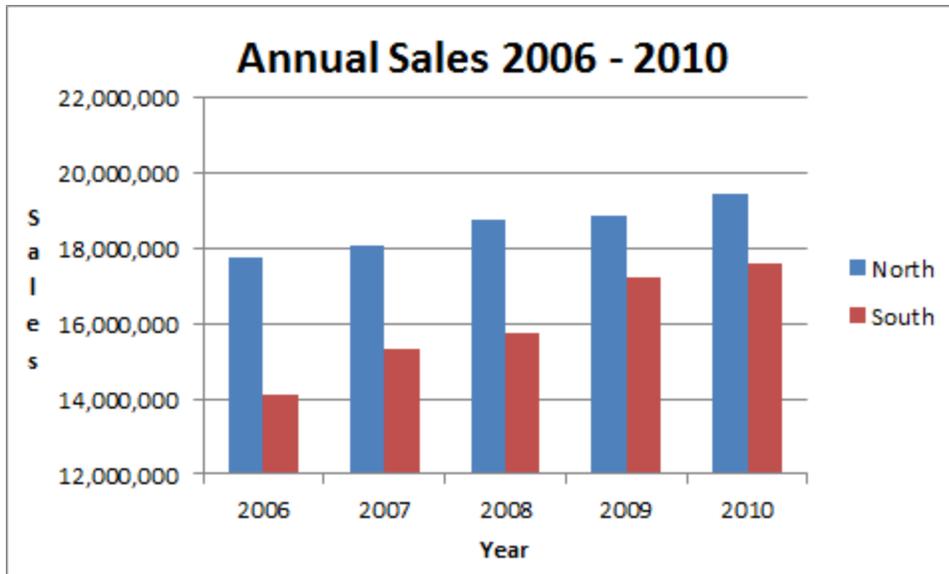
Figure 13.10

The columns in the chart appear a little bolder and you can see more of a change from year to year. Let's add some more customization to the chart.

> 9. *Right-click in a white space within the chart but outside of the actual chart in the middle of the chart, and choose* **Format Chart Area…**
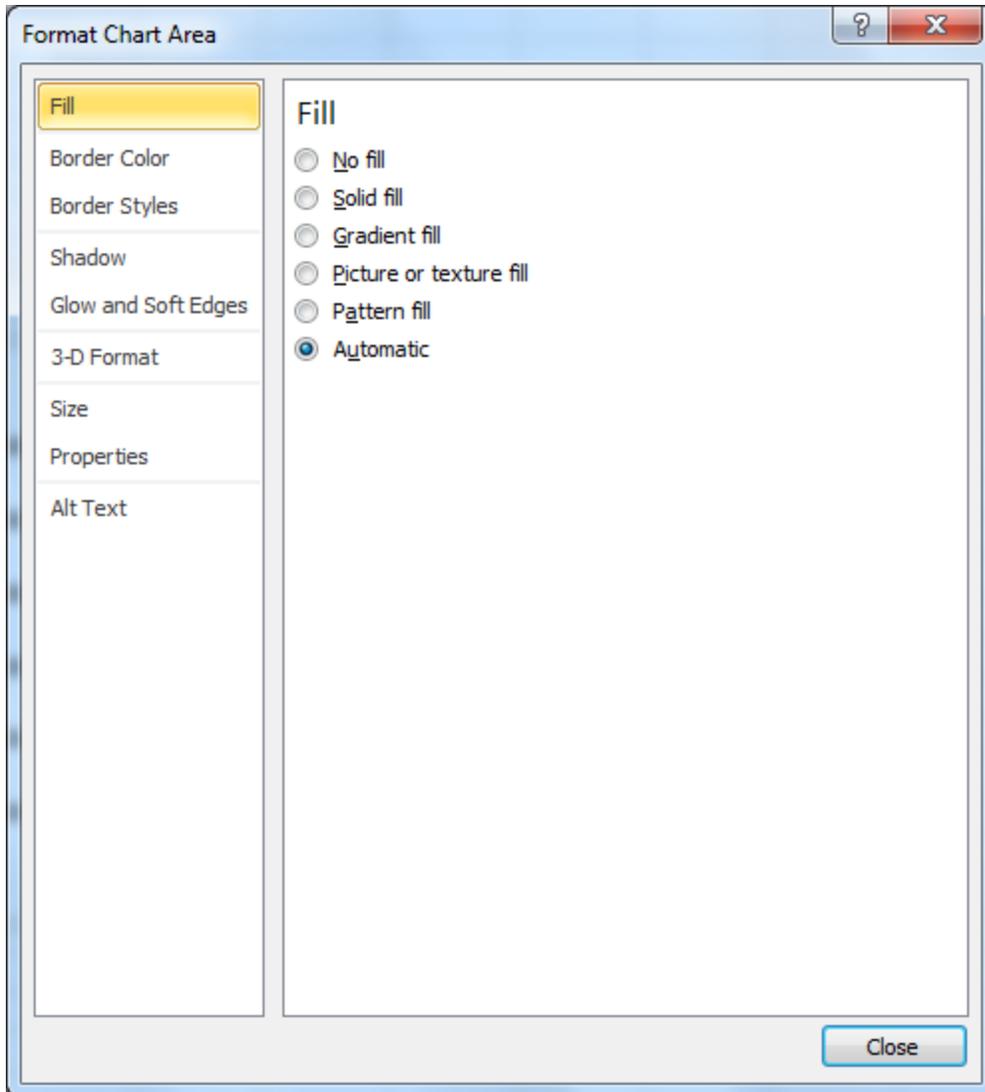
Figure 13.11

The Format Chart Area dialog box pops up.

> *10. Make sure the **Fill** option on the left is selected.*
> *11. Click on the **Gradient Fill** radio button.*

Once you click on Gradient Fill, the Gradient Fill options appear in the section below. It also pre-fills a type of popular gradient fill option.

> *12. Click on the **Preset** colors button and choose **Fog** (it should be the*
> *last button on the second row), and click **Close**.*

Figure 13.12

The chart is now formatted with a Fog style background. Let's do a little more formatting.

> 13. *Right-click on the* **Chart Title** *and choose* **Font…**
> 14. *Choose* **Bold Italic** *under* **Font Style**.
> 15. *Click* **OK**.
> 16. *In the same manner, change the* **Vertical** *and* **Horizontal titles** *(***Sales** *and* **Year***) to have a* **font size** *of* **12**.
> 17. *The chart should appear like* **Figure 13.13**

Figure 13.13

Now your chart looks much nicer. Some people, like me, prefer simple charts with little or no formatting or colors. I prefer that because I print in black and white, and black and white printers don't show colors very well.

Positioning a Chart

Positioning or moving a chart is easy – just click and drag it.

1. *Make sure the chart is deselected by clicking anywhere outside of the chart.*
2. *Click and hold anywhere in the blank space and drag the chart where the upper left corner of the chart is positioned at the upper left corner of* **Cell A9.**
3. *Drag the right middle sizing handle of the chart and drag the right edge of the chart to be in line with the right edge of* **Column F**.
4. *Adjust the bottom of the chart to be at the bottom of* **Row 23**.
5. *Deselect the chart.*
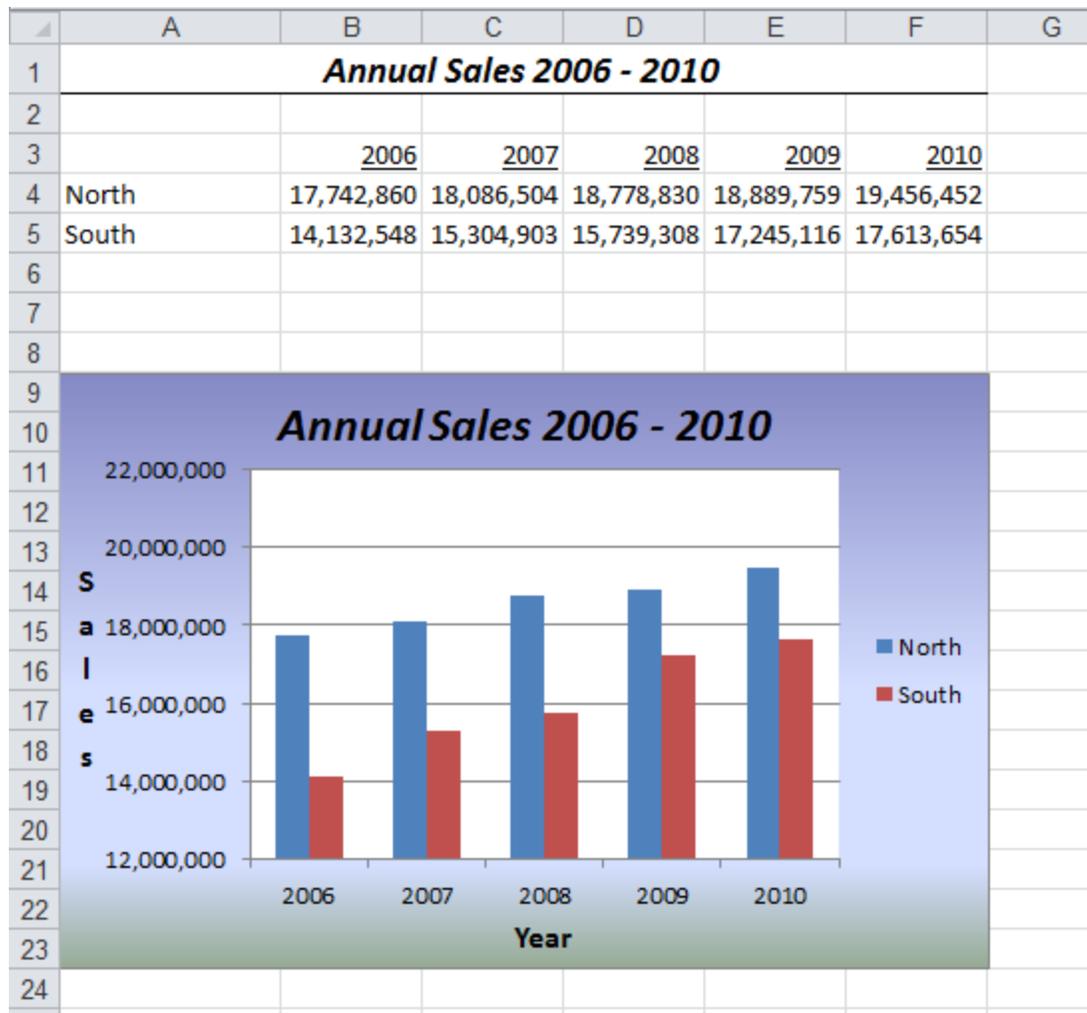
Figure 13.14

The chart should now be positioned under the table with the sales data. Keep in mind that the data in the table is tied directly to the columns in the chart, so if you change the data in the table, the chart will automatically update.

Sparklines

One of the new features of Excel 2010 is **sparklines**. A sparkline is a small, simple chart that shows only one data set displayed as a line, column or win/loss chart and is contained in one cell. A line or column sparkline is a compact version of a line or column chart, and a win/loss sparkline shows whether a single cell's value is positive (win), negative (loss) or a zero (a tie). Let's add a line and column sparkline

1. *Select* **Cells B4** *through* **F4**.
2. *On the* **Insert** *tab,* **Sparklines** *group, click on the* **Line** *icon.*
3. *In the* **Create Sparklines** *dialog box, the cursor should be blinking in the* **Location Range** *box.*

4. *Click on* **Cell G4** *and click* **OK***.*
5. *Use the same procedure to create a* **Column** *sparkline for* **Cells B5** *through* **F5** *in* **Cell G5***.*

◢	A	B	C	D	E	F	G
1			Annual Sales 2006 - 2010				
2							
3		2006	2007	2008	2009	2010	
4	North	17,742,860	18,086,504	18,778,830	18,889,759	19,456,452	
5	South	14,132,548	15,304,903	15,739,308	17,245,116	17,613,654	

Figure 13.15

Now that I see the Column sparkline, I don't like it, so let's change it to a Line sparkline.

6. *With* **Cell G5** *selected, click on the* **Line** *icon in the* **Type** *group of the* **Sparkline Tools Design** *contextual tab.*

◢	A	B	C	D	E	F	G
1			Annual Sales 2006 - 2010				
2							
3		2006	2007	2008	2009	2010	
4	North	17,742,860	18,086,504	18,778,830	18,889,759	19,456,452	
5	South	14,132,548	15,304,903	15,739,308	17,245,116	17,613,654	

Figure 13.16

One note on sparklines – sparklines are a cool new tool, but if you find yourself using too many sparklines, consider using a regular chart. Use sparklines sparingly.

Add a Trendline

While looking at our chart, enhanced by the sparklines, it looks like sales are going up each year. What do you think sales will do in 2011 or 2012 if they stay at the same rate of growth? We can use a **trendline** to show us. A trendline is a graphical representation of trends in a data series, such as sales over a period of years.

1. *Select the chart.*
2. *On the* **Layout** *tab, click on the* **Trendline** *button in the* **Analysis** *group.*
3. *Click on* **Linear Trendline***.*
4. *In the* **Add Trendline** *dialog box, choose* **North** *and click* **OK***.*
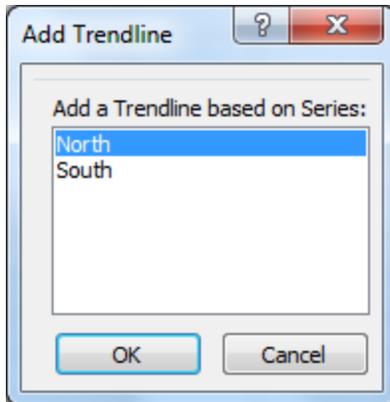
Figure 13.17

Figure 13.18

When using a Trendline, most people use a Linear type. That is because most people really don't understand the other types (Exponential or Two Period Moving Average). In this exercise, we want to forecast a linear trend over two periods, so we can use the Linear Forecast Trendline.

>   5. *Click on the* **Undo** *button (to remove the first* **Trendline** *we created).*
>   6. *Create a* **Trendline** *using the* **Linear Forecast Trendline** *option for the* **North** *and* **South**.
>   7. *Select the chart area and reposition it to where the legend is completely to the right of the chart area.*
>   8. *Deselect the chart.*

Figure 13.19

The trendlines show that the North's sales are increasing, but the rate of growth for the South is significantly faster. It looks like they should intersect at about the Year 2013.

> ***Tip****: Check out the various icons in the Chart Tools Design tab, particularly those in the Type, Data, and Chart Layout groups. These tools can greatly speed up chart development.*

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 13, Section 1 of 2** option and complete the review questions.*

Pie Charts

Another chart type that is very useful is a **pie chart**. Companies love to use pie charts to view the distribution of sales, assets, or a host of other business measures.

1. Click on the **Pie** tab.

	A	B
1	State	10 Sales
2	DC	6,644,303
3	MD	6,549,469
4	NC	3,922,261
5	NJ	4,664,761
6	NY	4,421,623
7	PA	11,032,022
8		

Figure 13.20

This is a simple table that represents 2010 sales in each state.

2. *With your cursor on any cell within the chart, click on the* **Insert** *tab, then click on the* **Pie** *icon in the* **Charts** *group.*
3. *Choose the first option (***Pie***).*

Figure 13.21

Excel automatically inserts a Pie chart. As with the Column chart (or any other chart), we need to do some formatting to the automatic chart Excel gave us. We'll rename the title of the chart to 2010 Sales by State and make the sections of the pie chart more readable.

4. *Click on the* **10 Sales** *chart title and rename it* **2010 Sales by State***.*
5. *On the* **Layout** *tab, click on the* **Data Labels** *button and choose* **More Data Label Options…**
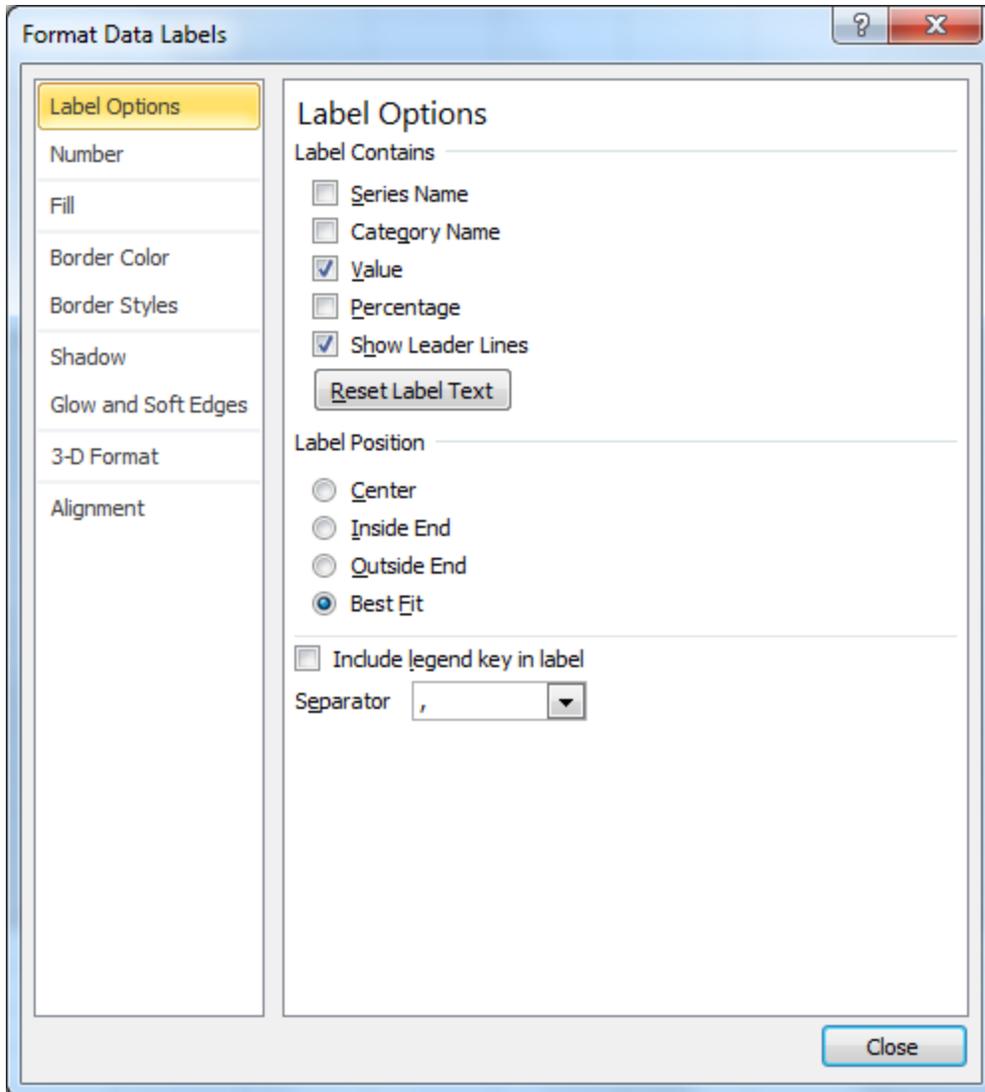
Figure 13.22

6. *With* **Label Options** *selected on the left, in the* **Label Contains** *group, click on the* **Category Name** *and* **Percentage** *boxes, and uncheck the* **Value** *box.*
7. *In the* **Label Position** *group, click the* **Outside End** *radio button.*
8. *Click* **Close***.*
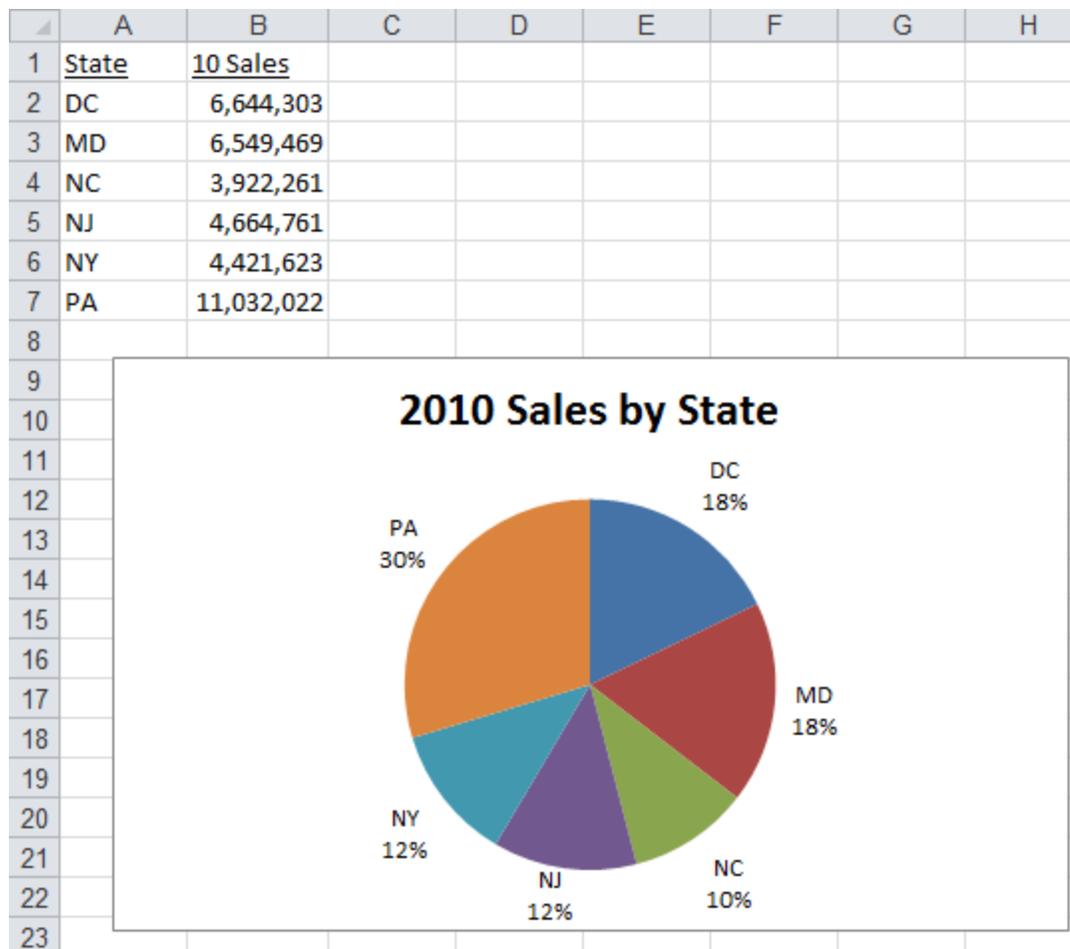9. *Click on the legend box to the right and delete it.*

◢	A	B	C	D	E	F	G	H
1	State	10 Sales						
2	DC	6,644,303						
3	MD	6,549,469						
4	NC	3,922,261						
5	NJ	4,664,761						
6	NY	4,421,623						
7	PA	11,032,022						
8								

Figure 13.23

With the percentages under each state in the Pie chart, you really don't need the Legend so you can get rid of it.

> 10. *Save and close the file.*

PivotChart Reports

Since you are now an expert with PivotTables, you can create a chart using a PivotTable as the data behind the chart and make it interactive. This is called a **PivotChart report**. It's easy to do, and you build the chart while you're building the PivotTable. Let's try one.

> 1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter13\Sales_Summary.xlsx.**
> 2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter13\ mySales_Summary.xlsx.**

	A	B	C	D	E	F	G	H
1	Store_No	City	State	Region	Year	Month	Category	Sales
2	1021	⚠ shington	DC	Southern Region	2008	11	Merchandise	29,552
3	1021	Washington	DC	Southern Region	2008	10	Warranty	548
4	1021	Washington	DC	Southern Region	2008	6	Warranty	590
5	1021	Washington	DC	Southern Region	2008	8	Merchandise	75,461
6	1021	Washington	DC	Southern Region	2008	11	Warranty	422
7	1021	Washington	DC	Southern Region	2008	10	Delivery	964
8	1021	Washington	DC	Southern Region	2008	2	Warranty	759
9	1021	Washington	DC	Southern Region	2008	4	Merchandise	29,786
10	1021	Washington	DC	Southern Region	2008	1	Merchandise	22,832
11	1021	Washington	DC	Southern Region	2008	8	Warranty	1,476
12	1021	Washington	DC	Southern Region	2008	10	Merchandise	33,929
13	1021	Washington	DC	Southern Region	2008	6	Delivery	964
14	1021	Washington	DC	Southern Region	2008	9	Delivery	783
15	1021	Washington	DC	Southern Region	2008	7	Warranty	633

Figure 13.24

This is basically the same table format that you used to create a PivotTable in Chapters 11 and 12. In creating a PivotChart, you will build the PivotTable and the chart will automatically be built as you build the PivotTable.

3. *On the* **Insert** *tab, click on the drop down arrow under* **PivotTable** *and choose* **PivotChart**.
4. *Click* **OK** *to accept the default values when creating the* **PivotTable**.
5. *Format the* **PivotTable** *to show* **Years** *in columns,* **Regions** *in rows and* **Sales** *as the data.*
6. *Format the data as* **Number**, **zero decimal places**.
7. *Rename each column* **2008 Sales**, **2009 Sales** *and* **2010 Sales**.
8. *Reposition the chart to where you can see all of the* **PivotTable**.
9. *Take off the* **Grand Totals for Columns** *and* **Grand Totals for Rows.**
10. *Select the* **PivotChart**.
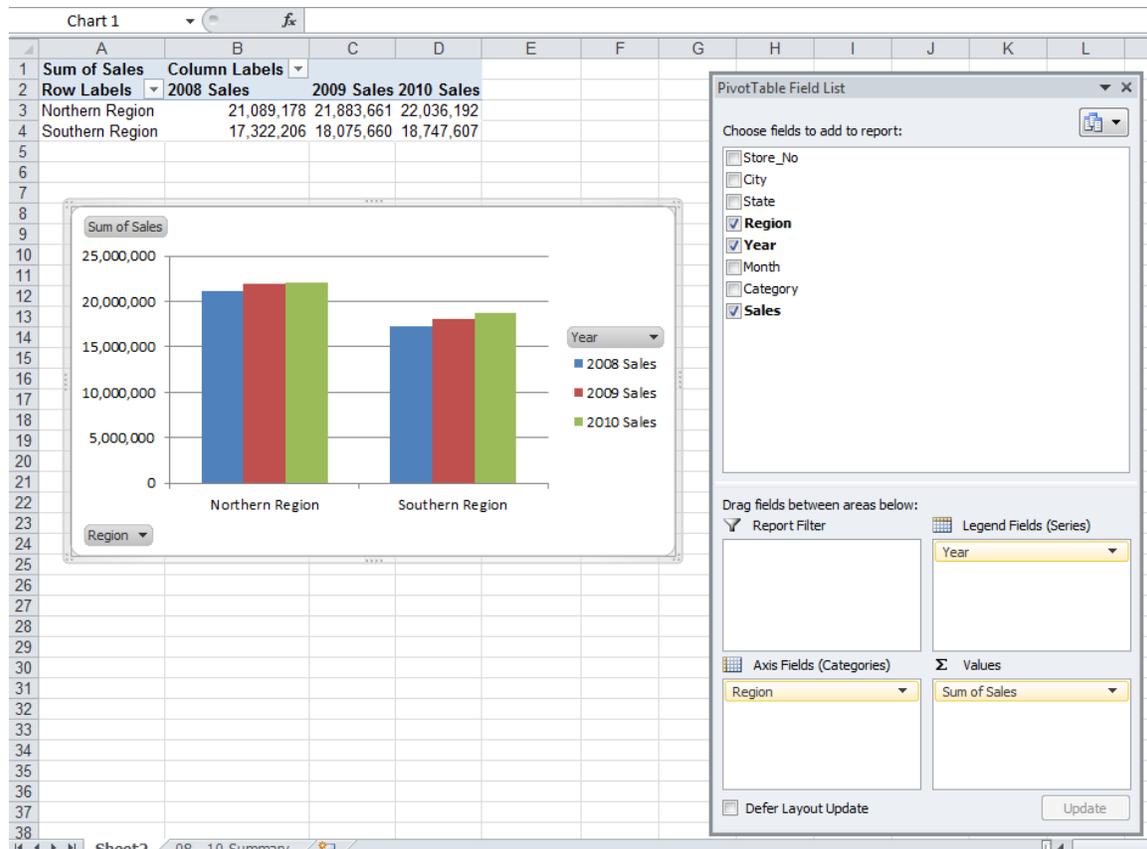
Your screen should look similar to this:

Figure 13.25

At this point, you can click on the chart and format it just like any other chart. The main difference is that the data in the chart is tied to a PivotTable. And in the PivotTable Field List, the Column Labels section is replaced with Legend Fields (Series), and the Row Labels section is replaced with Axis Fields (Categories). But the chart doesn't tell us too much, does it? Let's rearrange the PivotTable to have it show sales by state instead of by region.

11. *Take out* **Region** *in the* **Axis Fields (Category)** *section and replace it with* **State**.
12. *Reposition the chart to where it is under the* **PivotTable**.
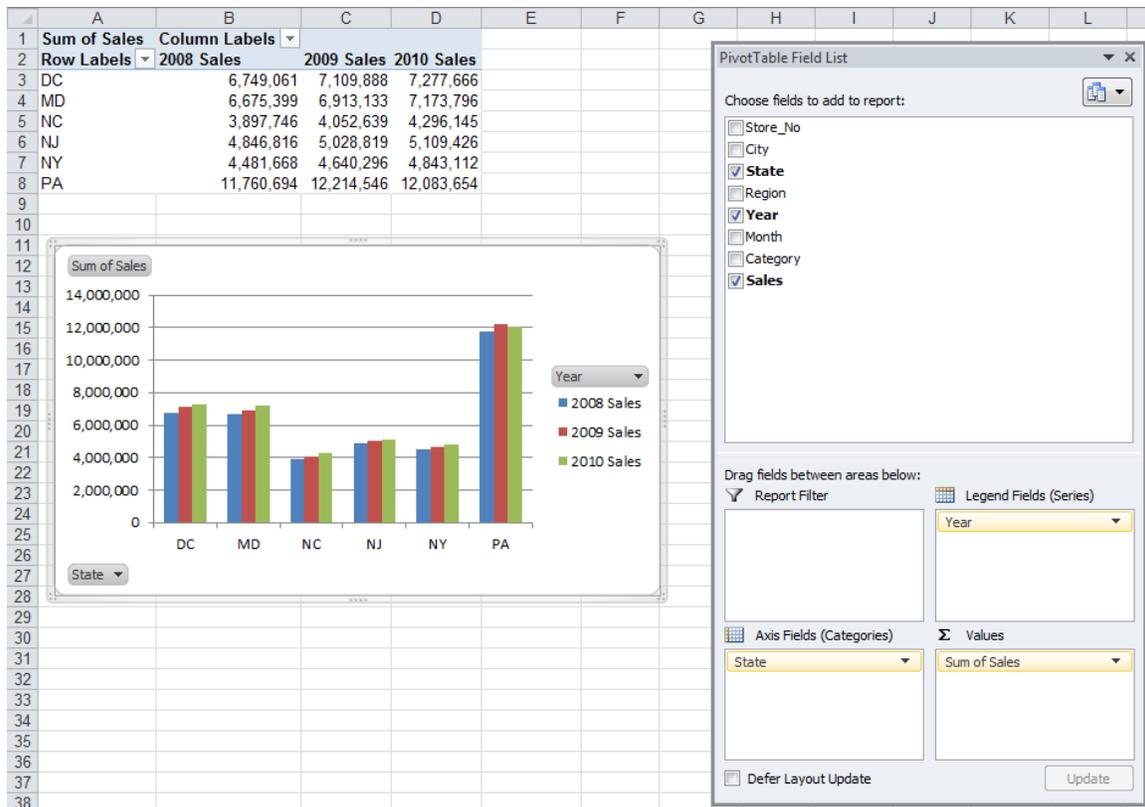
Figure 13.26

Clearly, PA has the largest amount of annual sales, with DC and MD running neck and neck for second and third places.

> *13. Save and close the file.*

PivotCharts are a very convenient way to create and manipulate charts in a fast and effective manner. Just remember that you can double-click and right-click just about anything you want to change. Use the Design and Layout tabs that come with chart development. And always remember that you can click the Undo to correct your mistakes.

SmartArt Graphics

Do you remember how we created a flowchart by using objects in the Insert tab? Excel has similar, preformatted charts that are accessible by using the SmartArt functionality. In SmartArt, there are many types of diagrams that can be useful to an organization. You can access these objects from the Insert tab.

1. *Open a blank spreadsheet and save it as* **mySmartArt.xlsx** *in the* **C:\ClineSys\Excel 2010\Chapter13** *folder.*
2. *On* **Sheet1**, *click on the* **Insert** *tab, and click on the* **SmartArt** *icon.*
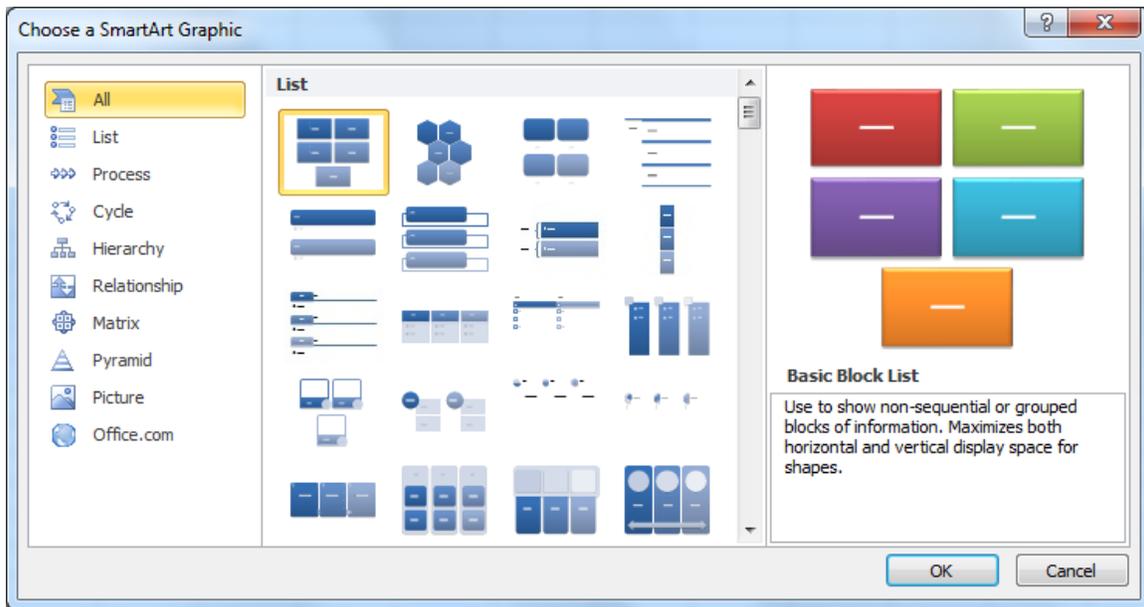
Figure 13.27

The Choose a SmartArt Graphic dialog box appears. As you can see, there are many types of SmartArt objects from which to choose. Feel free to click on each one to see what it does, and play around with each if you think it would be useful to your organization. For the next exercise, we'll use the Organization Chart object in the Hierarchy section.

3. *Click on* **Hierarchy** *in the left section of the dialog box, then click on* **Organization Chart** *(the first object) in the middle section, and click* **OK**.
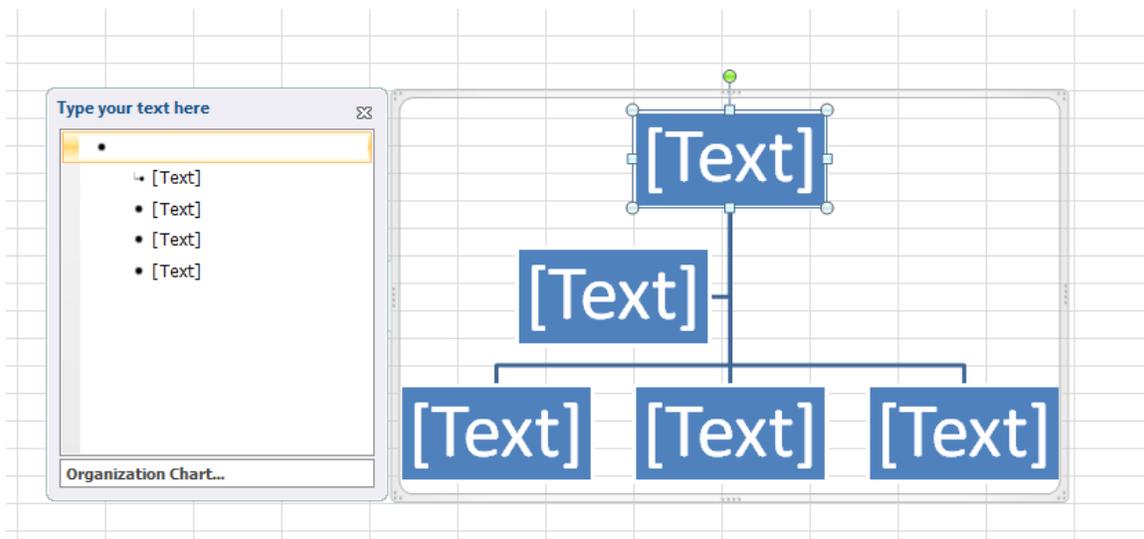
Figure 13.28

You use the SmartArt objects just like charts or other objects. The sizing handles on the corners and middle of the outside edges of the chart make it easy to resize and position the chart exactly how you want it. We will now create an organization chart.

4. *With the first box (on top) selected, type* **President** *in the* **Type your text here box** *on the left.*
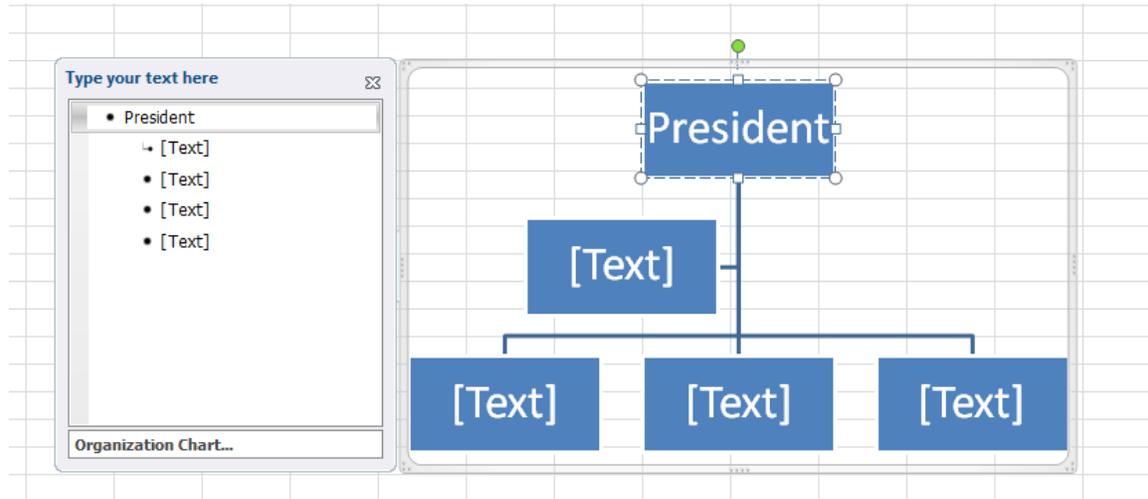

Figure 13.29

Notice that as you type, the sizes of all the boxes changes to accommodate the text.

5. *Click on the box under* **President** *and type* **President Assistant**.
6. *In the lower three boxes, type* **Vice President of Sales***;* **Vice President of Purchasing***;* **Vice President of Operations**.
7. *Click outside the* **Organization Chart** *to deselect it.*
8. *Take off the gridlines on the spreadsheet by clicking on the* **File** *tab, click on* **Options**, *click on the* **Advanced** *section, and uncheck the* **Show Gridlines** *box in the* **Display options for this worksheet***: section.*
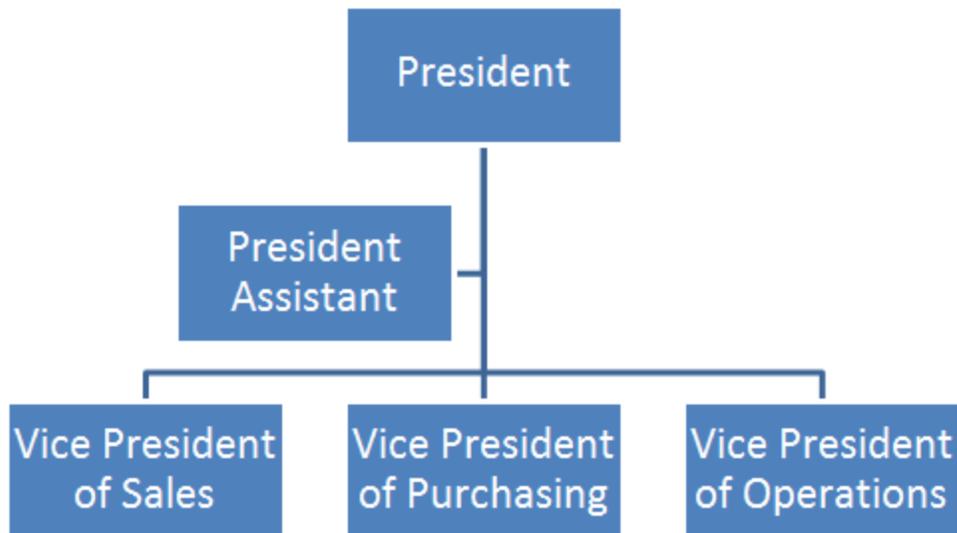9. *Click* **OK**.

Figure 13.30

Now let's add some more levels.

10. *Right-click on the* **Vice President of Operations** *box, point to* **Add Shape***, and choose* **Add Shape Below**.

Notice that all the objects in the entire box become smaller. That is because Excel had to add the new box into the area defined by the organization chart. To make the boxes larger or smaller, simply adjust the outside edges of the chart itself.

11. *In the new box, type* **Director, Accounting**.
12. *Below* **Director, Accounting***, add an assistant box called* **Director, Accounting Assistant**.

You should get the picture now. You should be able to complete the rest of the chart on your own.

13. *Under* **Director, Accounting***, create a box for* **Manager, General Ledger**.
14. *Create another box under* **Director, Accounting** *called* **Manager, Accounting Systems.**
15. *Drag the* **Manager, Accounting Systems** *box over to the left to be on the same level as* **Manager, General Ledger**.
16. *Resize the* **President** *box to be larger than the others (our president has a real big ego).*
17. *Resize the organization chart as you work on it to fit all of the text boxes, then click outside the diagram to deselect it.*
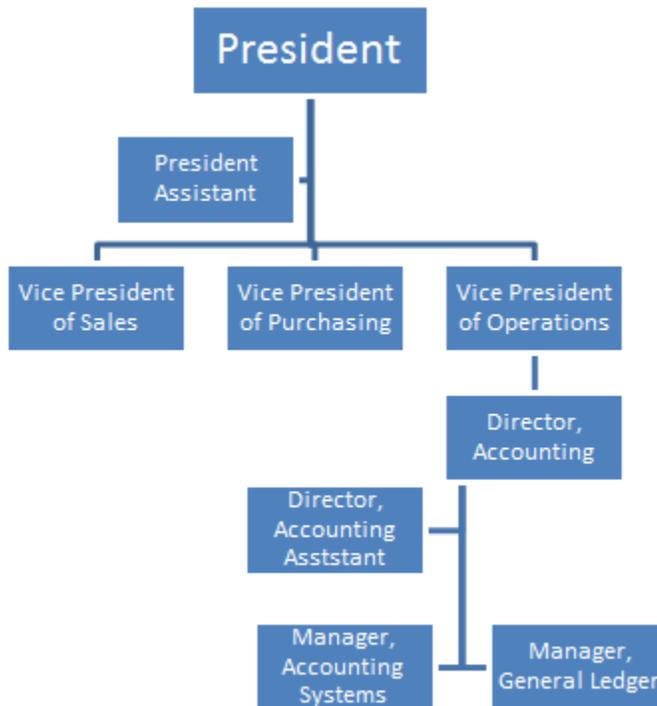
Your diagram should now look something like this:

Figure 13.31

   18. Save the file

Many people use costly programs to create these types of charts, but I really like Excel's built-in tools.

Importing Objects

To finish up the chapter, let's talk a little about **importing** objects to and **exporting** objects from an Excel file. In this first example, we'll import a slide from a PowerPoint presentation into a blank Excel spreadsheet.

   1. *Click on* **Sheet2** *of the* **mySmartArt.xlsx** *file.*
   2. *On the* **Insert** *tab, click on the* **Object** *button in the* **Text** *group.*
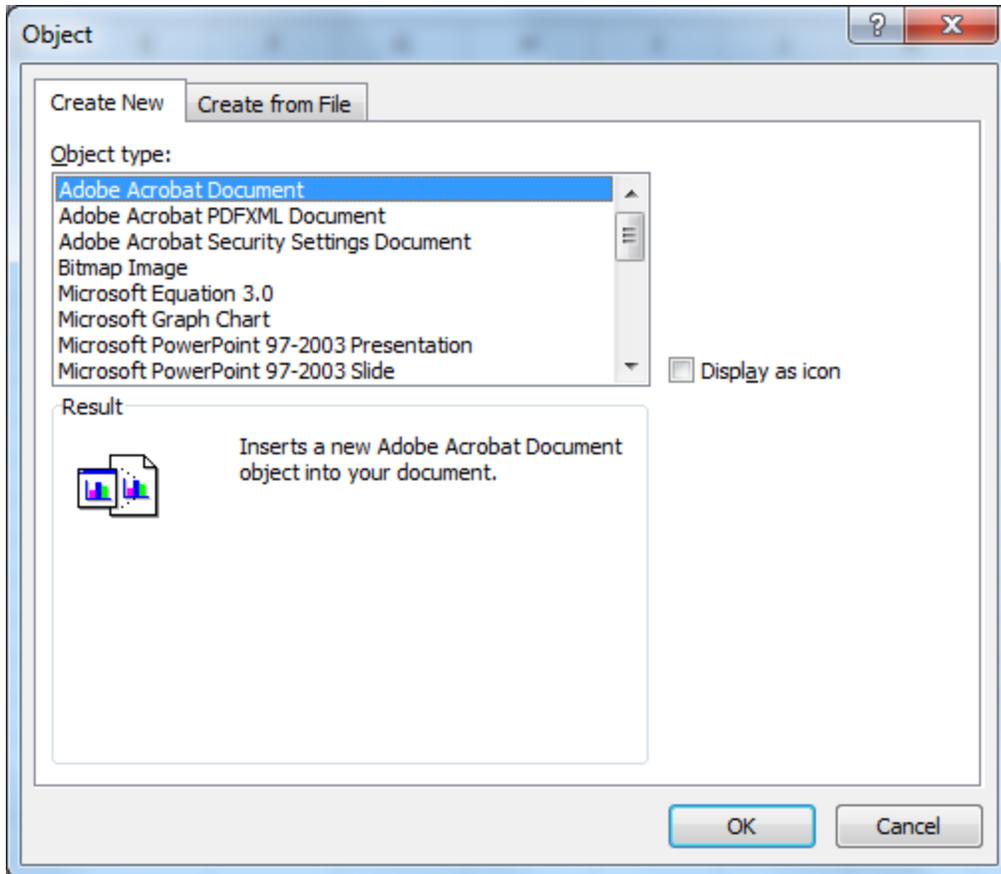
Figure 13.32

The Object dialog box appears.

3. *Click on the* **Create from File** *tab, and click the* **Browse** *button.*
4. *Navigate to the* **C:\ExcelCEO\Excel 2010\Chapter13** *folder, click on* **AnnualReportCover.pptx** *and click* **Insert**.
5. *In the* **Object** *dialog box, click on the* **Link to file** *check box and click* **OK.**
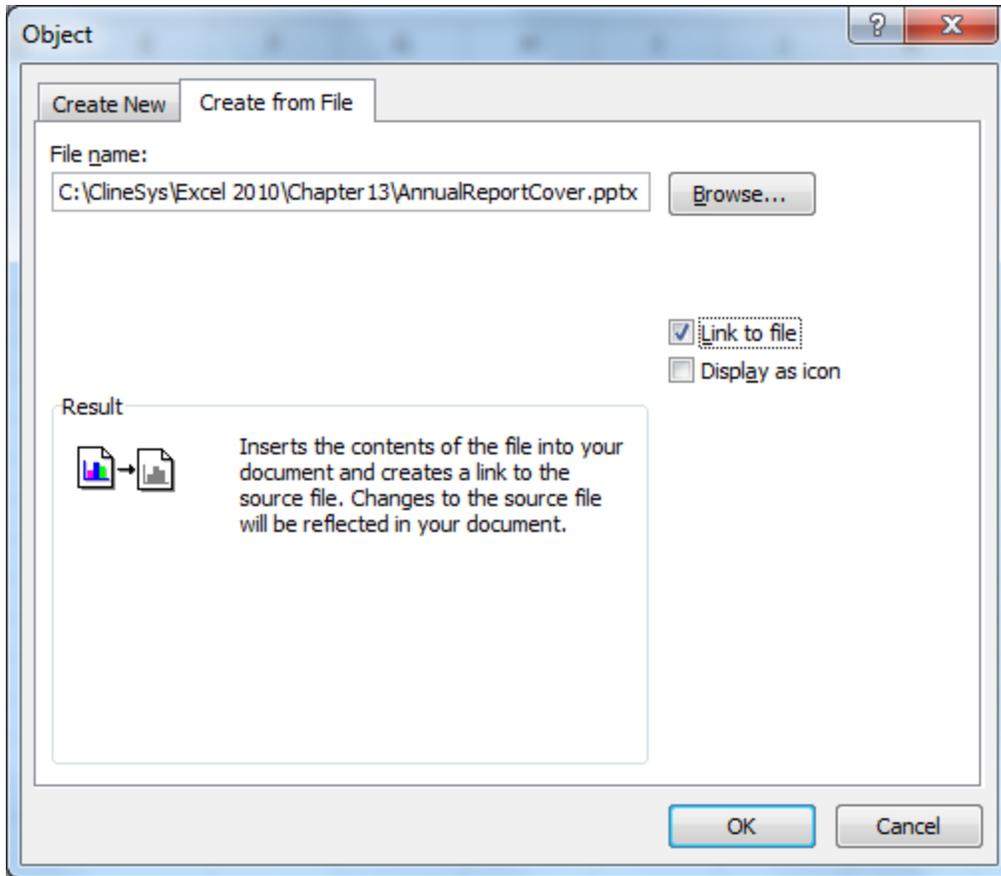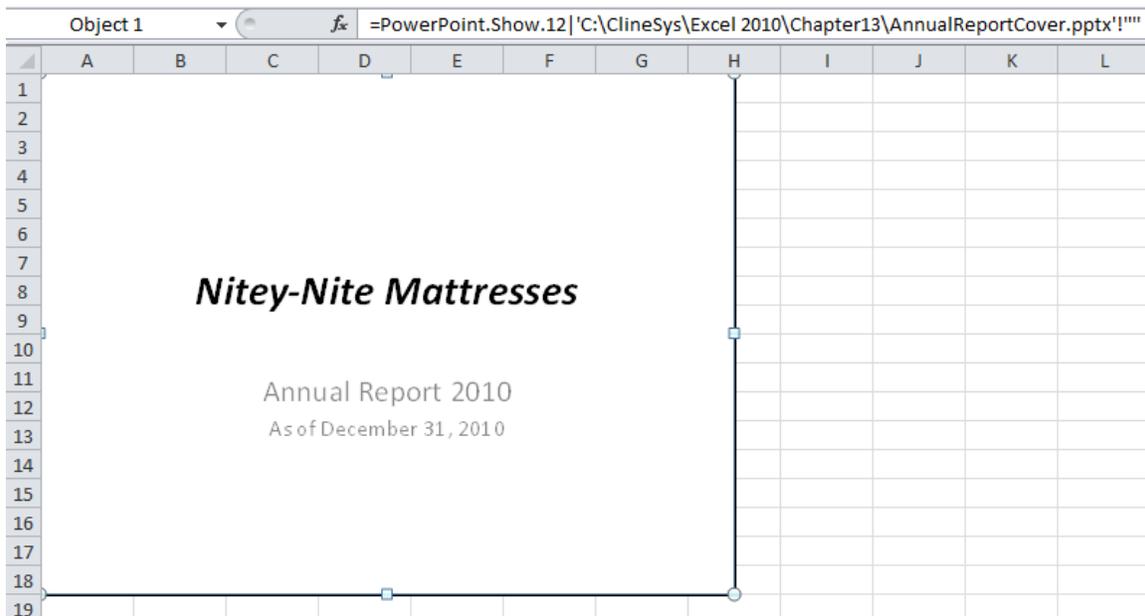
Figure 13.33

Figure 13.34

The object appears on the spreadsheet. Notice that the function box reads:

**=PowerPoint.Show.12|'C:\ExcelCEO\Excel 2010\Chapter13\
AnnualReportCover.pptx'!''''.**

This means that the object is linked to the Excel file. To edit the object in PowerPoint, just use your right-click friend.

> 6. *With the linked object selected, right-click on the object, point to* **Presentation Object** *and click* **Edit***.*

PowerPoint opens up to the file you linked to. To edit the object in Excel, you must open the PowerPoint file first, save it, then it will be updated in the spreadsheet.

> 7. *When* **PowerPoint** *opens up, change the* **Years** *from* **2010** *to* **2009,** *save and close the* **PowerPoint** *file (Make sure to save the PowerPoint file as its original name, AnnualReportCover).*
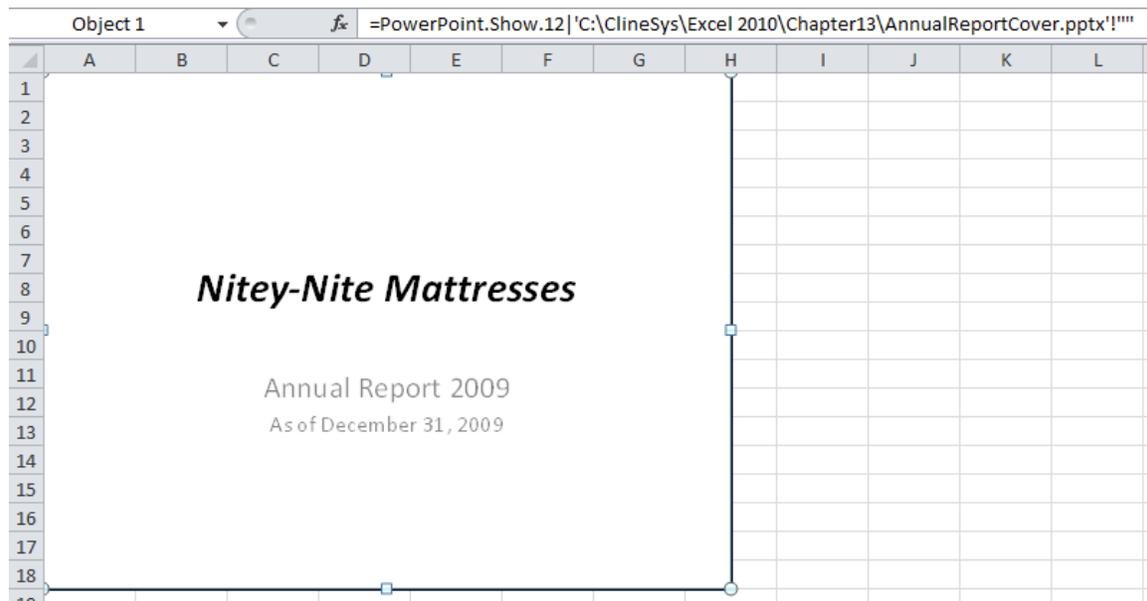

Figure 13.35

The object in the spreadsheet is now updated for 2009.

> 8. *Save and close the file*.

Embedding Objects

In the last exercise, you linked a PowerPoint slide (or object) to an Excel file. One advantage on linking a file is that when the source file changes, the linked object changes as well. A disadvantage is that the location of the source file may change, or the linked file may be sent to another person who doesn't have the same source file in their system or they don't have access to it. When this happens, the link will not work. To overcome

this issue, you can **embed an object**. An embedded object stays with the file it was embedded to. You can embed objects to another Microsoft Office program just as easily as you can import them to Excel. The only difference in the procedure to link an object and to embed an object is when you embed an object, don't check the "Link to file" checkbox in the Object dialog box, as illustrated in Figure 13.30. As long as you don't have space or size considerations, embedding an object can many times be a better alternative to linking an object.

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 13, Section 2 of 2** option and complete the review questions.*

Conclusion

In this chapter, you learned how to work with charts. You created and edited a basic chart. You learned how to reposition or move a chart to another part of the spreadsheet. You learned how to create a Sparkline. You added a trendline to show the direction the data is moving on a chart. You created a pie chart and explored PivotCharts. You learned how to use Excel's SmartArt functionality by creating and modifying an organizational chart diagram. Finally, you learned how to import objects to and export objects from Excel.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER FOURTEEN –ANALYSIS TOOLS

In this chapter, you will:

- Use Goal Seek and Solver.
- Calculate Descriptive Statistics using Data Analysis.
- Perform Conditional Formatting.
- Use Data Bars.
- Turn the Full Screen functionality off and on.
- Create a Hyperlink.

When I was learning to program web pages, I decided to create a project of my own. Since I am a family history novice, I set out to write a genealogy program on the Internet. After about a year of part-time programming, I showed it to my sister-in-law, an avid genealogist. All I had programmed was the functionality – I hadn't made it look good yet. Her response was kind of "ho-hum" and she was obviously not thrilled with it. I took a couple of weeks to put in some graphics, some colors and images and showed it to her again. When she saw it, her eyes lit up and said, "*This is GREAT!*" I hadn't touched the functionality, but colors and a little cleanup work, with solid functionality basics, sold the project much better. I enjoy creating tools that are easy for inexperienced end-users to navigate through and manipulate. Typically, the easier a spreadsheet is to use, the harder it is to develop. One tool that is easy to use and allows you to arrive at an answer very quickly is called Goal Seek. We'll begin this chapter by discussing Goal Seek.

Goal Seek

Goal Seek is a tool sometimes called a "what-if analysis." When you know the desired result of a single formula but not the input value, and the formula needs to determine the result, you can use Goal Seek. When using Goal Seek, Excel changes the value in one cell potentially hundreds of times until the formula returns the result you want.

Let's try an example.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter14\2010_Forecast.xlsx.**
2. *Save as* **C:\ExcelCEO\Excel 2010\Chapter14\my2010_Forecast.xlsx.**

◢	A	B	C	
1		2010 Forecast	% of Revenue	
2	**Revenue**			
3	Mattress Sales	250,000	90.9%	
4	Pillow Sales	25,000	9.1%	
5	**Total Revenue**	**275,000**	**100.0%**	
6				
7	**Fixed Expenses**			
8	Salary Expense	50,000	18.2%	
9	General Admin Expense	11,500	4.2%	
10	Building Expense	5,000	1.8%	
11	**Total Fixed Expenses**	**66,500**	**24.2%**	
12				
13	**Variable Expenses**			
14	Cost of Merchandise	68,750	25.0%	
15	Selling Expense	35,750	13.0%	
16	**Total Variable Expenses**	**104,500**	**38.0%**	
17				
18	**Total Expenses**	**171,000**	**62.2%**	
19				
20	**Net Income**	**104,000**	**37.8%**	
21				

Figure 14.1

This is a simple file that calculates the Net Income for one store. In this file, the Mattress Sales are hard-coded, as are the Fixed Expenses. Pillow sales are estimated at 10% of Mattress Sales, and the formula in Cell B4 reflects that assumption. The Variable Expenses are estimated as a percentage of Total Revenue. Your manager has asked you to find out what level of sales we should have in order to have Net Income of $125,000. Right now, Net Income is at $104,000, $21,000 off from where it needs to be. Let's increase Mattress Sales by $50,000 and see what the Net Income figure changes to.

3. *Change* **Cell B3** *(***Mattress Sales***) to* **$300,000**.

Net Income changes to $138,100. We would probably spend quite a bit of time playing around with the Mattress Sales number to reach an exact $125,000, but Goal Seek will help us in one step.

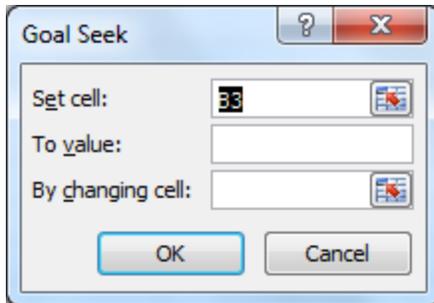4. *On the* **Data** *tab, click on* **What-If Analysis** *in the* **Data Tools** *group and choose* **Goal Seek…**

Figure 14.2

> 5. *Change the* **Set cell***: box to* **B20** *(which is* **Net Income***).*
> 6. *Type* **125000** *in the* **To value:** *box*
> 7. *Type* **B3** *(or choose* **Cell B3** *with your mouse) in the* **By changing cell:** *box.*
> 8. *Click* **OK***.*

Here we are telling Excel to make Net Income $125,000 by changing the Mattress Sales cell.
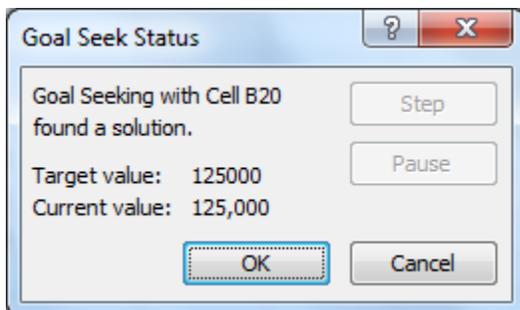

Figure 14.3

Excel runs through a few iterations, as we would do by manually changing the Mattress Sales cell, but Excel does it a lot faster than we can.

> 9. *Click* **OK** *in the* **Goal Seek Status** *dialog box.*

B3		f_x	280791.788856305	
	A	B	C	D
1		2010 Forecast	% of Revenue	
2	**Revenue**			
3	Mattress Sales	280,792	90.9%	
4	Pillow Sales	28,079	9.1%	
5	**Total Revenue**	308,871	100.0%	
6				
7	**Fixed Expenses**			
8	Salary Expense	50,000	16.2%	
9	General Admin Expense	11,500	3.7%	
10	Building Expense	5,000	1.6%	
11	**Total Fixed Expenses**	66,500	21.5%	
12				
13	**Variable Expenses**			
14	Cost of Merchandise	77,218	25.0%	
15	Selling Expense	40,153	13.0%	
16	**Total Variable Expenses**	117,371	38.0%	
17				
18	**Total Expenses**	183,871	59.5%	
19				
20	**Net Income**	125,000	40.5%	
21				

Figure 14.4

The result is that Mattress Sales need to be $280,792 in order to have Net Income of exactly $125,000. Notice that the exact amount changed in Cell B3 is $280,791.788856305, so Excel had to go through a bunch of iterations to arrive at that exact figure.

> 10. *Save and close* **C:\ExcelCEO\Excel 2010\Chapter14\my2010_Forecast.xlsx.**

Solver

Goal Seek is a great tool if you want to find a solution based on changing one variable, but what it there are multiple inputs in your analysis that could change? For that, Excel provides a nifty tool called **Solver**. Solver does not come with the standard installation of Excel, so when you launch Solver, you may be prompted to install it. You must go through the installation of Solver to continue with the exercise.

In this next example, you have a charitable opportunity. Area management has been asked to donate mattresses that are slated to be discontinued to a local homeless shelter. Nitey-Nite should give away as many mattresses to the shelter as possible without going over a retail price of $10,000 in total. The schedule in the next file we will work with

shows the item number, manufacturer, description and retail price of each item that could be donated. Your job is to find out the maximum number of each item that could be donated without going over the $10,000 budget.

One advantage to using Solver is that it allows you to use **constraints**. A constraint is simply a limitation placed on Solver. For example, one constraint in our analysis is that the budget, or total retail price of the mattresses donated, cannot exceed $10,000. Another constraint placed on us by management is that we must give away at least two of each mattress type. You can have more than two constraints when using Solver, as you will see in this next exercise. In fact, to get the best analysis, you should input as many constraints as necessary to make the analysis as reliable as possible. Let's first make sure that Solver is installed and then set up the analysis.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter14\Solver.xlsx.**
2. *Save as* **C:\ExcelCEO\Excel 2010\Chapter14\mySolver.xlsx**

If the Solver button does not appear in the Analysis group of the Data tab, you need to install it. To do so, follow Steps 3 – 7 below. If you already have it, skip to Step 8.

3. *Click on the* **File** *tab and click on the* **Options** *button at the bottom of the screen (the* **Excel Options** *dialog box appears)*
4. *Click on the* **Add-Ins** *option on the left side of the screen.*
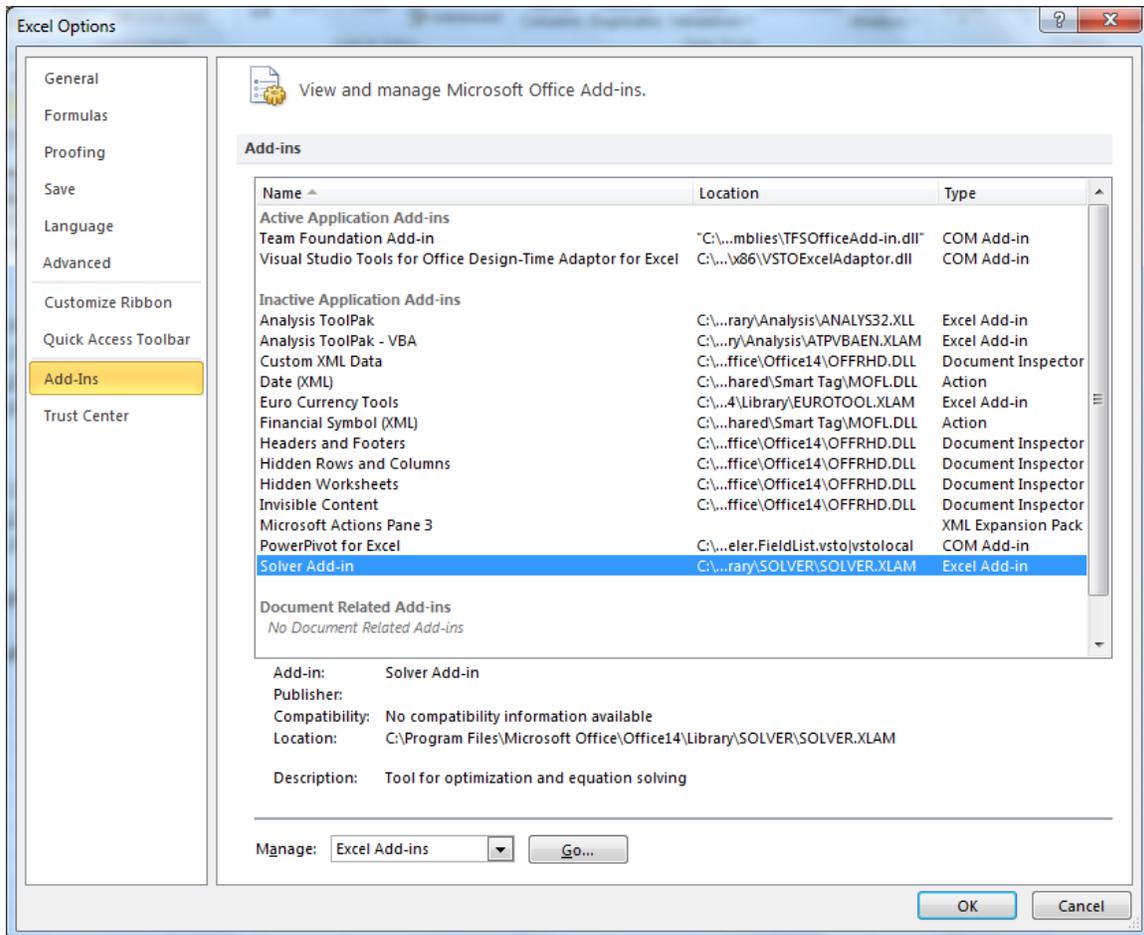
Figure 14.5

You should see Solver Add-in listed in the list of add-ins. If you don't see it, Solver was not installed with your version of Excel, and you will have to obtain a version of Excel that has this add-in.

5. *Click on* **Solver Add-in**.
6. *Make sure* **Excel Add-ins** *is chosen in the* **Manage:** *box at the bottom of the* **Excel Options** *dialog box and click* **Go**.
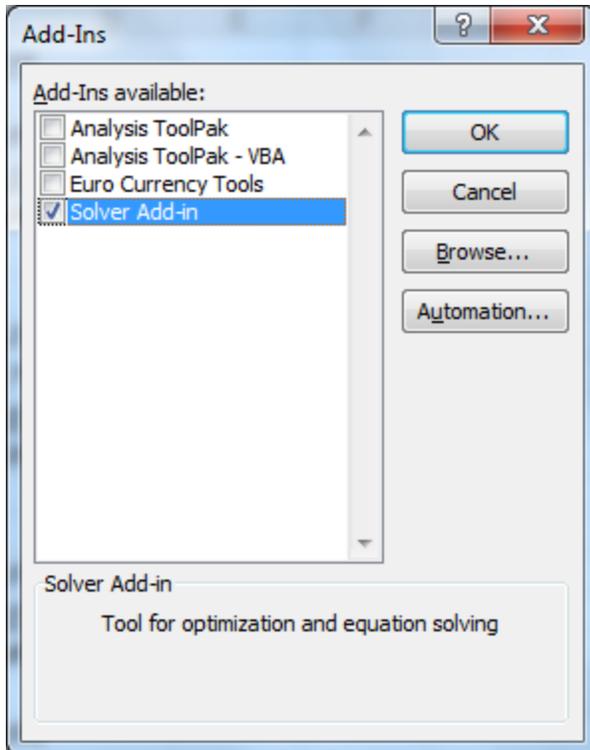
Figure 14.6

7. *In the **Add-Ins** dialog box, check the **Solver Add-in** box and click **OK**.*

After you load Solver, it will be available on the Analysis group of the Data tab.

	A	B	C	D	E	F	G	H	I
1	**Item_No**	**Manufacturer**	**Size**	**Quality**	**Series**	**Retail Price**	**No. to Donate**	**Total to Donate**	
2	LMTF167	Leavan	Twin	Fair	Daisey	79.00	1	79.00	
3	DMKG127	Dream	King	Good	Maple	759.00	1	759.00	
4	DMQF130	Dream	Queen	Fair	Pine	509.00	1	509.00	
5	CMKF142	Cama	King	Fair	Bronze	559.00	1	559.00	
6	CMTB157	Cama	Twin	Best	Platinum	319.00	1	319.00	
7							5	2,225.00	
8									
9	**Constraints**								
10	Total Budget	10,000.00							
11	Minimum Number of								
12	Daisey series to donate	4							
13	Minimum Number of								
14	all other to donate	2							
15	Maximum number of any								
16	one item to donate	5							
17									

Figure 14.7

Let's talk a little more about constraints. We've already mentioned two constraints, but there are more. The goal here is to give away as many mattresses as possible while working within the budget we have. Let's list all of the constraints for this analysis.

- The budget for this opportunity is $10,000.
- We must give away all of the Daisey mattresses (we have a total of four in stock).
- The only cells we can change are the number of items to donate (Cells G2 through G6).
- The minimum number of mattresses to donate per item is two, except for the Daisey series, which we will give away all four.
- The maximum number of each mattress item to donate is five.
- The number of mattresses (Cells G2 through G6) should be integers (no fractions, like 2.6 mattresses).

With these constraints in mind, let's set up Solver to do the analysis.

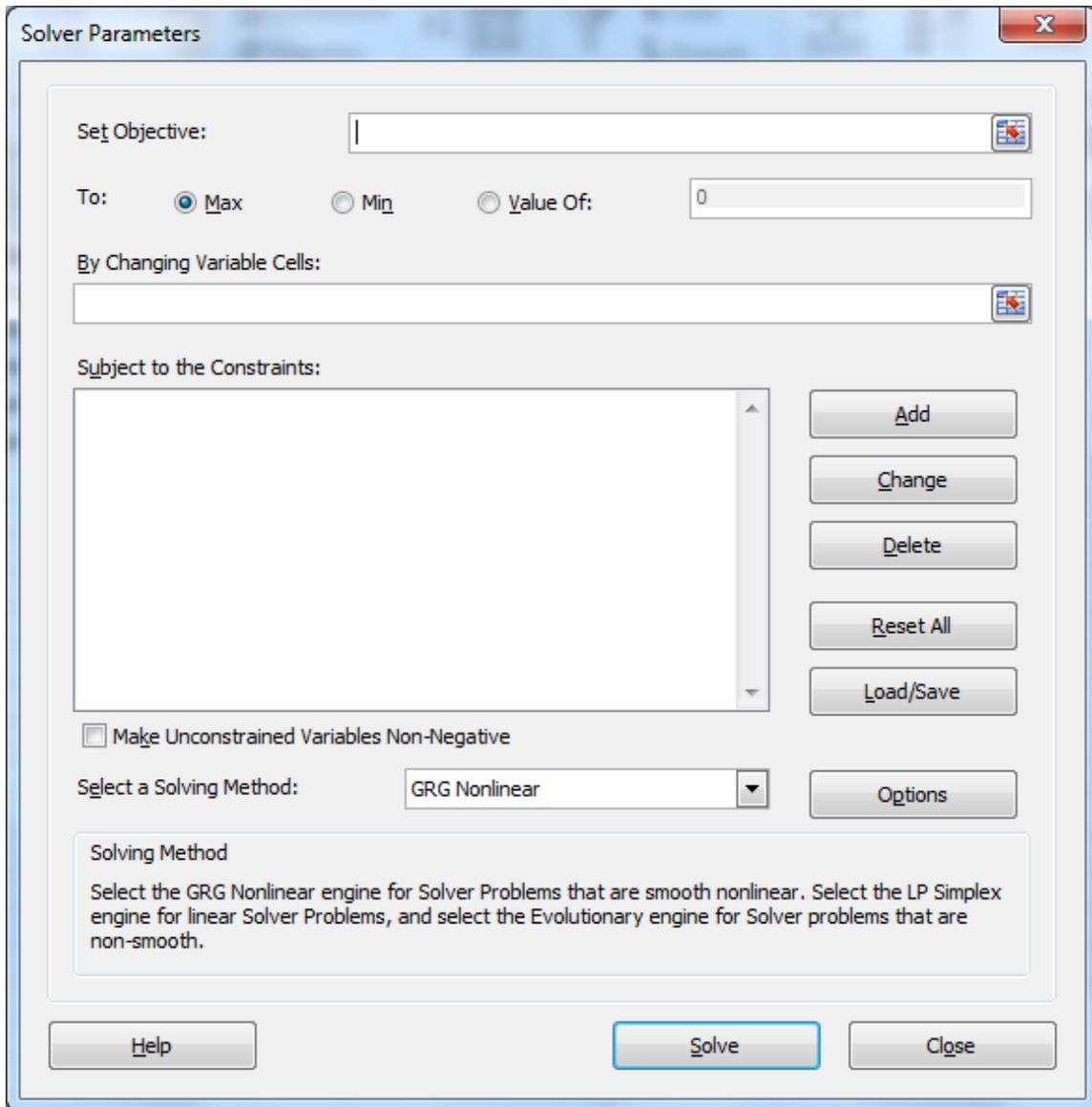8. *Click on the* **Solver…** *button on the* **Analysis** *group on the* **Data** *tab.*

Figure 14.8

9. *In the* **Solver Parameters** *dialog box, set the* **Set Objective** *to* **$G$7.**
10. *Make sure the* **Max** *radio button on the* **Equal To:** *line is chosen, as we want to donate as many mattresses as possible.*
11. *Click in the* **By Changing Variable Cells** *box and choose* **Cells G2 through G6.**
12. *Click the* **Add** *button to add a constraint.*

Figure 14.9

This is the box where you will add all the constraints.

> *13. In the **Cell Reference** box, choose **Cell H7**.*
> *14. Make the **Operator** box display "<=".*
> *15. In the **Constraint** box, choose **Cell B10**.*

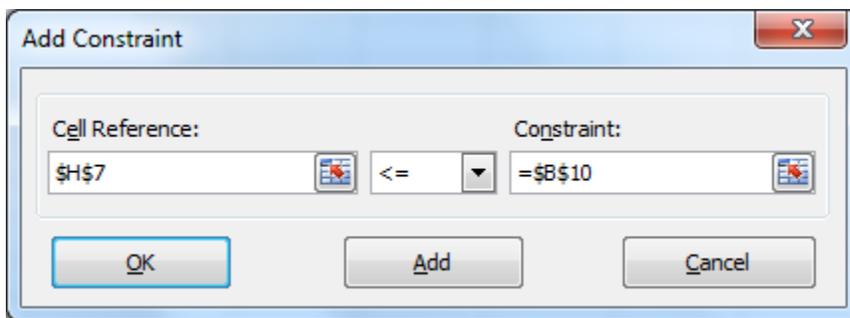This constraint sets a maximum dollar amount of mattresses to give away, or $10,000.

Figure 14.10

> *16. Click the **Add** button to add another **constraint**.*

You should be able to input the remaining constraints yourself.

> *17. Using the **Add Constraint** box, add all of the constraints previously*
> *discussed.*
> *18. Once you have added all constraints, click the **OK** button.*
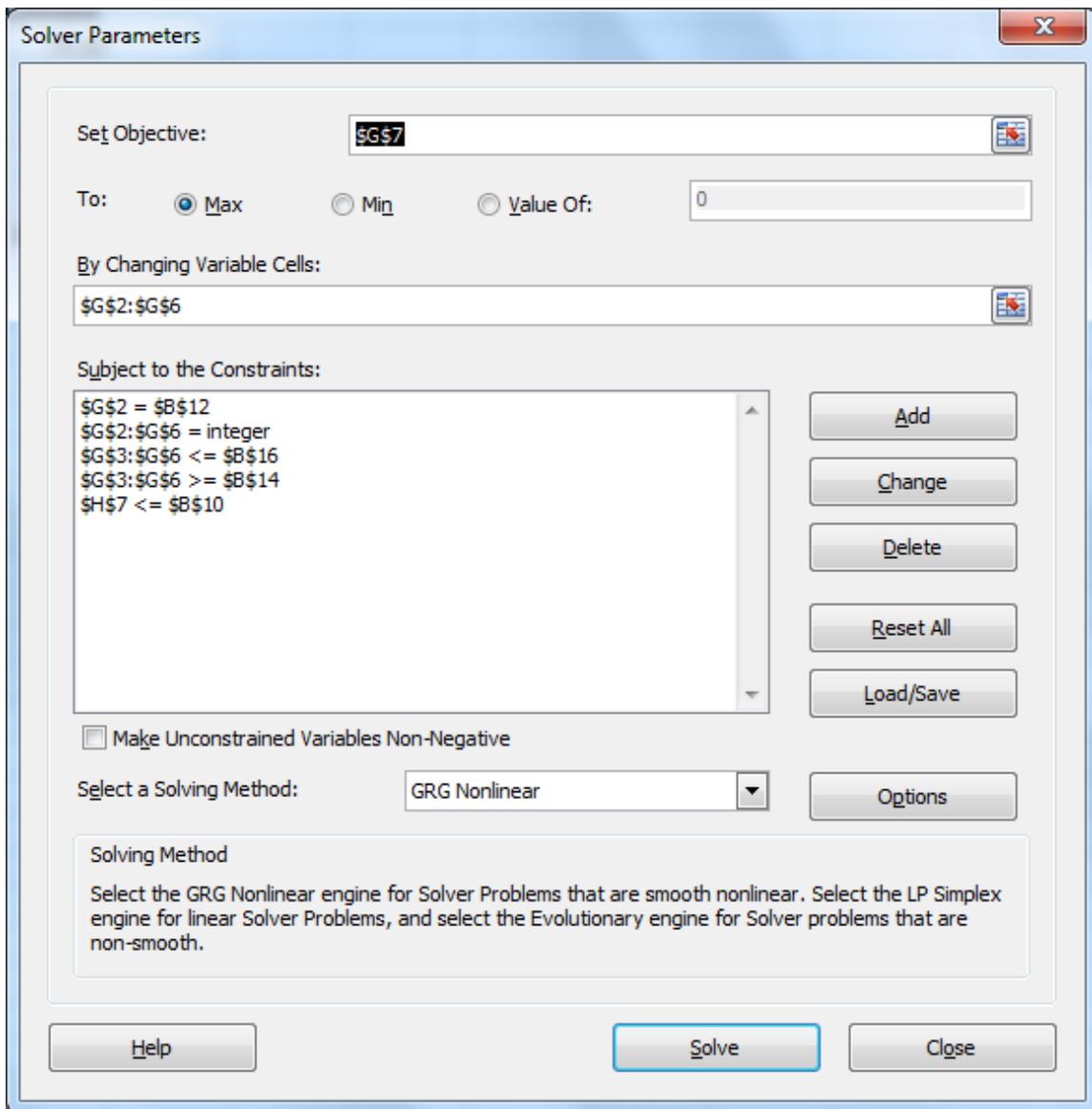> *19. Check your parameters with **Figure 14.11**.*

Figure 14.11

20. Click the **Solve** *button in the* **Solver Parameters** *box.*

	A	B	C	D	E	F	G	H	I	J
1	**Item_No**	**Manufacturer**	**Size**	**Quality**	**Series**	**Retail Price**	**No. to Donate**	**Total to Donate**		
2	LMTF167	Leavan	Twin	Fair	Daisey	79.00	4	316.00		
3	DMKG127	Dream	King	Good	Maple	759.00	3.621870883	2,749.00		
4	DMQF130	Dream	Queen	Fair	Pine	509.00	5	2,545.00		
5	CMKF142	Cama	King	Fair	Bronze	559.00	5	2,795.00		
6	CMTB157	Cama	Twin	Best	Platinum	319.00	5	1,595.00		
7							23	10,000.00		
8										
9	**Constraints**									
10	Total Budget	10,000.00								
11	Minimum Number of									
12	Daisey series to donate	4								
13	Minimum Number of									
14	all other to donate	2								
15	Maximum number of any									
16	one item to donate	5								
17										

Solver Results

Solver found a solution. All Constraints and optimality conditions are satisfied.

Reports
Answer
Sensitivity
Limits

⦿ Keep Solver Solution

○ Restore Original Values

☐ Return to Solver Parameters Dialog   ☐ Outline Reports

OK   Cancel   Save Scenario...

Solver found a solution. All Constraints and optimality conditions are satisfied.
When the GRG engine is used, Solver has found at least a local optimal solution. When Simplex LP is used, this means Solver has found a global optimal solution.
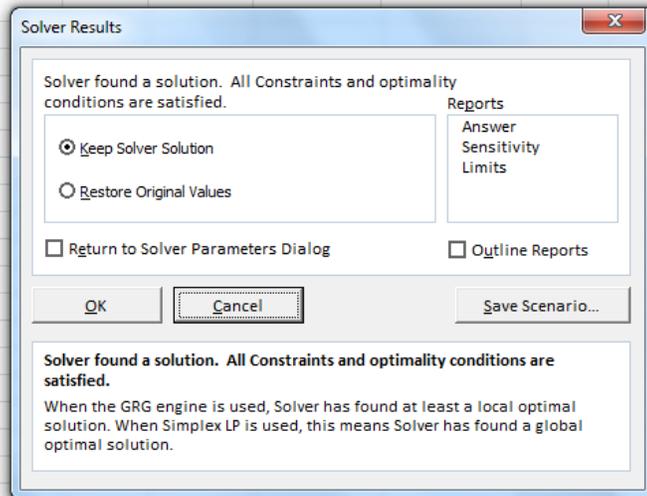
Figure 14.12

And after a few seconds, Solver goes through a whole bunch of iterations, trying different values in Cells G2 through G6 and comes up with the highest solution for the number of mattresses to be donated. Now, as of the writing of this chapter, there was still a problem with Solver's integer constraints in Excel 2010. As you can see in the example, Cell G3 returned a value of 3.621870883, which should not happen. When I asked Microsoft about it, they said that it was a problem which they will attempt to fix in future versions of Excel 2010. Realistically, you should change the number in Cell G3 to 3 which will return 22 mattresses to donate at a total retail price of $9,528.00. At this point you can save this analysis as a scenario, cancel out of it, keep the solution or restore the original values.

21. Make sure the **Keep Solver Solution** *radio button is selected and click* **OK**.
22. *Save and close the file.*

Review Questions: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 14, Section 1 of 2** *option and complete the review questions.*

Descriptive Statistics

Another handy tool that Excel has is **Descriptive Statistics**. Descriptive statistics allows you to run a series of statistical analyses on a set of numbers without having to write each formula. This is not a feature I use often; however, real geeky people like to use it to display a set of statistical numbers that analyzes the entire dataset. This is not a tool that comes with the standard installation of Excel, so you may have to install it to do this next exercise.

1. *Open the* **May_Sales.xlsx** *file at* **C:\ExcelCEO\Excel 2010\Chapter14\.**
2. *Save the file in the same folder as* **myMay_Sales.xlsx.**

If the Data Analysis button does not appear in the Analysis group of the Data tab, you need to install it. To do so, follow Steps 3 – 7 below. If you already have it, skip to Step 8.

3. *Click on the* **File** *tab and click on the* **Options** *button at the bottom of the* **Excel Options** *dialog box.*
4. *Click on the* **Add-Ins** *option on the left side of the screen.*
5. *Make sure* **Excel Add-ins** *is chosen in the* **Manage:** *box at the bottom of the* **Excel Options** *dialog box and click* **Go.**
6. *Check the* **Analysis Toolpak** *check box and click* **OK.**
7. *Follow the directions to install* **Data Analysis.**

After you load Data Analysis, it will be available on the Analysis group of the Data tab.

	A	B
1	Date	Sales
2	5/1/2010	52,989
3	5/2/2010	27,412
4	5/3/2010	19,234
5	5/4/2010	22,280
6	5/5/2010	27,542
7	5/6/2010	19,484
8	5/7/2010	14,431
9	5/8/2010	18,875
10	5/9/2010	14,741
11	5/10/2010	18,694
12	5/11/2010	16,092
13	5/12/2010	23,470
14	5/13/2010	25,108

Figure 14.13

This file is a simple file with daily sales for one month. We want to perform a comprehensive statistical analysis on the data in the file, and we'll do it using Descriptive Analysis.

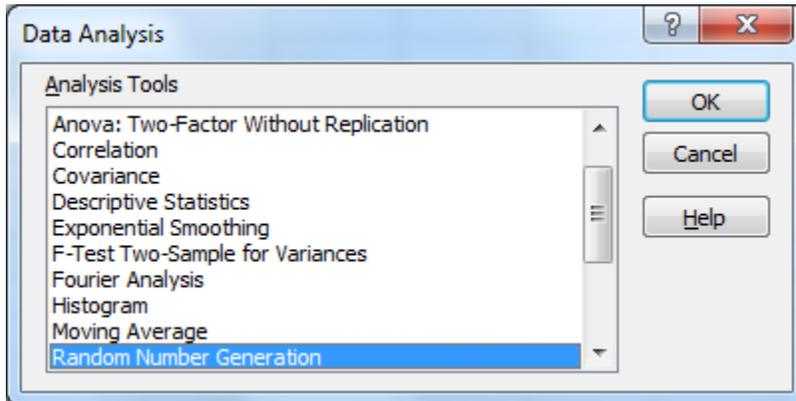8.   *Click on the* **Data Analysis** *button in the* **Analysis** *group of the* **Data** *tab.*

Figure 14.14

9.   *In the* **Data Analysis** *dialog box, select* **Descriptive Statistics** *and click* **OK**.
10. *In the* **Descriptive Statistics** *dialog box, select the* **Input range B2 to B32**.
11. *Make sure the* **Columns** *radio button in the* **Grouped By** *option is checked and that the* **New Worksheet Ply** *radio button in the* **Output options** *is selected.*
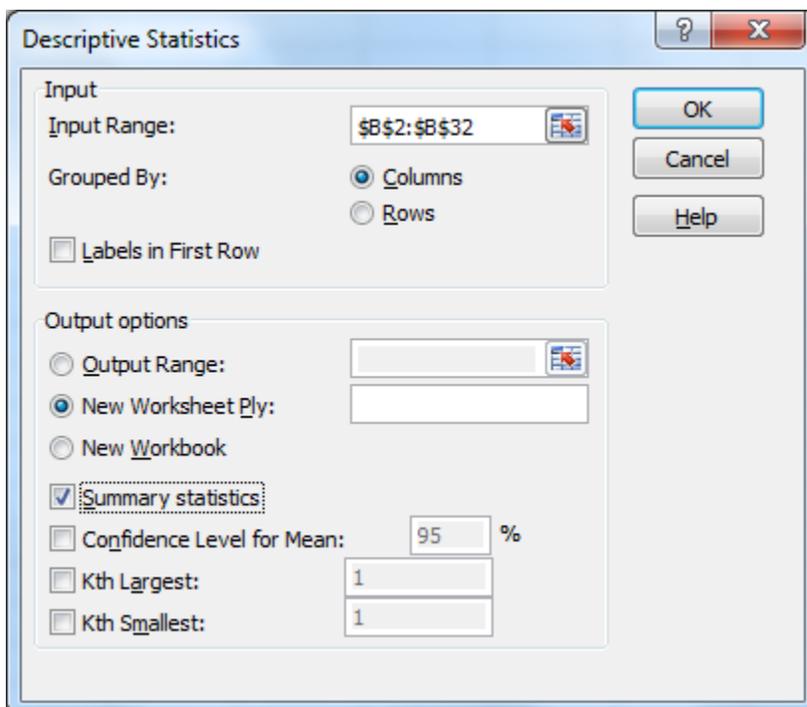12. *Check the* **Summary statistics** *check box.*

Figure 14.15

13. Click **OK***.*

You should get a new worksheet in the May_Sales file that looks like Figure 14.16.

	A	B
1		*Column1*
2		
3	Mean	23114.83
4	Standard E	1202.41
5	Median	22238.34
6	Mode	#N/A
7	Standard D	6694.735
8	Sample Va	44819478
9	Kurtosis	13.19006
10	Skewness	2.993058
11	Range	38558.43
12	Minimum	14430.94
13	Maximum	52989.37
14	Sum	716559.6
15	Count	31
16		

Figure 14.16

Again, I don't use this feature much because I don't typically do some of these in-depth types of statistics, but it may come in handy when you have a manager who thrives on statistical analysis, like actuaries and statisticians. By the way, do you know the difference between an actuary and an accountant?   An actuary doesn't have the personality to be an accountant! (with apologies to actuaries, but it *is* funny!)

14. Save and close the file.

Conditional Formatting

The next topic is **Conditional Formatting**. I have seen conditional formatting used extensively on spreadsheets where the user wanted to make numbers that meet certain criteria stand out.

1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter14\Sales_2010.xlsx***.*
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter14\mySales_2010.xlsx***.*

◢	A	B	C	D	E	F	
1	Paper	% of Budget	Bonus %		Min. Budget	Level	
2	1	0%	0.00%		0	Paper	
3	2	100%	0.50%		80,000	Scissors	
4	3	110%	1.00%		120,000	Rock	
5	4	120%	1.50%				
6	5	150%	2.00%				
7	6	200%	3.00%				
8					Total Bonus	291,205	
9							
10	Scissors	% of Budget	Bonus %				
11	1	0%	0.00%				
12	2	100%	0.50%				
13	3	110%	1.00%				
14	4	125%	1.25%				
15	5	145%	1.50%				
16	6	175%	2.00%				
17							
18							
19	Rock	% of Budget	Bonus %				
20	1	0%	0.00%				
21	2	100%	0.50%				
22	3	105%	0.75%				
23	4	115%	1.25%				
24	5	130%	1.50%				
25	6	150%	2.00%				

Figure 14.17

This file is similar to a file we did in Chapter 10. The Sales tab contains a database for sales for each location by month in 2010. It also contains the Budget, Budget_%, Store_Type and Bonus fields. The Budget_%, Store_Type and Bonus fields contain calculations. You learned how to do all of these calculations in previous chapters, so I'm not going to review them here. The Assumptions tab contains the assumptions (Budget % for all types, and the type values based on Budget). Your assignment in this chapter is to make this spreadsheet easier to read and use.

Conditional Formatting is creating a format in a cell (like font style or background color) whose value meets a certain criteria. Let's suppose that you want to identify all of the stores that did not earn a sales bonus. You also want to highlight all of the stores whose manager made over $2,000 in bonus for any given month. With a report like that, it would be very easy for management to scan down the list of stores in the Sales tab and quickly see who is performing and who is not. For those who did not earn a bonus, let's format all cells that are equal to zero with a bright yellow background with bold red font.

3. *On the* **Sales** *tab, click on* **Cell K2**.
4. *On the* **Home** *tab in the* **Styles** *group, click on the* **Conditional Formatting** *button.*

When you click on the Conditional Formatting button, a number of different options appear. In Excel 2003, Microsoft allowed you to set the formatting of the font and cell background color in Conditional Formatting. In Excel 2007 and 2010, there are numerous additional options available, far too many for me to review in this exercise. As you go through this exercise, explore other options you see that may more suitably fit your needs or style. For this exercise, we will identify all of the cells in the Bonus column that have a 0 with a yellow background with bold red font. Bonuses of $2,000 or more will be displayed with a green bold text.

5. *On the* **Conditional Formatting** *menu, place your cursor over* **Highlight Cells Rules** *and choose* **Equal To**.
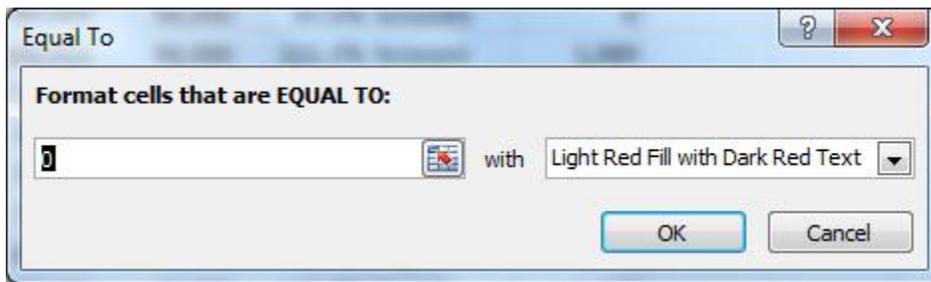

Figure 14.18

The Equal To dialog box pops up. If you click on the drop down menu on the right side of the dialog box, you will see that a yellow background with bold red text is not an available option, so you'll have to create that custom option.

6. *Click on the drop down menu on the right side of the text box, choose* **Custom Format…** *and click* **OK.**
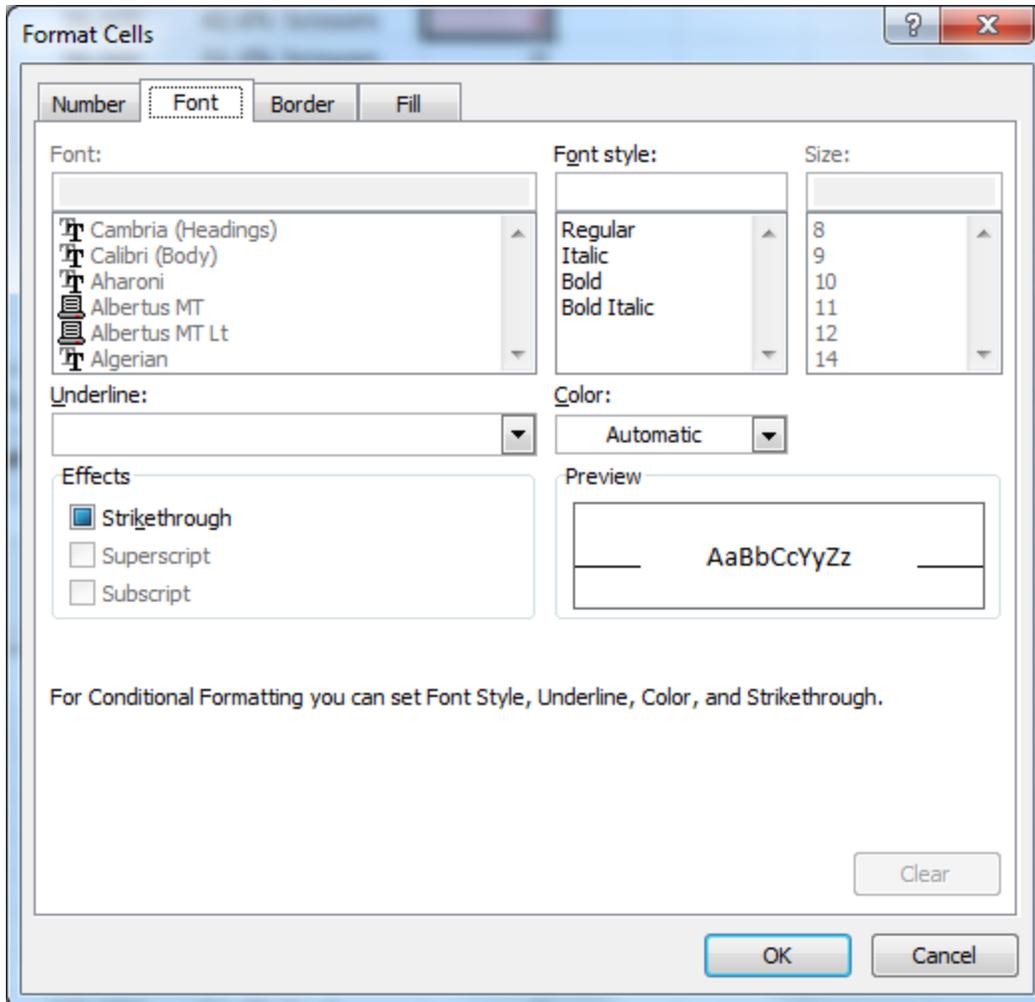
Figure 14.19

7. *With the* **Font** *tab selected, click on the drop down menu under* **Color** *and choose* **Red**.
8. *Under* **Font style**, *click on* **Bold**.
9. *Click on the* **Fill** *tab, choose* **Yellow** *and click* **OK**.
10. *Click* **OK** *in the* **Equal To** *dialog box.*
11. *Use the* **Format Painter** *icon to copy the format in* **Cell K2** *to all of the cells beneath it (or copy the formula to all cells below)*

ss_Rev	Pillow_Rev	Total_Rev	Budget	Budget_%	Store_Type	Bonus
37,107	4,613	41,720	98,000	42.6%	Scissors	0
46,224	4,021	50,245	98,000	51.3%	Scissors	0
51,256	4,578	55,834	98,000	57.0%	Scissors	0
54,584	3,595	58,178	98,000	59.4%	Scissors	0
55,027	3,662	58,689	98,000	59.9%	Scissors	0
56,609	3,911	60,520	98,000	61.8%	Scissors	0
63,045	3,681	66,726	98,000	68.1%	Scissors	0
63,376	4,095	67,471	98,000	68.8%	Scissors	0
77,923	8,318	86,241	98,000	88.0%	Scissors	0
86,017	9,506	95,523	98,000	97.5%	Scissors	0
L01,484	7,430	108,913	98,000	111.1%	Scissors	1,089
L01,337	9,197	110,533	98,000	112.8%	Scissors	1,105
31,686	2,817	34,502	63,000	54.8%	Paper	0
57,618	2,278	59,896	63,000	95.1%	Paper	0
72,269	3,554	75,823	63,000	120.4%	Paper	1,137
81,840	5,530	87,369	63,000	138.7%	Paper	1,311
83,319	5,358	88,676	63,000	140.8%	Paper	1,330
80,627	8,831	89,458	63,000	142.0%	Paper	1,342
84,532	7,998	92,530	63,000	146.9%	Paper	1,388
89,399	5,175	94,574	63,000	150.1%	Paper	1,891
89,886	8,183	98,068	63,000	155.7%	Paper	1,961
L01,393	4,562	105,954	63,000	168.2%	Paper	2,119
L1° FN°	F ∩∩∩	11∩ /∩1	C° ∩∩∩	1°∩ F%	n.n..	° °°°

Figure 14.20

Now you see that all of the cells that contain a zero (i.e., no bonus is paid) are formatted as bold red text with a yellow. We also want to format all cells with a value of $2,000 or more with a bold, green, italicized font. However, there is no standard option in the Highlight Cells Rules for Greater Than or Equal To, so we'll have to create a custom format. Let's do that now.

1. *Select the range* **K2:K349**.
2. *Click on the* **Conditional Formatting** *button, point to* **Highlight Cells Rules***, and click on* **More Rules…**
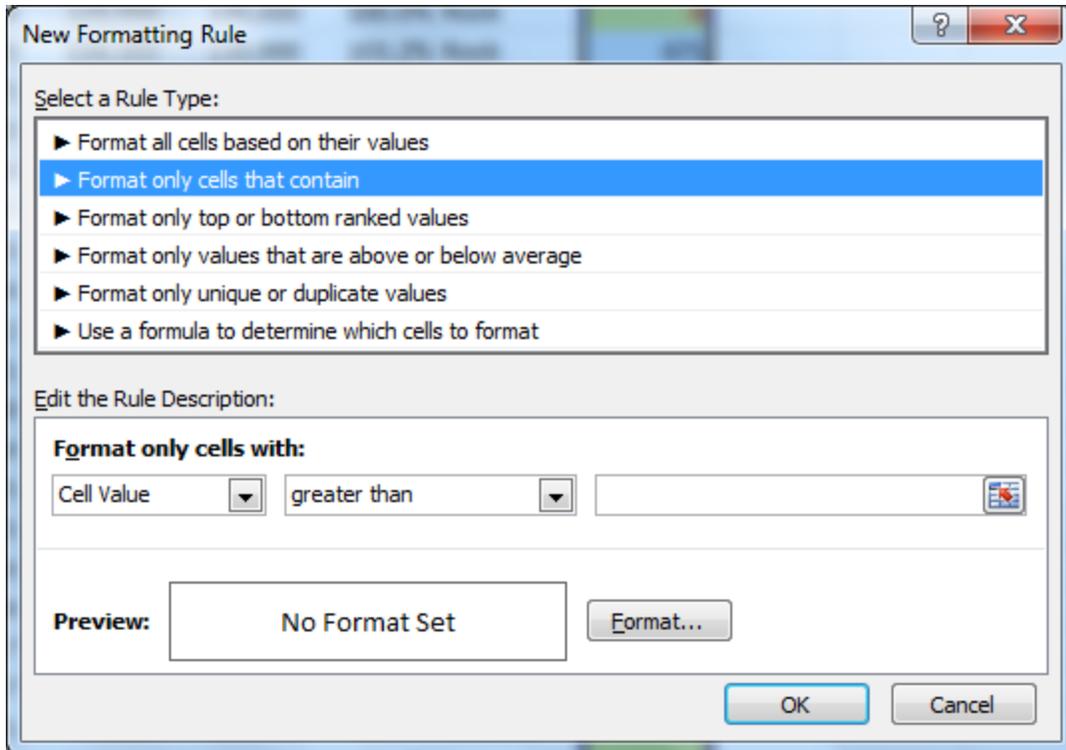
Figure 14.21

The New Formatting Rule dialog box opens. This is the dialog box in which you will create the new rule.

3. *Make sure the* **Format only cells that contain** *option is selected.*
4. *In the* **Edit the Rule Description** *section, make sure* **Cell Value** *appears in the first box, change the second box to* **greater than or equal to** *and type* **2000** *in the third box.*
5. *Click the* **Format…** *button.*
6. *In the* **Format Cells** *dialog box, click on the* **Font** *tab, and choose* **Green** *color, and* **Bold Italic** *font style.*
7. *Click* **OK** *in both dialog boxes.*

...ss_Rev	Pillow_Rev	Total_Rev	Budget	Budget_%	Store_Type	Bonus
95,959	4,165	100,124	130,000	77.0%	Rock	0
109,584	5,183	114,766	130,000	88.3%	Rock	0
119,644	8,369	128,013	130,000	98.5%	Rock	0
120,402	9,548	129,950	130,000	100.0%	Rock	0
129,403	4,700	134,103	130,000	103.2%	Rock	671
143,953	8,475	152,428	130,000	117.3%	Rock	1,905
157,708	8,980	166,688	130,000	128.2%	Rock	2,084
55,914	4,314	60,228	83,000	72.6%	Scissors	0
72,958	3,910	76,867	83,000	92.6%	Scissors	0
78,867	3,993	82,860	83,000	99.8%	Scissors	0
114,934	4,934	119,868	83,000	144.4%	Scissors	1,498
119,329	3,612	122,941	83,000	148.1%	Scissors	1,844
128,103	3,301	131,404	83,000	158.3%	Scissors	1,971
128,521	7,908	136,429	83,000	164.4%	Scissors	2,046
134,587	3,534	138,120	83,000	166.4%	Scissors	2,072
147,479	4,765	152,244	83,000	183.4%	Scissors	3,045
156,858	9,365	166,223	83,000	200.3%	Scissors	3,324

Figure 14.22

All of the formatting you applied now appears. Note that we applied two styles of conditional formatting to these cells. You can see all of the formatting you applied by looking at the Conditional Formatting Rules Manager dialog box.

8. Click on **Conditional Formatting**, *and then on* **Manage Rules…**
9. *If necessary, click on the* **Show formatting rules for:** *drop down menu and choose* **This Worksheet**.
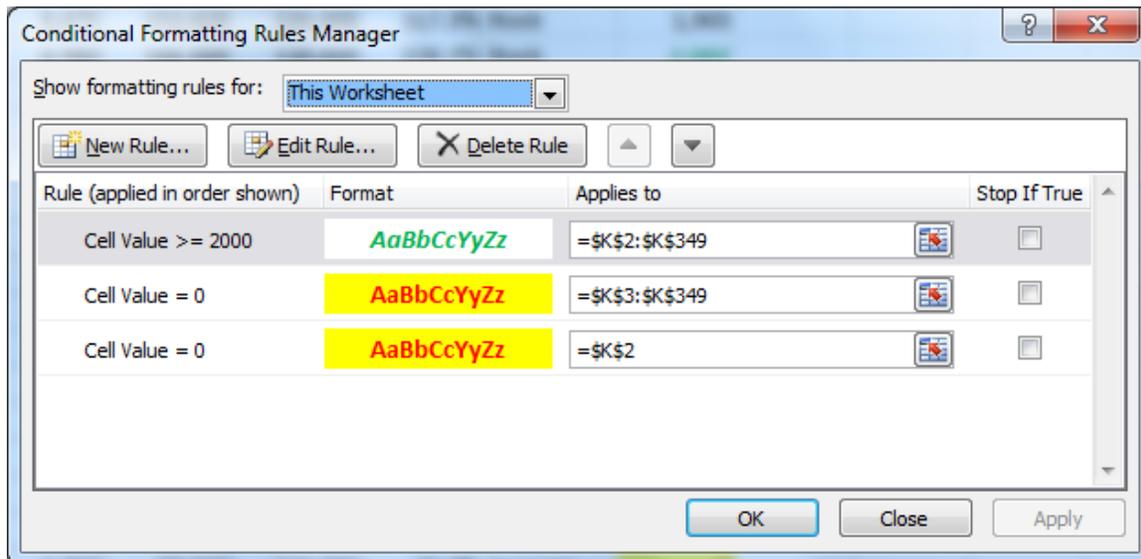
Figure 14.23

In the Conditional Formatting Rules Manager, you can see all of the formats that are applied in the current selection, on this worksheet, or on other worksheets in the workbook. In this example, we have three conditional formatting rules, when we really only have two. The second rule should be applied to the range $K$2:$K$349, so let's fix that and delete the third rule.

> 10. *Change the second rule's range to be* **$K$2:$K$349**.
> 11. *Click on the third rule, click the* **Delete Rule** *button and click* **OK**.

Let's explore one more type of Conditional Formatting: **Data Bars**. Data Bars were introduced in Excel 2007, and Microsoft made some minor but necessary changes to Data Bars in Excel 2010. A Data Bar is simply solid or gradient shading behind a number. In Excel 2007, the length of the shading represented each number's position relative to other numbers in the data set. In Excel 2010, Data Bars compare values between the numbers based on their distance from zero.

First, we'll sort the table.

> 1. *Click on* **Cell B4** *and click the* **Sort Smallest to Largest** *icon on the* **Data** *tab*.
> 2. *Right-click on* **Cell C4**, *point to* **Sort**, *and click on* **Sort Smallest to Largest**.

You did this to sort the table in preparation for this next exercise.

> 3. *Select* **Cells G2:G349**.
> 4. *On the* **Home** *tab,* **Styles** *group, click on* **Conditional Formatting**, *point to* **Data Bars**, *and choose the* **Green Data Bar** *under* **Solid Fill**.
> 5. *Click anywhere outside the selection.*

3	Year	Month	Store_No	Store_ID	Mattress_Rev	Pillow_Rev	Total_Rev	Budget	Budget_%	Store_Type	Bonus
323	2010	8	1060	30	157,708	8,980	166,688	130,000	128.2%	Rock	2,084
324	2010	9	1060	30	120,402	9,548	129,950	130,000	100.0%	Rock	0
325	2010	10	1060	30	88,117	3,740	91,857	130,000	70.7%	Rock	0
326	2010	11	1060	30	119,644	8,369	128,013	130,000	98.5%	Rock	0
327	2010	12	1060	30	143,953	8,475	152,428	130,000	117.3%	Rock	1,905
328	2010	1	1062	23	55,914	4,314	60,228	83,000	72.6%	Scissors	0
329	2010	2	1062	23	72,958	3,910	76,867	83,000	92.6%	Scissors	0
330	2010	3	1062	23	114,934	4,934	119,868	83,000	144.4%	Scissors	1,498
331	2010	4	1062	23	128,103	3,301	131,404	83,000	158.3%	Scissors	1,971
332	2010	5	1062	23	119,329	3,612	122,941	83,000	148.1%	Scissors	1,844
333	2010	6	1062	23	134,587	3,534	138,120	83,000	166.4%	Scissors	2,072
334	2010	7	1062	23	78,867	3,993	82,860	83,000	99.8%	Scissors	0
335	2010	8	1062	23	161,813	10,216	172,029	83,000	207.3%	Scissors	3,441
336	2010	9	1062	23	156,858	9,365	166,223	83,000	200.3%	Scissors	3,324
337	2010	10	1062	23	147,479	4,765	152,244	83,000	183.4%	Scissors	3,045
338	2010	11	1062	23	128,521	7,908	136,429	83,000	164.4%	Scissors	2,046
339	2010	12	1062	23	161,317	15,284	176,601	83,000	212.8%	Scissors	3,532
340	2010	1	1063	3	51,330	4,617	55,946	119,000	47.0%	Scissors	0
341	2010	2	1063	3	83,280	4,767	88,047	119,000	74.0%	Scissors	0
342	2010	3	1063	3	133,002	5,858	138,860	119,000	116.7%	Scissors	1,389
343	2010	4	1063	3	137,514	4,935	142,449	119,000	119.7%	Scissors	1,424
344	2010	5	1063	3	114,576	3,901	118,477	119,000	99.6%	Scissors	0
345	2010	6	1063	3	113,782	3,256	117,038	119,000	98.4%	Scissors	0
346	2010	7	1063	3	95,204	4,021	99,226	119,000	83.4%	Scissors	0

Figure 14.24

Take some time to explore the other options available in Conditional Formatting. Management really likes to see a report in color with the different colors that make values stand out.

Full Screen

I sometimes don't know who of my users has Excel knowledge and who doesn't. Therefore, I try to make the applications as easy and dummy-proof as I can. One way of doing this is to hide the tabs and menus so the user is forced to use the commands on the spreadsheet. This can be accomplished in one easy step – by changing the view of the spreadsheet to a **full screen**.

1. *Click on the* **Assumptions** *tab.*
2. *Click on the* **View** *tab and click the* **Full Screen** *button in the* **Workbook Views** *group.*

	A	B	C	D	E	F	G
					Microsoft Excel - mySales_2010.xlsx		
1	Paper	% of Budget	Bonus %		Min. Budget	Level	
2	1	0%	0.00%		0	Paper	
3	2	100%	0.50%		80,000	Scissors	
4	3	110%	1.00%		120,000	Rock	
5	4	120%	1.50%				
6	5	150%	2.00%				
7	6	200%	3.00%				
8					Total Bonus	291,205	
9							
10	Scissors	% of Budget	Bonus %				
11	1	0%	0.00%				
12	2	100%	0.50%				

Figure 14.25

The Office Ribbon, Name Box and Formula Bar are now hidden, and the only thing that appears is the title bar. To bring back the normal view, right-click anywhere in the spreadsheet and choose Close Full Screen.

3. *Right-click anywhere in the spreadsheet and choose* **Close Full Screen**.

> *Trick: There are two other ways you can hide sheets. You can go into* **Excel Options**, *click on* **Advanced** *and uncheck the* **Show Sheet Tabs** *option which will hide all sheet tabs in the workbook. You can also right-click on any sheet tab and choose Hide.*

Hyperlinks

Believe it or not, there are some users that don't know you can click on the tabs at the bottom of the sheet to access other sheets. Sometimes, I don't want them to have that capability, so I have the option of hiding the sheet(s). With the tabs hidden, the user still needs a way to navigate from one sheet to another. In this case, I like to use **Hyperlinks** or a macro contained in a Command button. In this chapter, we'll look at Hyperlinks. We'll review Macros and Command Buttons in Chapter 16.

In the next exercise, we will insert a Hyperlink that takes the user from the Assumptions tab to the Sales tab.

1. *On the* **Assumptions** *tab, insert two rows above* **Row 1**.
2. *In* **Cell A1**, *type:* **Sales**
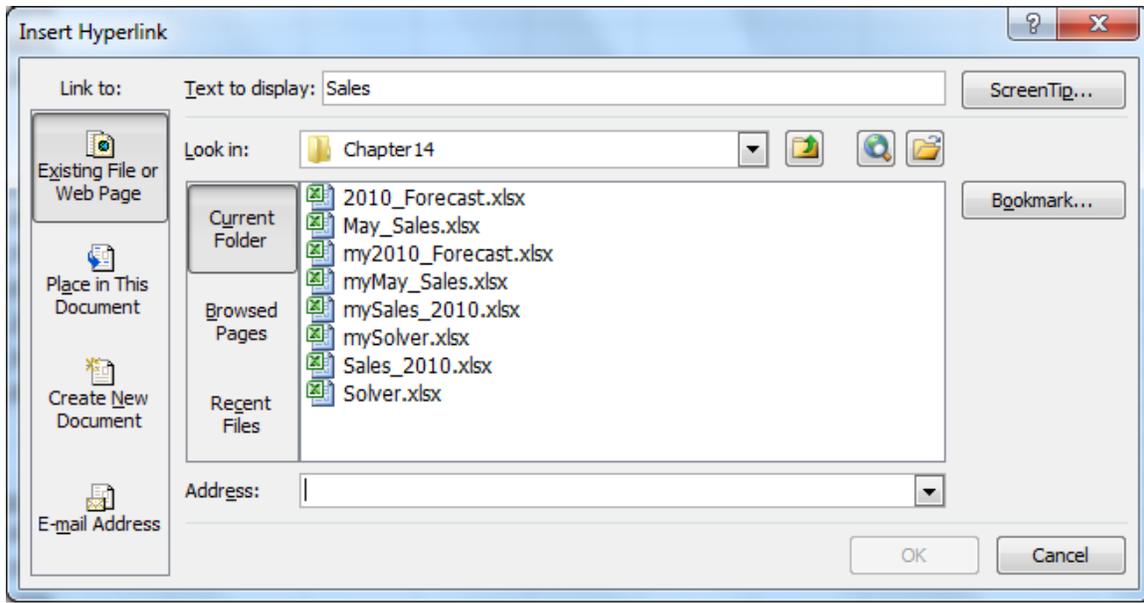3. *Right-click on* **Cell A1** *and choose* **Hyperlink**.

Figure 14.26

The Insert Hyperlink dialog box appears.

> 4. *Click on the* **ScreenTip…** *button.*
> 5. *In the* **Set Hyperlink ScreenTip** *dialog box, type:* **Go to the Sales tab.**
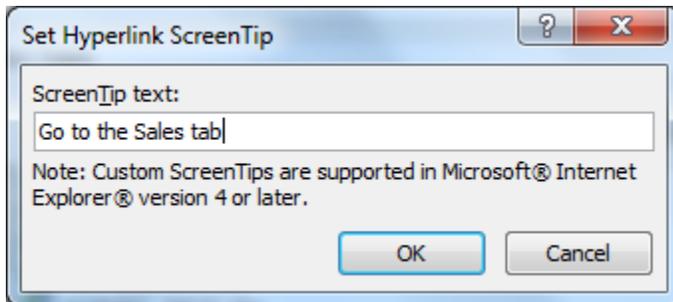> 6. *Click* **OK***.*

Figure 14.27

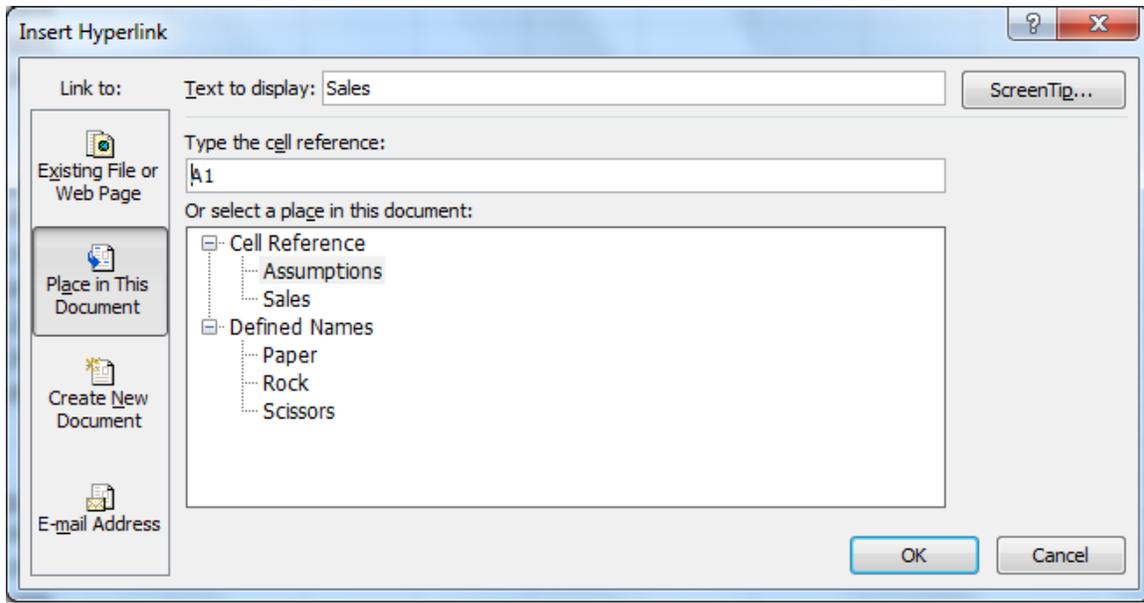> 7. *Under the* **Link to***: heading, choose the* **Place in this Document** *option***.**

Figure 14.28

> 8.   *Under* **Type the cell reference***, type:* **K1**
> 9.   *Under* **Cell Reference***, choose* **Sales***.*
> 10. *Click* **OK***.*

When you hold your mouse over the hyperlink, the screentip "Go to the Sales tab" appears. When you click on the hyperlink, it will automatically go to Cell K1 of the Sales tab.

Figure 14.29

> 11. *In the* **Sales** *tab, insert two rows above* **Row 1** *and insert a* **Hyperlink** *that sends the user to the* **Assumptions** *tab,* **Cell A3***.*

To edit a hyperlink, simply place your cursor of the linked text, right-click and choose Edit Hyperlink. The Edit hyperlink dialog box will pop up which is identical to the Insert Hyperlink dialog box. All you have to do is make the modifications and click OK.

12. Save and close the file.

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 14, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you learned how to change parameters to get a desired result by using Goal Seek and Solver. You used Data Analysis to calculate Descriptive Statistics. You learned how to work with Conditional Formatting, how to turn the Full Screen off and on, and you created Data Bars. Finally, you created a hyperlink that helped to move users from one place on the spreadsheet to another.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

CHAPTER FIFTEEN – GRAPHICS, PROTECTION, AND SHARING

In this chapter, you will:

- Create graphics using Paint.
- Work with Protection.
- Share a workbook and track changes.
- Merge and compare workbooks.
- Consolidate data from multiple files.

Graphics Using Paint

To begin this chapter, let's talk a little bit about **graphics**. A graphic is simply an image that you can use in your documents to give it a little variety and pizzazz, and they can be easy to create. I like using a program called **Paint** to create graphics. Paint is a simple program that comes standard in all Windows packages. I like it because it's very easy to use and most of the graphic type work I do is very simple. My artistic ability is limited to drawing a straight line with a ruler, and I usually mess that up. You can use the graphic, usually saved as a .jpg file, in Excel, Access, Word, HTML and in a host of other tools. Let's create a graphic using Excel's WordArt and Paint.

1. *Open a new workbook in* **Excel***.*
2. *Click on the* **Insert** *tab, click on* **WordArt** *in the* **Text** *group, and choose the first "***A***" in the second row (***Fill – Blue, Transparent Accent 1, Outline – Accent 1***).*
3. *Replace* **Your Text Here** *with* **Nitey-Nite Mattresses**
4. *Make the font size* **20***.*
5. *Leave the default style* **Calibri (Body).**
6. *On the* **Format** *tab of the* **Drawing Tools** *contextual tab, click on the* **Text Effects** *button of the* **WordArt Styles** *group.*
7. *Place your cursor over* **Transform***, scroll down and hover your cursor over the* **Double Wave 1** *icon, and click.*
8. *Click anywhere outside the graphic.*

You should get a graphic that looks like Figure 15.1.

Figure 15.1

9. *Open* **Paint** *(click on* **Start***,* **All Programs***,* **Accessories***,* **Paint***).*
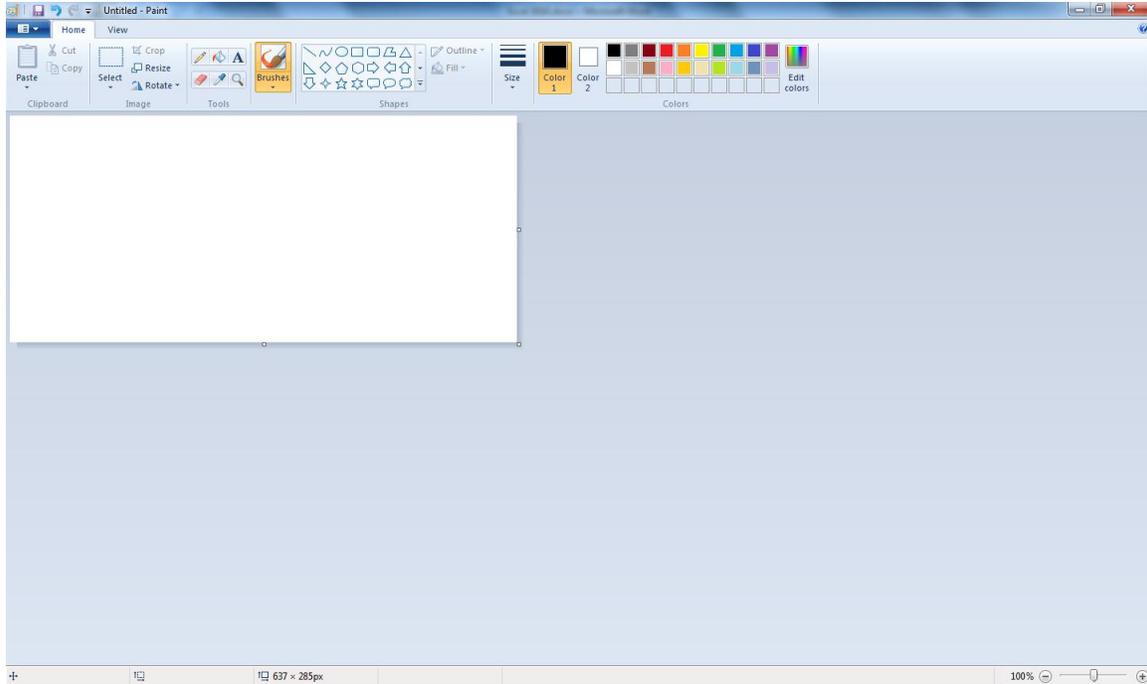
Figure 15.2

> 10. *Go back to* **Excel**, *make sure the graphic is selected (handle bars will appear around the graphic) and copy the graphic (*[Ctrl]+c*).*
> 11. *Toggle over to* **Paint** *and paste it (*[Ctrl]+v*).*
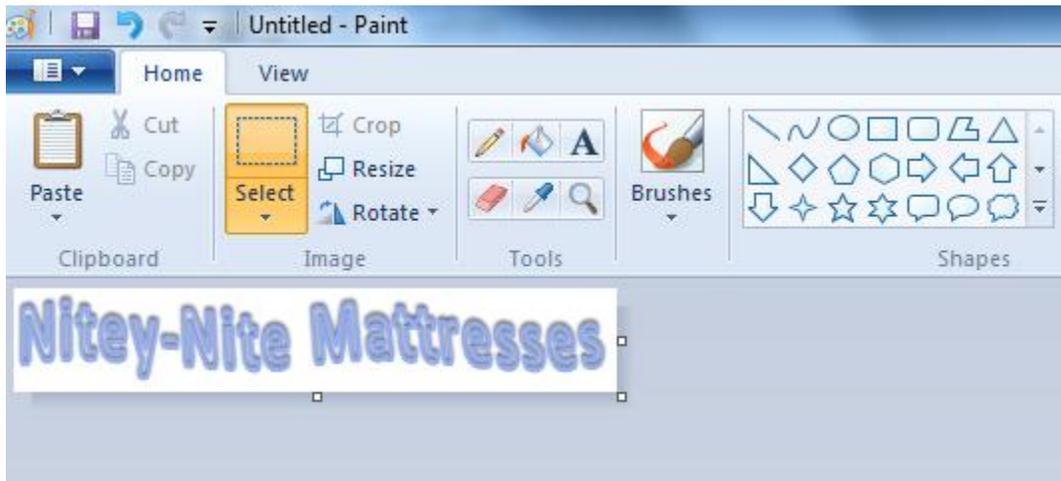> 12. *Resize the graphic in* **Paint** *(using the blue handle at the bottom right) to look like* **Figure 15.3***.*

Figure 15.3

> 13. *Save the* **Paint** *file as* **C:\ExcelCEO\Excel 2010\Chapter15\logo.jpg**.
> 14. *Close* **Paint**.
> 15. *Close the blank* **Excel** *file without saving it.*

Now you have a logo that you can use in your reports. Let's place the graphic in a file.

16. *Open the* **mySales_2010.xlsx** *file in the* **C:\ExcelCEO\Excel 2010\Chapter14** *folder.*
17. *Save the file with the same name in the* **C:\ExcelCEO\Excel 2010\Chapter15** *folder.*
18. *Click on* **Cell G1** *on the* **Assumptions** *tab.*
19. *Click on the* **Insert** *tab, choose* **Picture***, navigate to* **C:\ExcelCEO\Excel 2010 \Chapter15\logo.jpg,** *click on the logo file and click* **Insert***.*
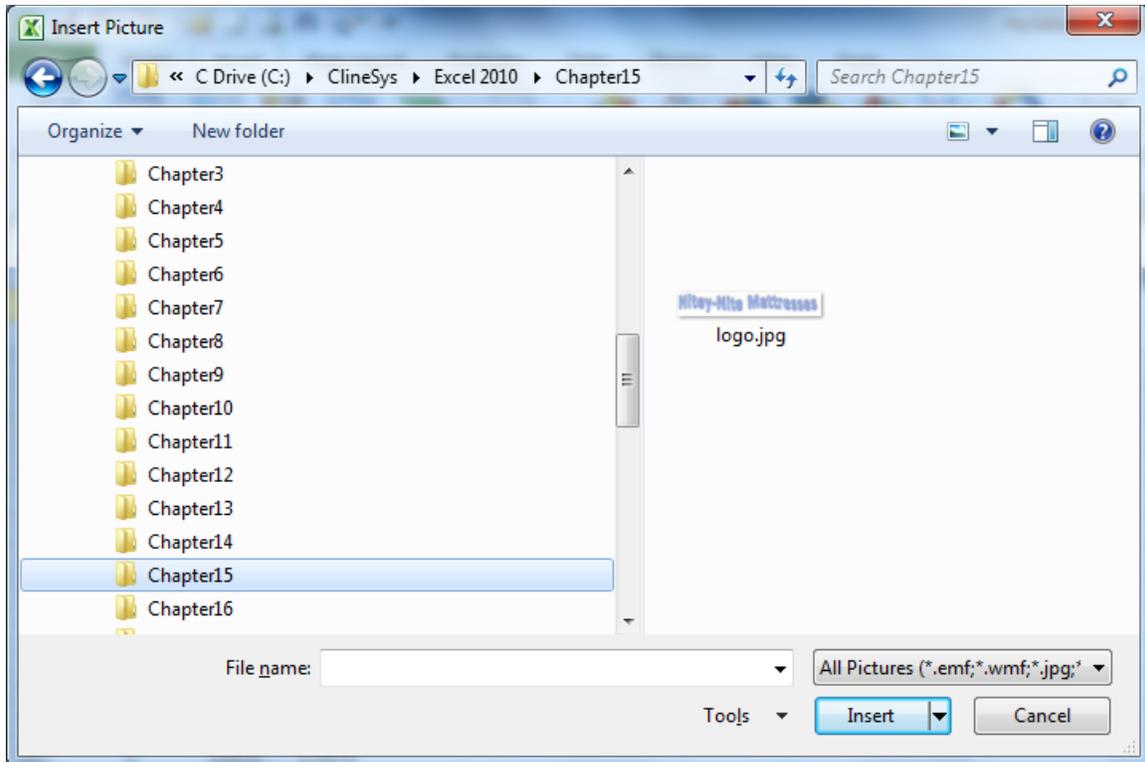20. *Click anywhere outside the logo to deselect it.*

Figure 15.4

	A	B	C	D	E	F	G	H	I	J	K
1	Sales										
2											
3	Paper	% of Budget	Bonus %		Min. Budget	Level					
4	1	0%	0.00%		0	Paper					
5	2	100%	0.50%		80,000	Scissors					
6	3	110%	1.00%		120,000	Rock					
7	4	120%	1.50%								
8	5	150%	2.00%								
9	6	200%	3.00%								
10					Total Bonus	291,205					
11											
12	Scissors	% of Budget	Bonus %								
13	1	0%	0.00%								
14	2	100%	0.50%								
15	3	110%	1.00%								
16	4	125%	1.25%								
17	5	145%	1.50%								
18	6	175%	2.00%								

Figure 15.5

With the image on the spreadsheet, you can now drag it to any place in the document you wish. Pretty easy, huh?

Protection

Once you have a spreadsheet designed just the way you want it, you need to **protect** it. In the Sarbanes-Oxley awareness world in which we live, it is vitally important to protect the formulas and analyses in your spreadsheets. One great way of protecting your spreadsheet is by using the Protection tools available under the Tools option.

1. *While on the* **Assumptions** *tab of the file, click on the* **Review** *tab, then click on the* **Protect Sheet** *button in the* **Changes** *group.*
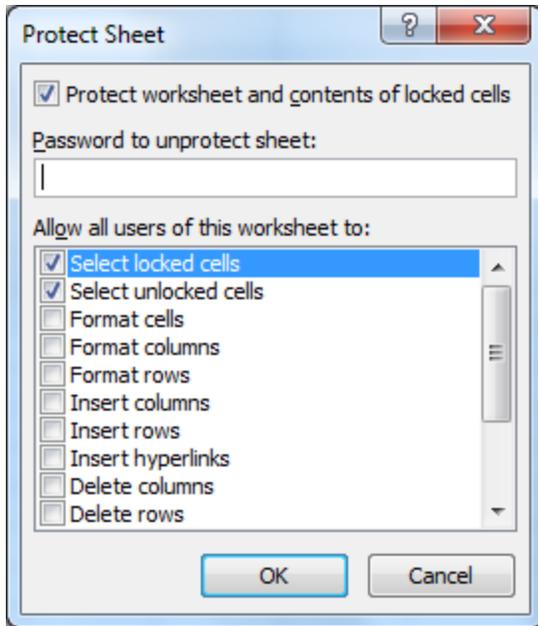
Figure 15.6

The Protect Sheet dialog box appears. There are multiple items you can protect or leave unprotected. For this exercise, we want to protect the entire spreadsheet. Note that this action protects only the spreadsheet you are currently on.   To protect the entire workbook, use the Protect Workbook from the Review tab.

2. *In the* **Password to unprotect sheet** *box, type:* **abc** *and click* **OK.**
3. *Retype the* **abc** *password in the* **Confirm Password** *dialog box and click* **OK***.*

Now if you try to change anything on the spreadsheet, you will get a message telling you it is protected. This works great if you want to protect the entire spreadsheet, but what if you want to allow the user the ability to change selected cells in the spreadsheet? In the next example, we want users to be able to change the values in certain cells in Columns B, C and E, but nothing else. To do this, we first have to unprotect the sheet.

4. *Click on the* **Unprotect Sheet** *button in the* **Changes** *group of the* **Review** *tab.*
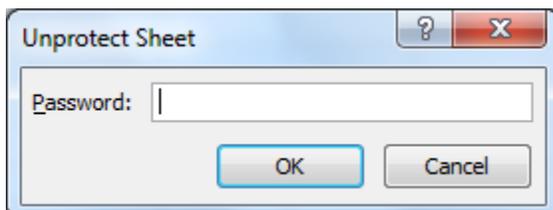
Figure 15.7

5. *Type* **abc** *in the* **Unprotect Sheet** *dialog box and click* **OK***.*
6. *On the* **Assumptions** *tab, select the cell ranges* **B4-C9, B13-C18, B22-C27** *and* **E4-E6** *(i.e., all of the cells that you could possibly change).*

	A	B	C	D	E	F	G	H	I	J	K
1	Sales										
2											
3	Paper	% of Budget	Bonus %		Min. Budget	Level					
4	1	0%	0.00%		0	Paper					
5	2	100%	0.50%		80,000	Scissors					
6	3	110%	1.00%		120,000	Rock					
7	4	120%	1.50%								
8	5	150%	2.00%								
9	6	200%	3.00%								
10					Total Bonus	291,205					
11											
12	Scissors	% of Budget	Bonus %								
13	1	0%	0.00%								
14	2	100%	0.50%								
15	3	110%	1.00%								
16	4	125%	1.25%								
17	5	145%	1.50%								
18	6	175%	2.00%								
19											
20											
21	Rock	% of Budget	Bonus %								
22	1	0%	0.00%								
23	2	100%	0.50%								
24	3	105%	0.75%								
25	4	115%	1.25%								
26	5	130%	1.50%								
27	6	150%	2.00%								

Nitey-Nite Mattresses

Figure 15.8

7. *Click on the* **Allow Users to Edit Ranges** *button.*

Allow Users to Edit Ranges

Ranges unlocked by a password when sheet is protected:

Title	Refers to cells

New…

Modify…

Delete

Specify who may edit the range without a password:

Permissions…

☐ Paste permissions information into a new workbook

Protect Sheet…   OK   Cancel   Apply
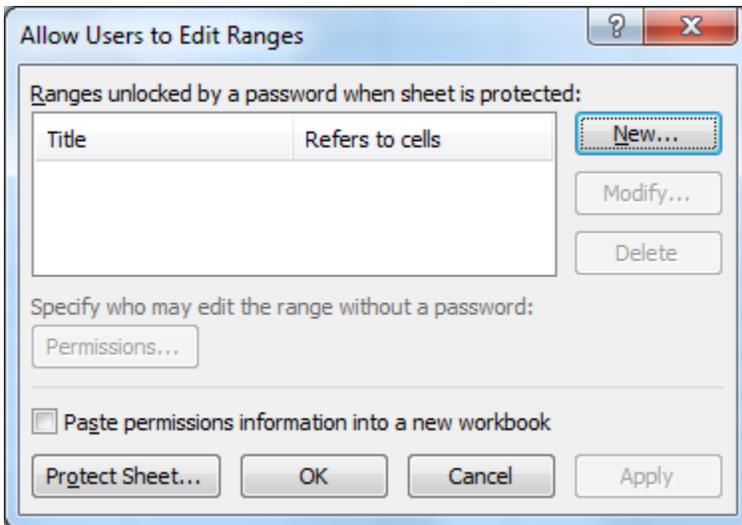
Figure 15.9

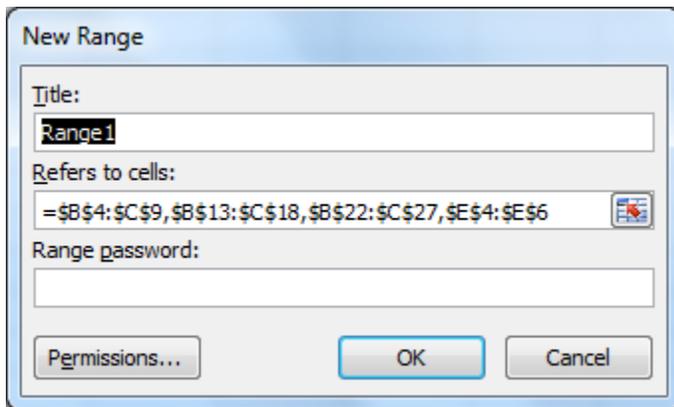8. *In the* **Allow Users to Edit Ranges** *dialog box, click* **New…**

Figure 15.10

> 9. Leave **Range1** *as the title of the named range, do not enter a password in
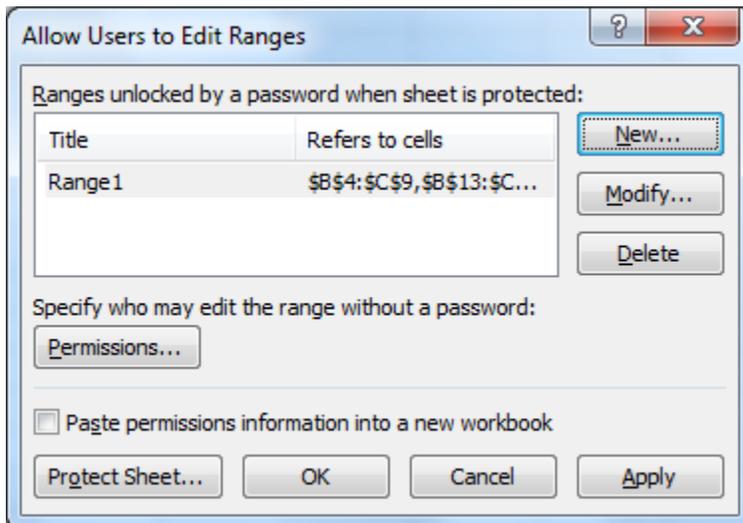> the range password box, and click* **OK***.*

Figure 15.11

> 10. *Click* **Protect Sheet…** *in the* **Allow Users to Edit ranges** *dialog box.*
> 11. *Use the* **abc** *password in each of the next two dialog boxes.*
> 12. *Now* **Password Protect** *the entire* **Sales** *tab with the same password.*

Now you have a file that your users can manipulate without the worry of anyone
changing the formulas.

You can also **lock** and **hide** cells in the Format Cells dialog box. A locked cell cannot be
changed when protection is turn on, and a hidden cell hides the formulas in a spreadsheet.
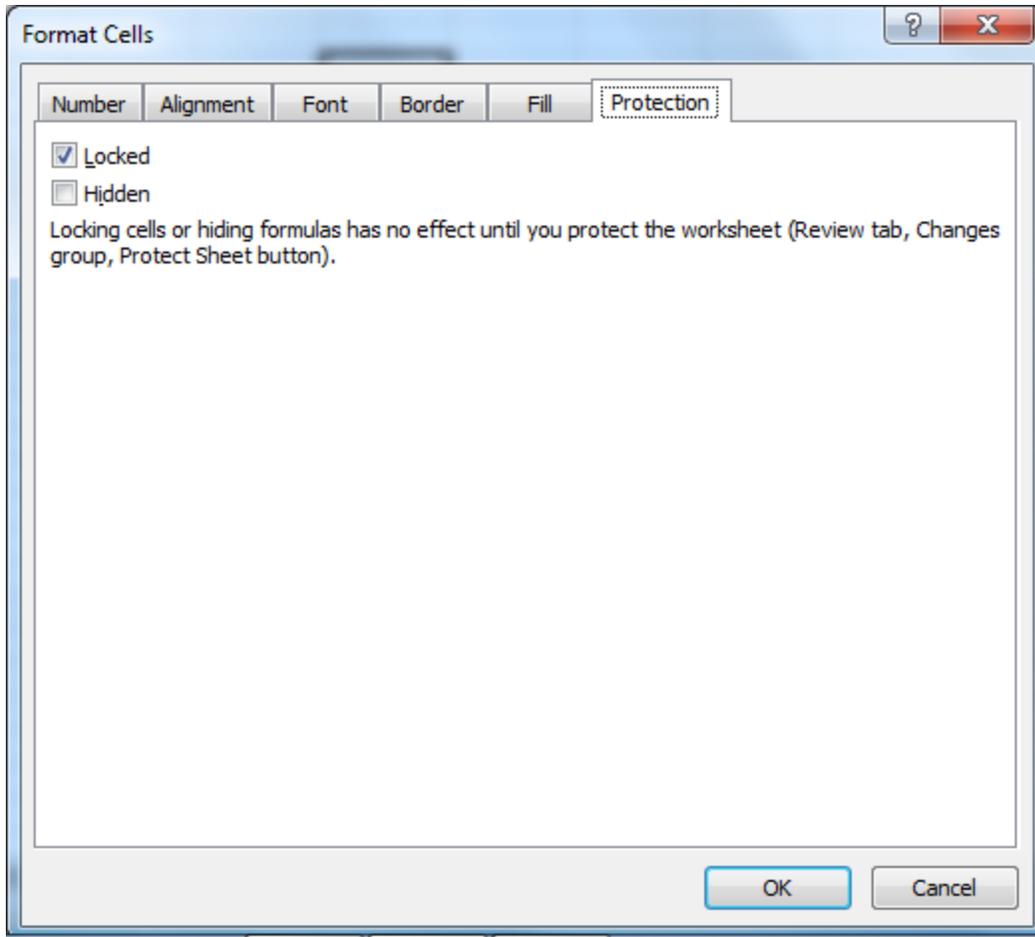
Figure 15.12

The exercises we just completed were designed to teach you how to protect data within an Excel file. You can also protect the entire file.

13. On the **File** *tab, click on* **Save As.**
14. *Click on the* **Tools** *option inside the* **Save As** *dialog box and click on the* **General Options** *option.*
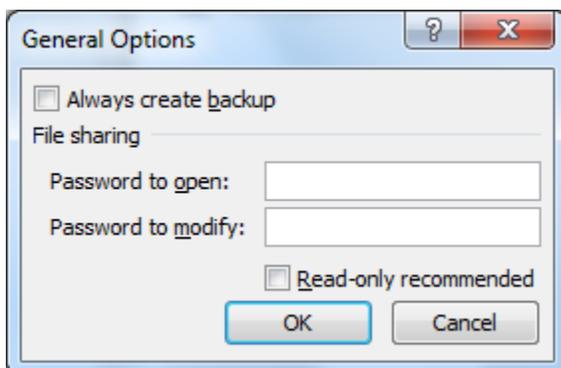
Figure 15.13

*15. In the **Password to open** box, type **123** and click **OK**.*

Figure 15.14

*16. Type **123** in the **Confirm Password** dialog box.*
*17. Click **Save** to save the **mySales_2010.xlsx** file and click **Yes** in the confirmation dialog box.*

Passwords

A few words of caution about passwords: DO NOT FORGET THE PASSWORD. In the past, if you forgot the password, you could not get it open again. However, in today's tech-savvy world, there are a number of applications you can buy off the Internet to recover a lost password. But it would be a lot easier on yourself to just not forget the password, or at least write it down somewhere. Remember that Excel passwords are case sensitive, so typing **ABC** will not work to open our file. If you use password protection in an Excel 2010 or 2007 file and allow users to edit a range, it will not work in some earlier versions of Excel.

The best passwords consist of a lot of characters and will contain upper and lower case characters, as well as numbers and special characters. Typically, the longer the password, the harder it is to hack into it. I like to create a file, paper or electronic, with all of my user IDs and passwords in it. There are so many applications out there where you have to use a user ID and password to sign on, and many of them require the user IDs and passwords be set up in a certain way. There is no guarantee that your standard user ID or password you use for everything will work in all applications – in fact, it most likely won't. Therefore, it's a good idea to keep those user IDs and passwords documented and in a safe place.

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the **Excel 2010 Review Questions, Chapter 15, Section 1 of 2** option and complete the review questions.*

Sharing a Workbook

When a user opens a standard Excel file, they typically open it with exclusive rights, meaning that no one else can make changes to it while they have it open. However, sometimes it is necessary for more than one person to work with the same spreadsheet at the same time. This presents a problem, as most workbooks are set up where only one person at a time can work on it. To solve this issue, you can turn on Excel's sharing capability. When a workbook is **shared**, multiple users can use it at the same time. The owner of the workbook can then review and track the changes made and accept or reject the changes he/she wants.

1. Click on the **Share Workbook** *button in the* **Changes** *group of the* **Review** *tab.*
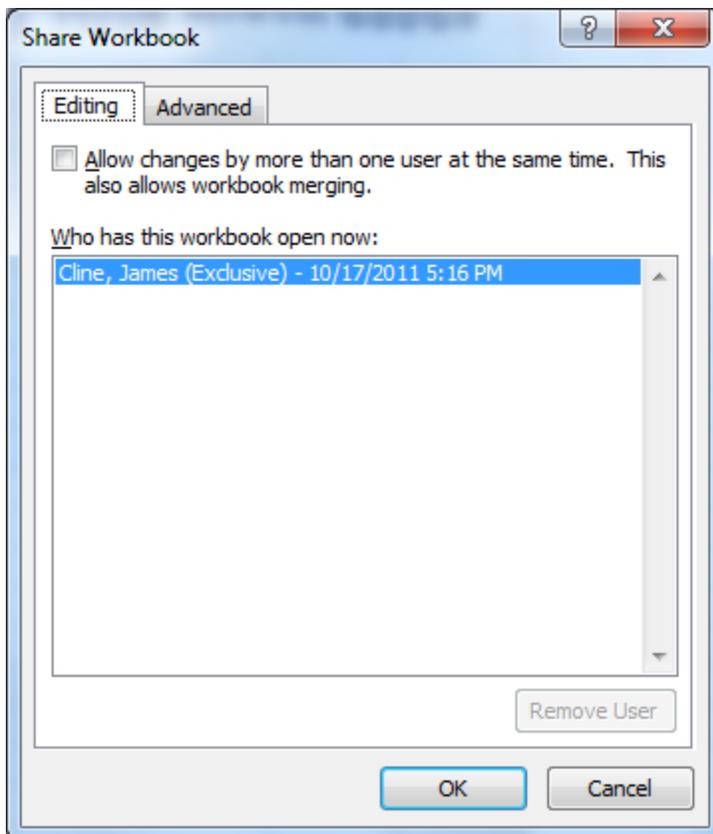
Figure 15.15

2. *Check the* **Allow changes by more than one user at the same time** *check box, and click the* **Advanced** *tab.*
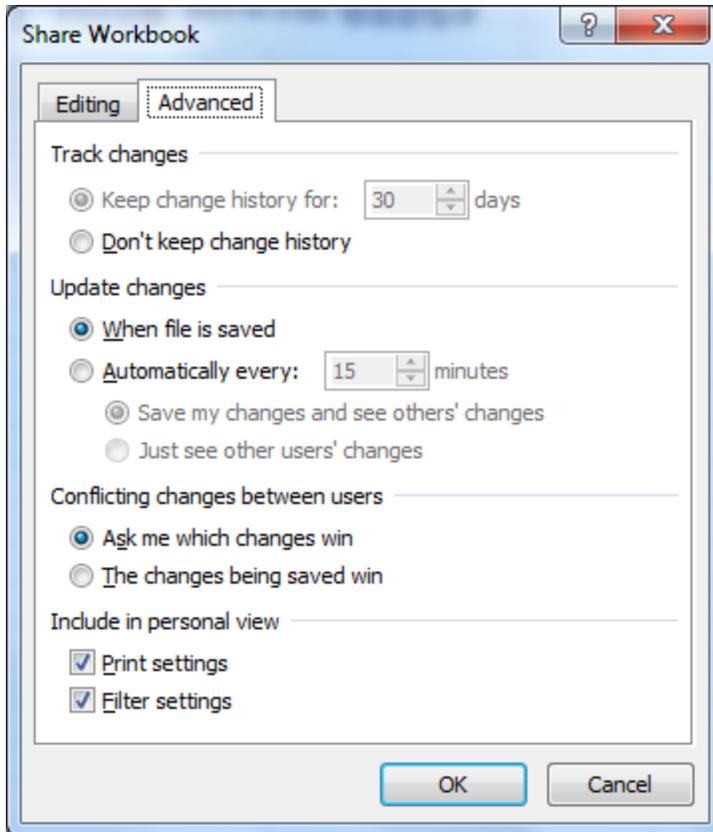
Figure 15.16

There are many settings on the Advanced tab, but the two that are most used concern keeping history and conflicting changes. I typically keep these default settings.

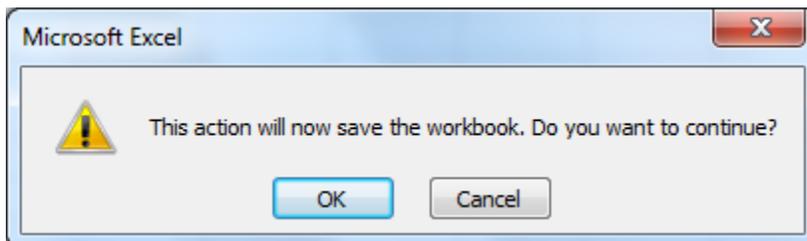3. *Leave the default settings and click* **OK**.
4. *Save the file.*

Figure 15.17

5. *Click* **OK** *in the* **Caution** *dialog box and close the file.*

Tracking Changes to a Shared Workbook

Excel allows you to track and review changes that you made and changes that others have made to a shared file. In this next exercise, you will open the Sales_2010_Changes.xlsx file and work with it to see how changes are captured in a shared file.

1. *Open the* **Sales_2010_Changes.xlsx** *file at* **C:\ExcelCEO\Excel 2010 \Chapter15**.
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter15\mySales_2010_Changes.xlsx.**

	A	B	C	D	E	F	G	H	I	J	K
1	Sales										
2								Nitey-Nite Mattresses			
3	Paper	% of Budget	Bonus %		Min. Budget	Level					
4	1	0%	0.00%		0	Paper					
5	2	100%	0.50%		70,000	Scissors					
6	3	110%	1.00%		110,000	Rock					
7	4	120%	1.50%								
8	5	150%	2.00%								
9	6	200%	3.00%								
10					Total Bonus	305,180					
11											
12	Scissors	% of Budget	Bonus %								
13	1	0%	0.00%								
14	2	100%	0.50%								
15	3	110%	1.00%								
16	4	125%	1.25%								
17	5	130%	1.50%								
18	6	150%	2.00%								
19											
20											
21	Rock	% of Budget	Bonus %								
22	1	0%	0.00%								
23	2	100%	0.50%								
24	3	105%	0.75%								
25	4	115%	1.25%								
26	5	130%	1.50%								
27	6	150%	2.00%								

Figure 15.18

In this exercise, you will pretend your name is Joe Smith. Whenever Joe logs on to his computer, his computer name is Joe Smith.

3. *Click on the* **File** *tab and choose* **Options**.
4. *In the* **General** *section of the* **Excel Options** *dialog box, change the* **computer name** *to* **Joe Smith** *and click* **OK**.

You are now operating your computer as if you were Joe Smith. Now you will turn on the tracking changes functionality.

5. *In the* **Changes** *group of the* **Review** *tab, click on the* **Track Changes** *button and choose* **Highlight Changes…**
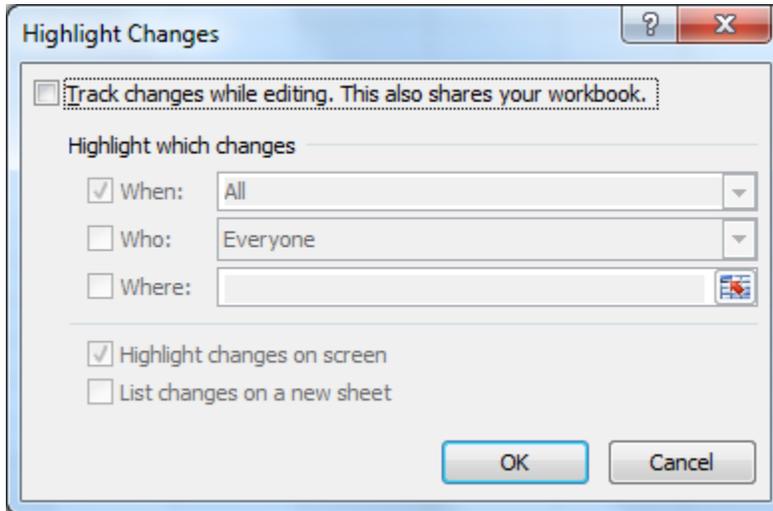

Figure 15.19

6. *Click the* **Track changes while editing...** *checkbox and click* **OK**.
7. *Click* **OK** *in the warning dialog box that appears.*

Notice that the name of the file at the top of the title bar appears as **mySales_2010_Changes   [Shared]**.   The **[Shared]** indicates that the sharing functionality is turned on.

8. *In the spreadsheet, change* **Cell B8** *to* **130%, Cell B9** *to* **150%, Cell E5** *to* **80,000** *and* **Cell E6** *to* **120,000**.

When you make a change to a cell, a thin blue line surrounds the cell and Excel creates a flag in the upper left corner of the cell. This is type of comment. When you hold your cursor over the cell, the comment box appears telling you who made the last change and what that changes were.

9. *Save the file, but don't close it yet.*
10. *Change the computer name (***Steps 3 and 4***) back to your computer name.*
11. *In the spreadsheet, change* **Cell E5** *to* **75,000** *and* **Cell E6** *to* **115,000**.
12. *Save the file.*
13. *In the* **Changes** *group of the* **Review** *tab, click on* **Track Changes***, then choose* **Highlight Changes…**
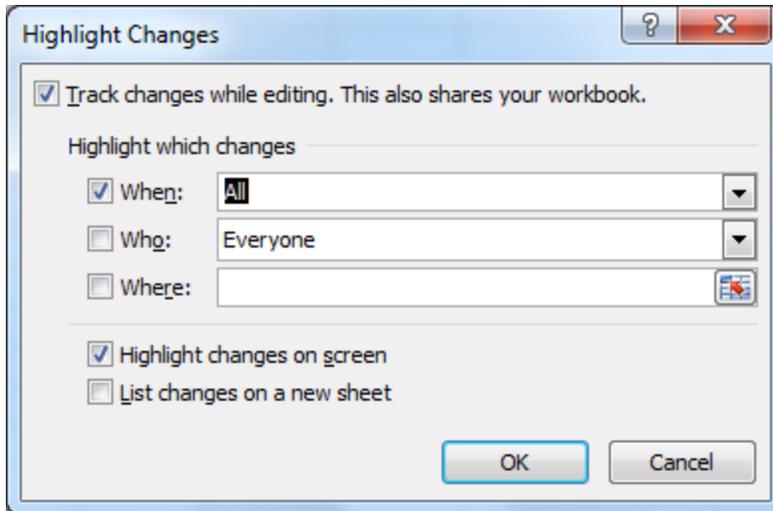
Figure 15.19

The Highlight Changes dialog box appears. It is in this box where you will define what changes are tracked by whom and where. You can also choose where to review the changes -- either on the screen or on a new sheet.

> 14. *In addition to the default settings as shown in* **Figure 15.19,** *check the* **List changes on a new sheet** *box and click* **OK.**

The Highlight Changes dialog box disappears. Additionally, a new tab called History was created in the file. This new tab records the changes that were made by others since you last saved it. If you click on the History tab, you will see that four changes were made by Joe Smith and two changes were made by you. You will have the chance in this exercise to accept or reject those changes.

> 15. *Click on the* **Track Changes** *button from the* **Changes** *group, then click on the* **Accept/Reject Changes** *button.*
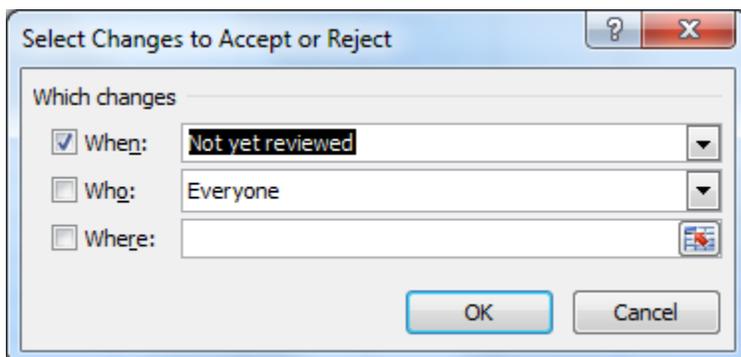

Figure 15.20
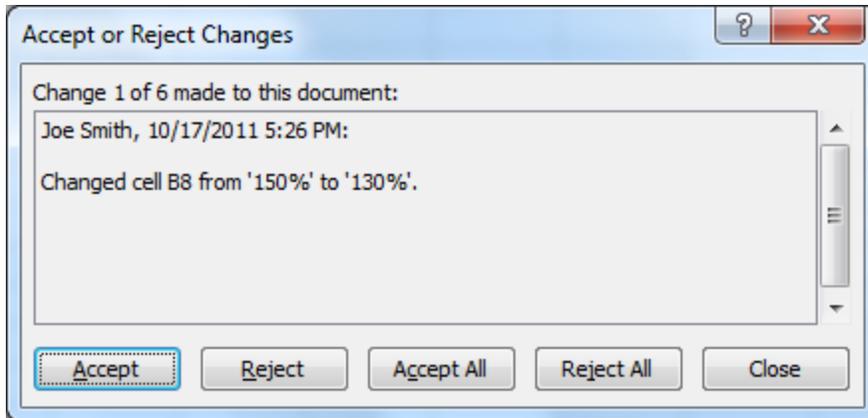
> 16. *Click* **OK** *in the next dialog box.*

Figure 15.21

These next few dialog boxes walk you through all of the changes that have been made to the workbook. In these dialog boxes, you can accept or reject changes made to the file. In this first dialog box, you see that there were 6 changes made to the file. For the first change, Joe Smith changed Cell B8 from 150% to 130%. Joe Smith is the User Name of the computer that made the change. Typically, people use their own name as their computer's User Name. That value is OK with us, so let's keep Joe's 130% number.
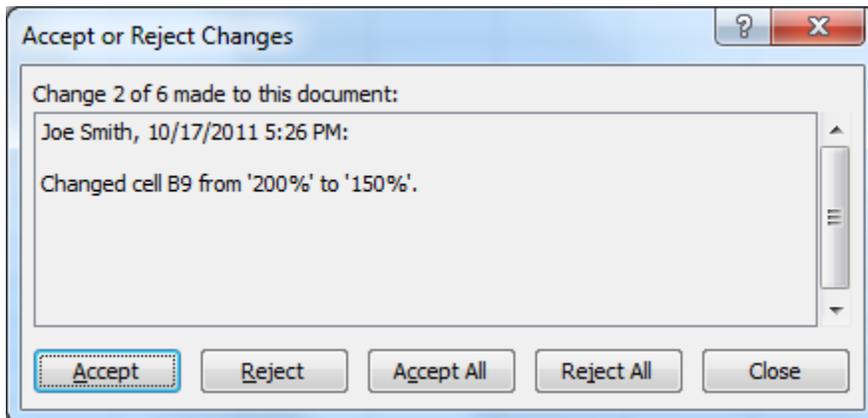
> *17. Click* **Accept**.

Figure 15.22

Once you click Accept, it changes the worksheet to accept the new figure and then goes to the next change. Let's accept the second change that Joe Smith did as well.

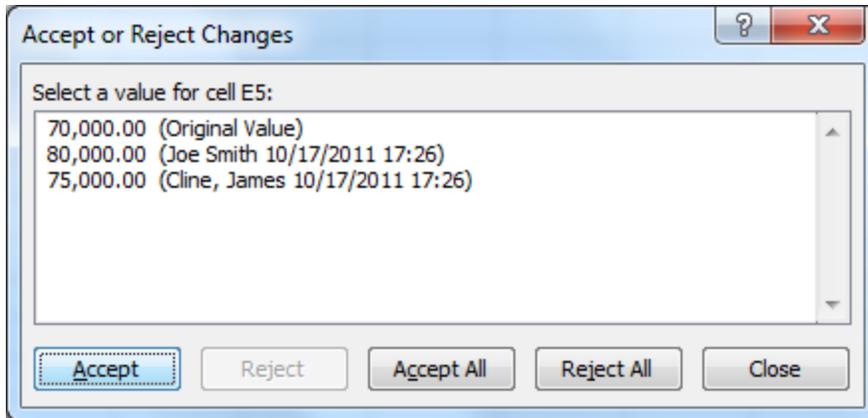> *18. On the change for* **Cell B9**, *click* **Accept**.

Figure 15.23

The next dialog box is a little different. This cell has been changed more than once, and all of the changes are listed in the dialog box. We see that Cell E5's original value was 70,000, then Joe Smith changed it to 80,000, then ClineSys (or your computer name) changed it to 75,000. Since we control the file, we also control which changes to accept or reject. In this case, we'll accept the 75,000 number.

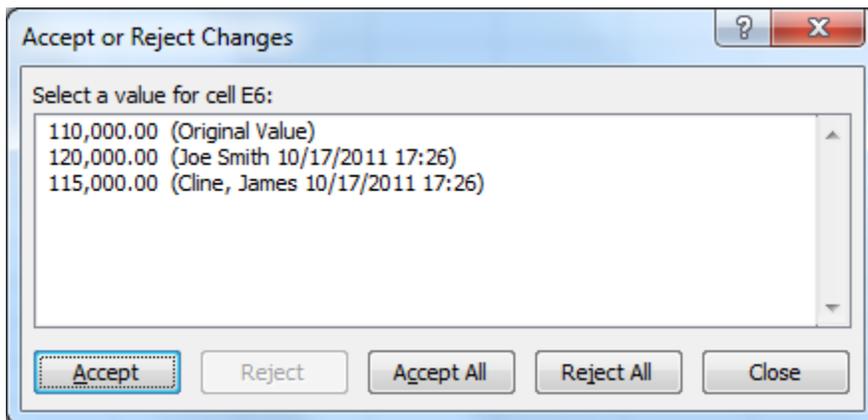> *19. Click on the **75,000** line and click **Accept**.*

Figure 15.24

> *20. In the last dialog box for the changes to **Cell E6**, click on the **110,000** original value line and click **Accept**.*

	A	B	C	D	E	F	G	H	I	J	K
1	Sales										
2											
3	Paper	% of Budget	Bonus %		Min. Budget	Level					
4	1	0%	0.00%		0	Paper					
5	2	100%	0.50%		75,000	Scissors					
6	3	110%	1.00%		110,000	Rock					
7	4	120%	1.50%								
8	5	130%	2.00%								
9	6	150%	3.00%								
10					Total Bonus	319,618					
11											
12	Scissors	% of Budget	Bonus %								
13	1	0%	0.00%								
14	2	100%	0.50%								
15	3	110%	1.00%								
16	4	125%	1.25%								
17	5	130%	1.50%								
18	6	150%	2.00%								
19											
20											
21	Rock	% of Budget	Bonus %								
22	1	0%	0.00%								
23	2	100%	0.50%								
24	3	105%	0.75%								
25	4	115%	1.25%								
26	5	130%	1.50%								
27	6	150%	2.00%								

Figure 15.25

All of the changed figures are now incorporated into the new file.

> *21. Save and close the file.*

Consolidating Data

Many times, you will get data from different people, and you need to put all of the data in one place. In our next example, you will open three files that contain data for three months and consolidate the data in another file for the quarter. This process is called **data consolidation**. I personally don't use data consolidation much. I prefer to load all of the data into one table and create a PivotTable to do my analysis. However, there are many people who use data consolidation, so we'll do an example of it. If it works for you, then use it.

> 1. Click on the **Open** *icon, and navigate to* **C:\ExcelCEO\Excel 2010\Chapter15**.
> 2. Click on the **Q1_Sales.xlsx** *file, hold down the* **[Ctrl]** *key, and click on the* **Jan_Sales.xlsx***,* **Feb_Sales.xlsx** *and* **Mar_Sales.xlsx** *files and click* **Open** *to open all files simultaneously.*

3. *Active the* **Q1_Sales.xlsx** *file.*

	A	B	C	D	E	F
1	Store_No	Year	Qtr	Merchandise Sales	Warranty Sales	Delivery Sales
2	1001	2010	1			
3	1002	2010	1			
4	1005	2010	1			
5	1009	2010	1			
6	1011	2010	1			
7	1012	2010	1			
8	1018	2010	1			
9	1019	2010	1			
10	1021	2010	1			
11	1024	2010	1			
12	1026	2010	1			
13	1027	2010	1			
14	1029	2010	1			
15	1032	2010	1			
16	1034	2010	1			
17	1036	2010	1			

Figure 15.26

The Q1_Sales.xlsx file will hold the summed results of the Jan, Feb, and Mar files.

4. *Click on* **Cell D2** *and click the* **Consolidate** *button from the* **Data Tools** *group on the* **Data** *tab.*
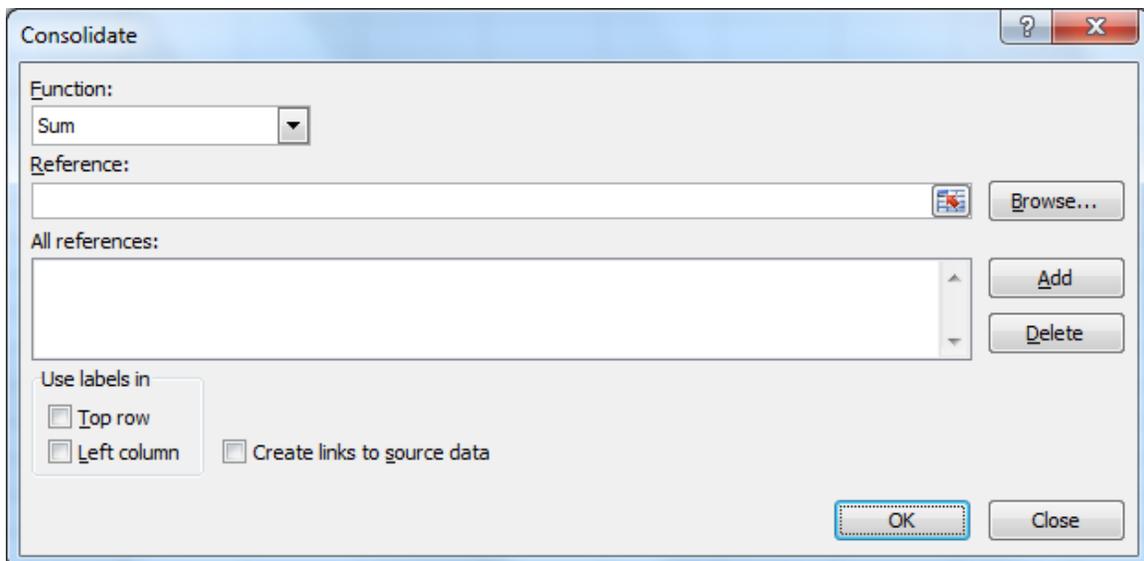

Figure 15.27

The Consolidate dialog box appears. In this dialog box, you will define the ranges you want to consolidate.

5. *Make sure the selected function is* **Sum**.
6. *With your cursor in the* **Reference** *box, toggle over to the* **Jan_Sales** *file (to activate it), select* **Cells D2** *through* **F30** *in the* **Jan_Sales** *file, and click* **Add**.

	A	B	C	D	E	F
1	Store_No	Year	Month	Merchandise Sales	Warranty Sales	Delivery Sales
2	1001	2010	1	35,430	440	935
3	1002	2010	1	23,619	560	990
4	1005	2010	1	51,581	1,120	1,485
5	1009	2010	1	28,460	600	495
6	1011	2010	1	59,323	1,600	1,760
7	1012	2010	1	53,462	1,240	1,540
8	1018	2010	1	60,420	1,480	1,595
9	1019	2010	1	62,773	1,520	1,210
10	1021	2010	1	30,801	680	715
11	1024	2010	1	66,012	1,280	1,265
12	1026	2010	1	57,845	960	1,760
13	1027	2010	1	56,040	1,400	1,925
14	1029	2010	1	35,139	520	1,045
15	1032	2010	1	67,055	960	1,760
16	1034	2010	1	60,600	1,320	1,210
17	1036	2010	1	24,598	640	715
18	1040	2010	1	51,079	1,240	1,705
19	1042	2010	1	29,641	720	550
20	1044	2010	1	27,171	640	880
21	1045	2010	1	35,124	680	880
22	1047	2010	1	31,448	640	880
23	1050	2010	1	25,683	720	715
24	1051	2010	1	60,064	1,240	1,595

Figure 15.28

7. *Perform the same procedure to add the range* **D2** *to* **F30** *in the* **Feb** *and* **Mar** *files into the* **All references** *section of the* **Consolidate** *dialog box.*
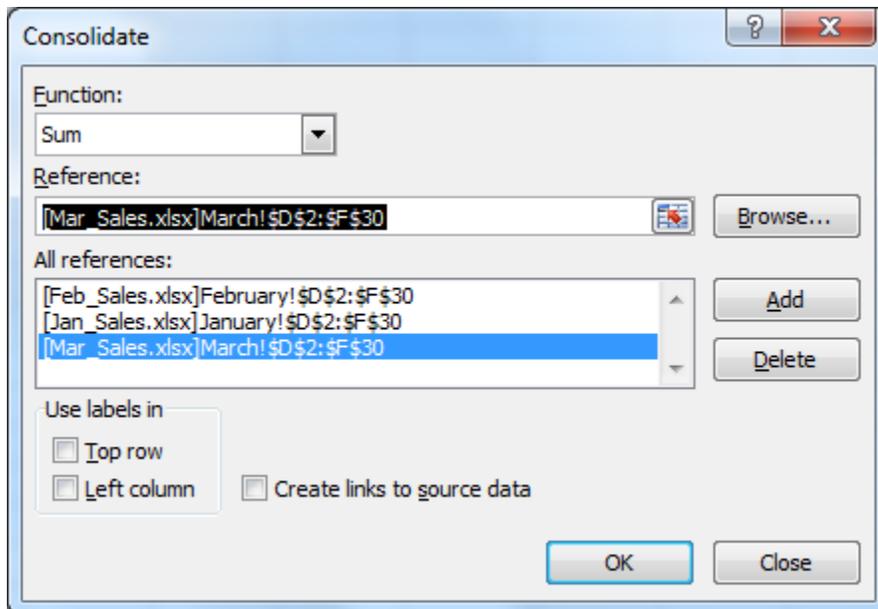
Figure 15.29

8. *After the* **Consolidate** *dialog box looks like* **Figure 15.29**, *click* **OK**.

	A	B	C	D	E	F
1	Store_No	Year	Qtr	Merchandise Sales	Warranty Sales	Delivery Sales
2	1001	2010	1	166,724	2,800	4,015
3	1002	2010	1	182,791	3,320	6,105
4	1005	2010	1	280,648	5,360	7,865
5	1009	2010	1	149,174	3,360	3,795
6	1011	2010	1	252,809	5,480	8,085
7	1012	2010	1	259,503	5,680	7,150
8	1018	2010	1	305,171	6,240	7,535
9	1019	2010	1	220,738	4,480	5,720
10	1021	2010	1	87,905	1,840	2,145
11	1024	2010	1	259,998	4,840	7,535
12	1026	2010	1	259,107	5,000	7,260
13	1027	2010	1	296,244	6,000	8,195
14	1029	2010	1	91,278	2,040	2,860
15	1032	2010	1	293,607	4,400	6,985
16	1034	2010	1	263,136	5,520	6,820

Figure 15.30

The data from all three files is now consolidated into one file. One rule that you must remember is that the data must be in the same format and in the same order in all data sources when you perform a data consolidation procedure. For that reason, I prefer to copy/import the data into a PivotTable. In a PivotTable, you have much more control in manipulating the data.

9. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter15\myQ1_Sales.xlsx** *and close it (leaving the other three files open)*.

Linking Data

Let me show you another way to consolidate data – linking files. If you prefer to use the keyboard instead of the mouse, this may be a preferable alternative. In this exercise, we will link the data in all three files into the myQ1_Sales file by simply clicking on the data.

1. *Open the* **Q1_Sales.xlsx** *file again.*
2. *Click on* **Cell D2**, *type the "=" key, toggle over to the* **Jan_Sales** *file, click on* **Cell D2** *of the* **Jan_Sales** *file, press the* **[F4]** *key three times and press* **[Enter]**.

Figure 15.31

The formula in Cell D2 in the Q1_Sales file should now look Figure 15.31. Pressing the [F4] key should make the formula a relative reference to Cell D2 in the Jan_Sales file. We need to make that cell a relative reference as we will be copying the cell soon. Now all we have to do is to add in February and March to the same cell.

> 3. *Click in the* **Formula Bar** *to the right of the formula, type the "+" key, click on* **Cell D2** *of the* **Feb_Sales** *file, make it a relative reference, type the "+" key again, click on* **Cell D2** *of the* **Mar_Sales** *file, make it a relative reference, and press* **[Enter]**.
> 4. *Make all of the* **D2** *references be relative values.*

Figure 15.32

> 5. *Copy the formula down to all cells below then copy the formula to the* **Warranty Sales** *and* **Delivery Sales** *columns.*

	E2			f_x	=[Jan_Sales.xlsx]January!E2+[Feb_Sales.xlsx]February!E2+[Mar_Sales.xlsx]March!E2					
	A	B	C	D	E	F	G	H	I	J	K
1	Store_No	Year	Qtr	Merchandise Sales	Warranty Sales	Delivery Sales					
2	1001	2010	1	166,724	2,800	4,015					
3	1002	2010	1	182,791	3,320	6,105					
4	1005	2010	1	280,648	5,360	7,865					
5	1009	2010	1	149,174	3,360	3,795					
6	1011	2010	1	252,809	5,480	8,085					
7	1012	2010	1	259,503	5,680	7,150					
8	1018	2010	1	305,171	6,240	7,535					
9	1019	2010	1	220,738	4,480	5,720					
10	1021	2010	1	87,905	1,840	2,145					
11	1024	2010	1	259,998	4,840	7,535					
12	1026	2010	1	259,107	5,000	7,260					
13	1027	2010	1	296,244	6,000	8,195					
14	1029	2010	1	91,278	2,040	2,860					
15	1032	2010	1	293,607	4,400	6,985					
16	1034	2010	1	263,136	5,520	6,820					
17	1036	2010	1	87,585	1,840	2,365					
18	1040	2010	1	256,801	5,560	6,985					
19	1042	2010	1	197,682	3,640	4,510					
20	1044	2010	1	181,629	3,560	5,390					
21	1045	2010	1	156,062	3,480	3,905					
22	1047	2010	1	114,870	2,160	3,520					
23	1050	2010	1	116,539	2,360	3,025					
24	1051	2010	1	261,581	4,800	6,600					
25	1055	2010	1	264,109	5,600	7,975					
26	1057	2010	1	158,690	3,360	4,125					
27	1059	2010	1	138,924	2,520	3,630					
28	1060	2010	1	253,153	5,200	7,535					
29	1062	2010	1	262,265	4,600	7,260					
30	1063	2010	1	257,769	5,120	7,810					
31											

Figure 15.33

All of your data is now consolidated in one file.

> 6. Save the file as **myQ1_Sales_Link.xlsx**, *and close all four files.*
> 7. Open the **myQ1_Sales_Link.xlsx** *file again.*

Look at the formula in the formula bar now. It should read:

> *='C:\ExcelCEO\Excel*
> *2010\Chapter15\[Jan_Sales.xlsx]January'!E2+'C:\ExcelCEO*
> *\Excel 2010\Chapter15\[Feb_Sales.xlsx]February'!E2+'C:*
> *\ExcelCEO\Excel 2010\Chapter15\[Mar_Sales.xlsx]March'!E2*

This formula now displays the full path of the linked files. I've seen many files like this where these links are set up and then someone moves or deletes the supporting files. When that happens, you will see an error message like this:
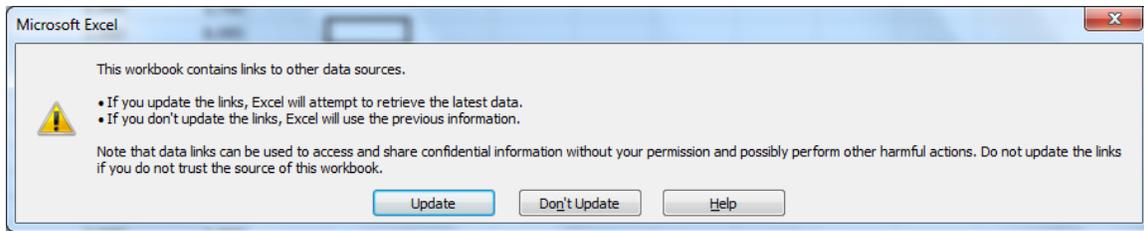
Figure 15.34

The data will be the same as it was the last time you saved it, but you may want to save the original values but get rid of the links. That's real easy to do using the Edit Links dialog box. In the Connections group of the Data tab, you should now see the Edit Links icon activated. With this link, you can manage links to external Excel files.

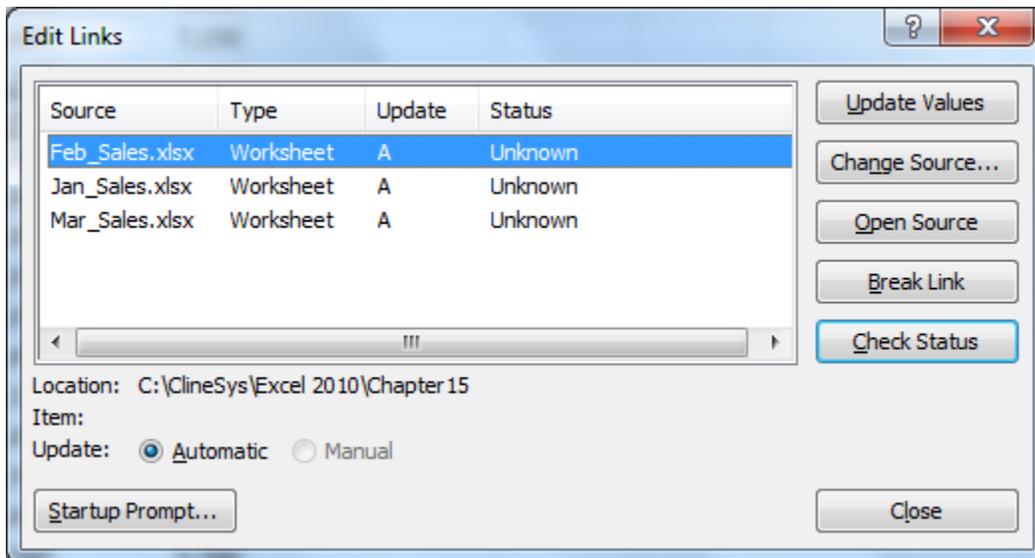8. *Click on the* **Edit Links** *icon in the* **Connections** *group of the* **Data** *tab.*

Figure 15.35

Using this dialog box, you can update the values, change the source, open the source, break the link(s) or check the status. In this case, we want to break the link.

9. *With the* **Feb_Sales.xlsx** *link selected, hold down the* **[Ctrl]** *key, click on the* **Jan_Sales.xlsx** *and the* **Mar_Sales.xlsx** *links, and click on the* **Break Link** *button.*
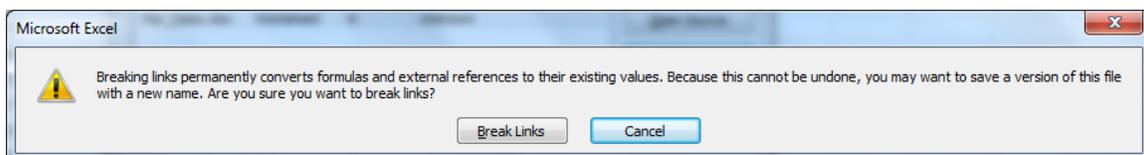

Figure 15.36

10. *Click on the* **Break Links** *button.*

11. Click on the **Close** *button in the* **Edit Links** *dialog box.*

The links are now broken and all of the data remains intact, but it is not linked to any source.

12. Close the **myQ1_Sales_Link.xlsx** *file.*

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 15, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you created graphics using Paint and you learned how to work with Excel's protection features. You learned how to share a workbook with multiple users and track the changes the users made. Finally, you consolidated similar data from multiple files into one file using two different methods.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER SIXTEEN – MACROS AND THE DEVELOPER TAB

In this chapter, you will:

- Apply macro security.
- Use VBA (Visual Basic for Applications).
- Create, edit, run and delete a macro.
- Use Relative References in macros.
- Use the Step Into functionality in macros.
- Use Shortcut Keys in macros.
- Create and use Command Buttons.
- Add macros to the Quick Access Toolbar.
- Create and use Spinner Buttons.
- Create and use Check Boxes.

Macros

The first thing I want to discuss in this chapter is **Macros**. A macro is simply a mini-program that executes a task. Anytime you have a task that is repeated over and over again, a macro may be in order. Excel provides a great way to create and run macros. I want to caution you, however. It is my belief that macros can be over-used. Anytime you find yourself creating a lot of macros in a spreadsheet, you should step back and consider if Excel is the right tool for the project. If you are continuously updating a report, you may want to think about putting that report in Access or on the Internet where it can be more easily automated and data can be more easily refreshed. One of my best Excel students is very interested in doing EVERYTHING with Excel, but his projects have progressed to a point where they really need to be in a database. He can write macros and VBA code "till the cows come home" but misses the point when it comes to report functionality.

Macro Security

Before we open a file that contains macros, let's discuss Macro Security. Excel 2010 has a number of file types that determine whether or not a macro can be run on the file. The following table illustrates the different types of files.

File Extension	Description
.xlsx	Macro *disabled* Excel workbook
.xlsm	Macro *enabled* Excel workbook
.xltx	Macro *disabled* Excel template
.xltxm	Macro *enabled* Excel template

Macros can be run only on Excel files that are saved as Excel *enabled* workbooks. In the exercises in this chapter, we will concentrate on the .xlsm file type of Excel workbook. For here on out, when I refer to a *macro enabled workbook*, I mean macro enabled workbook or template. When you first open an Excel enabled workbook, you may get a message telling you that the macros have been disabled.

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter16\Macro.xlsm**.

Figure 16.1

This security warning means that your security settings have been set to disable some or all macros in the workbook. When you click on the Enable Content button, you will enable the macros for that specific workbook.

> 2. *Click on the* **Enable Content** *button.*

Figure 16.2

The Security Warning goes away, and the macros are enabled for this workbook only. To permanently change the settings for all workbooks you open, you need to go to the Macro Security Settings. When you open a workbook that has macros in it, a new tab along the top of the Office Ribbon called Developer should appear. If you do not see the Developer tab, open the Options dialog box (under the File tab), click on Customize Ribbon, and check the "Developer" box. Let's do that now.

> 3. *If you don't see the* **Developer** *tab in the* **Office Ribbon**, *click on the* **File** *tab, click on* **Options**, *click on* **Customize Ribbon**, *then check the* **Developer** *box in the right section of the* **Excel Options** *dialog box.*
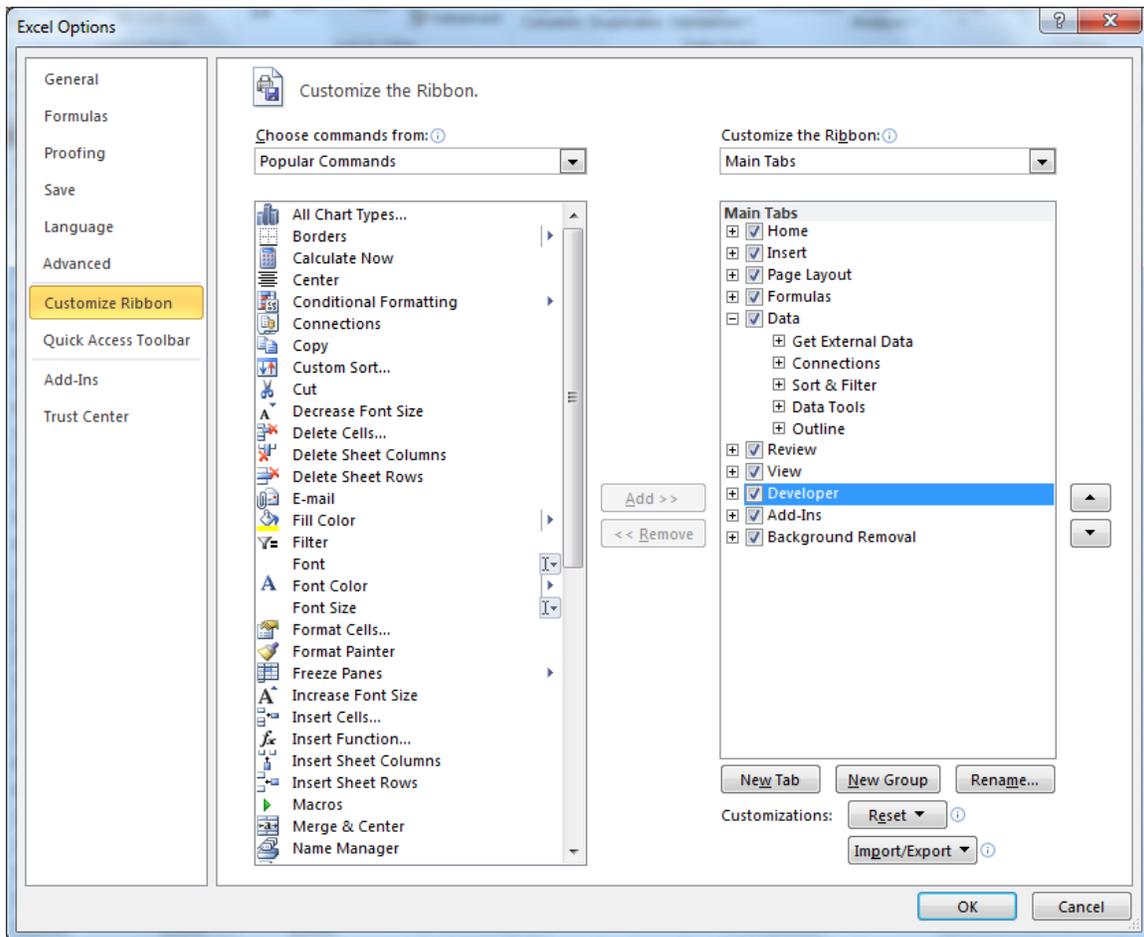
Figure 16.3

4. *Click* **OK**.

The Developer tab now appears at the top of the Office Ribbon. Let's now view your macro settings.

5. *Open the* **Excel Options** *dialog box, click on* **Trust Center***, click on*
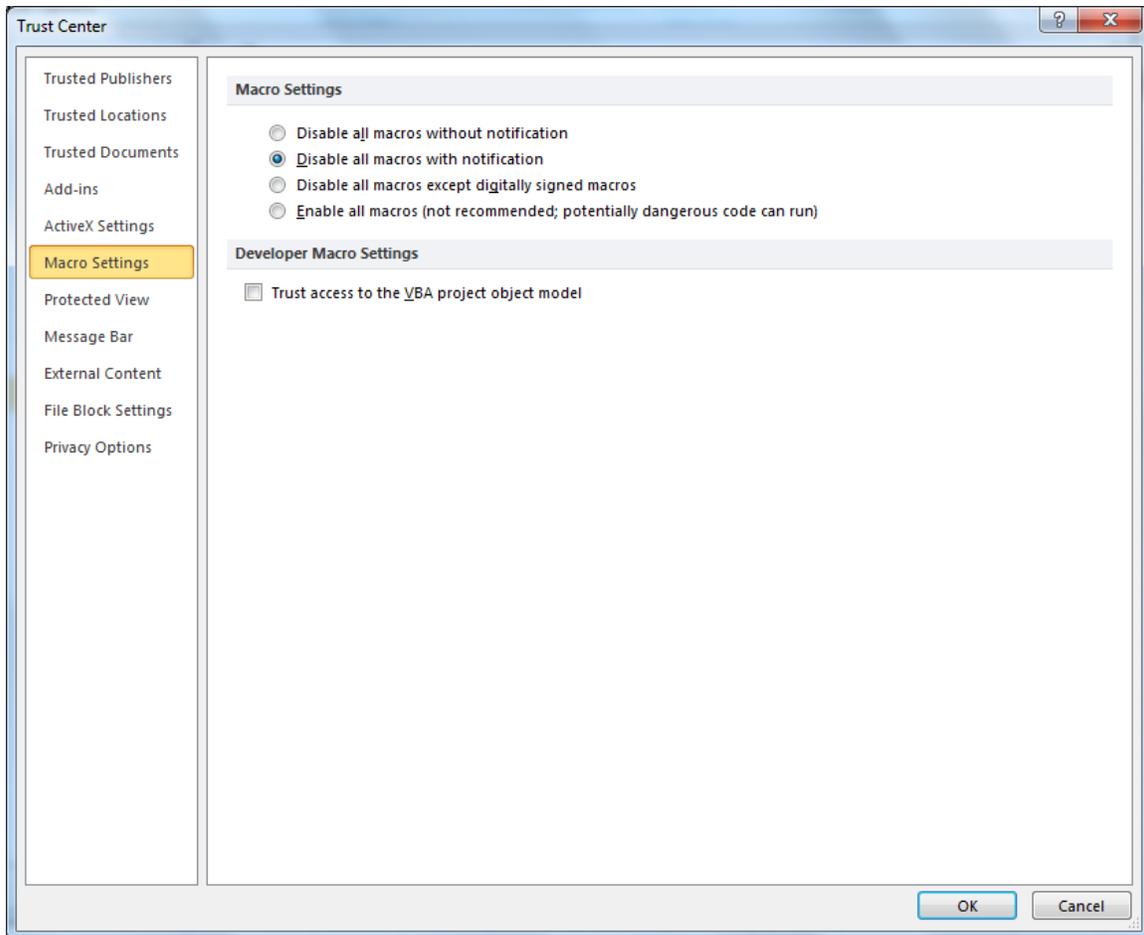   **Trust Center Settings…,** *and click on* **Macro Settings***.*

Figure 16.4

I like to keep this setting on **Disable all macros with notification**. There are some unethical people out there that like to write macros that will harm your computer. Microsoft can't catch all of the harmful macros which can be easily written. Macros can be written to execute whenever the file is opened, so to be safe, I like to disable all macros until I can review the file to determine if it is safe. Before you enable the macros, you should know who the file is being sent from and you should be certain that person wouldn't send you a file with potentially harmful macros in it. For this reason, you should NEVER set the Macro Security Setting to Enable All Macros.

    6. *Make sure the* **security level** *is set to* **Disable all macros with notification** *and click* **OK** *in both dialog boxes.*
    7. *Close the file (without saving it).*

With that introduction, let's explore some simple macros.

    1. *Open the file* **C:\ExcelCEO\Excel 2010\Chapter16\Sales_2010.xlsm.**
    2. *Click the* **Enable Content** *button.*

3. *Save it as* **C:\ExcelCEO\Excel 2010\Chapter16\mySales_2010.xlsm**
    (*make sure you save it as a* **Macro-enabled workbook** *in the* **Save As**
    dialog box)

	A	B	C	D	E	F
1	Nitey-Nite Mattresses					
2						
3						
4	Paper	% of Budget	Bonus %		Min. Budget	Level
5	1	0%	0.00%		0	Paper
6	2	100%	0.50%		80,000	Scissors
7	3	110%	1.00%		120,000	Rock
8	4	120%	1.50%			
9	5	150%	2.00%			
10	6	200%	3.00%			
11					Total Bonus	291,205
12						
13	Scissors	% of Budget	Bonus %			
14	1	0%	0.00%			
15	2	100%	0.50%			
16	3	110%	1.00%			
17	4	125%	1.25%			
18	5	145%	1.50%			
19	6	175%	2.00%			
20						
21						
22	Rock	% of Budget	Bonus %			
23	1	0%	0.00%			
24	2	100%	0.50%			

Figure 16.5

This file calculates Store Manager bonuses for all stores. The Assumptions tab allows
you to change the assumptions and see what the bonus calculates at. It is essentially the
same file you used in Chapter 15.

VBA

Macros in Excel are written in a language called **VBA (Visual Basic for Applications).**
The macro that is already created on this file does some formatting changes, like bold and
italicize some of the cells in the spreadsheet. Although generally you don't need to know
how to program with VBA to write macros, it does help to be exposed to it. But before
we get too deep into macros, let's open up the code to see how it looks.

4. *On the* **View** *tab in the* **Macros** *group, click on the drop down arrow below* **Macros** *and choose* **View Macros**.
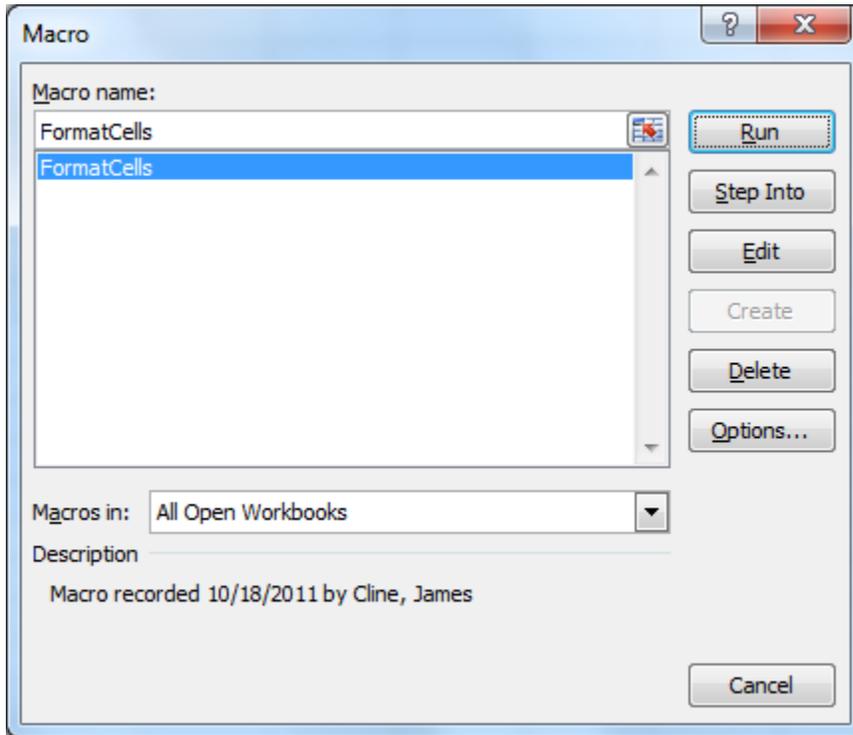

Figure 16.6

In the Macro dialog box, you can choose to run the macro, run it in steps (Step Into), edit it, delete it, and/or assign it a shortcut key (the Options button). Let's look at the VBA code behind the macro.

5. *In the* **Macro** *dialog box, make sure the* **FormatCells** *macro is selected, and click the* **Edit** *button.*
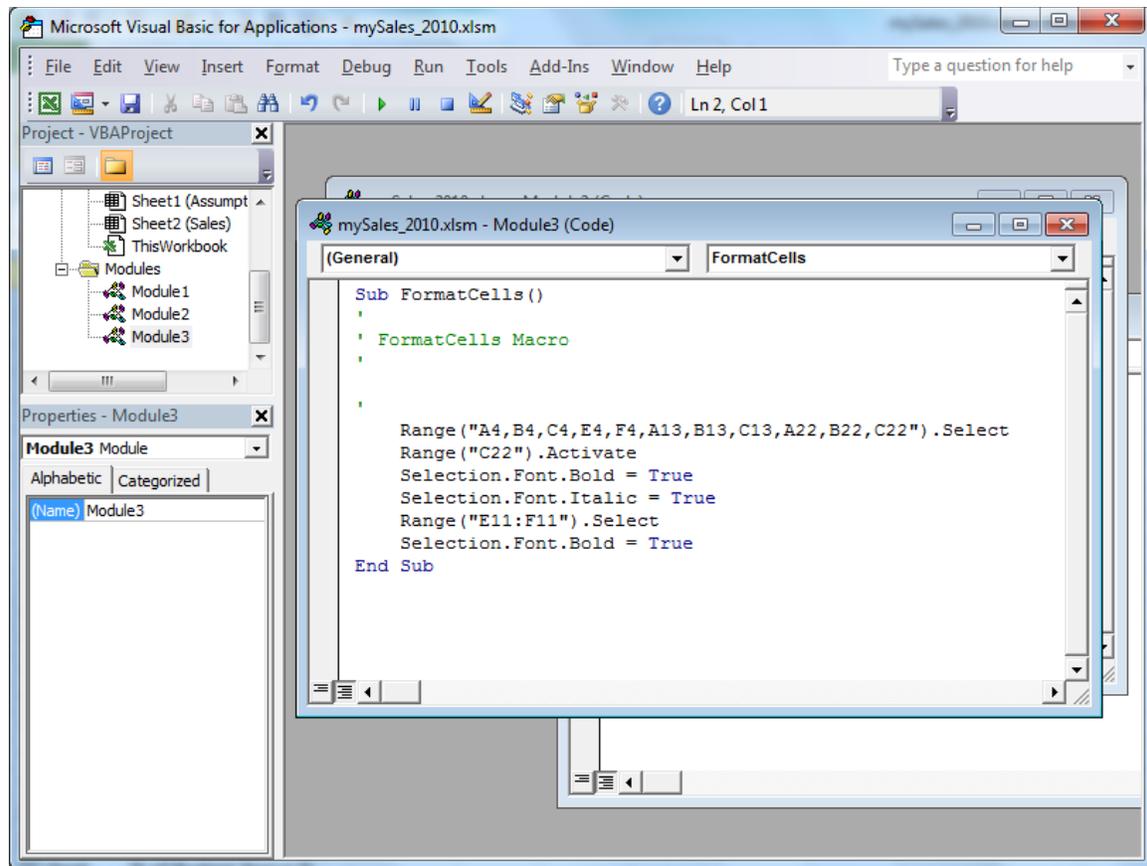
Figure 16.7

Remember, you don't have to know how to write VBA code, but it does help to become somewhat familiar with the code screen as you'll see in an exercise later. You can probably read the code and figure out what the macro is supposed to do. VBA is written with mostly English words and you can learn how to write the code with little training. This macro selects a few cells, bolds and italicizes them, then selects the range E11 – F11 and bolds that range.

6. *Close the* **Microsoft Visual Basic** *screen.*

Running a Macro

You now return to the spreadsheet. To see how the macro works, let's run it.

7. *Click on the* **Macros** *button and choose* **Run** *in the* **Macro** *dialog box.*

	A	B	C	D	E	F
1	Nitey-Nite Mattresses					
2						
3						
4	**Paper**	**% of Budget**	**Bonus %**		**Min. Budge Level**	
5	1	0%	0.00%		0	Paper
6	2	100%	0.50%		80,000	Scissors
7	3	110%	1.00%		120,000	Rock
8	4	120%	1.50%			
9	5	150%	2.00%			
10	6	200%	3.00%			
11					Total Bonus	291,205
12						
13	**Scissors**	**% of Budget**	**Bonus %**			
14	1	0%	0.00%			
15	2	100%	0.50%			
16	3	110%	1.00%			
17	4	125%	1.25%			
18	5	145%	1.50%			
19	6	175%	2.00%			
20						
21						
22	**Rock**	**% of Budget**	**Bonus %**			
23	1	0%	0.00%			
24	2	100%	0.50%			

Figure 16.8

And just like that, the macro selected certain cells and formatted them with bold and/or italics. After you run the macro, notice that the Undo button is not available, so if you run the macro, you have to manually undo the changes or close out of the file and reopen it. We want to start over on our macro lesson, so let's close the file without saving it and reopen it.

8. Close the **mySales_2010.xlsm** *file without saving it and reopen it.*
9. **Enable** *the macros.*

Shortcut Keys

I hate to admit it, but it really is kind of a pain to run the macro, isn't it? You have to go into the View tab, click on View Macros, then run it. Inexperienced users would have a hard time remembering how to do that. Therefore, Excel made it easier to run a macro by using **shortcut keys**. A shortcut key is the keyboard shortcut to run the macro. Let's create a shortcut key to run this macro.

1. *Click on the* **Macros** *drop down menu, choose* **View Macros***, make sure* **FormatCells** *is selected and click the* **Options…** *button.*
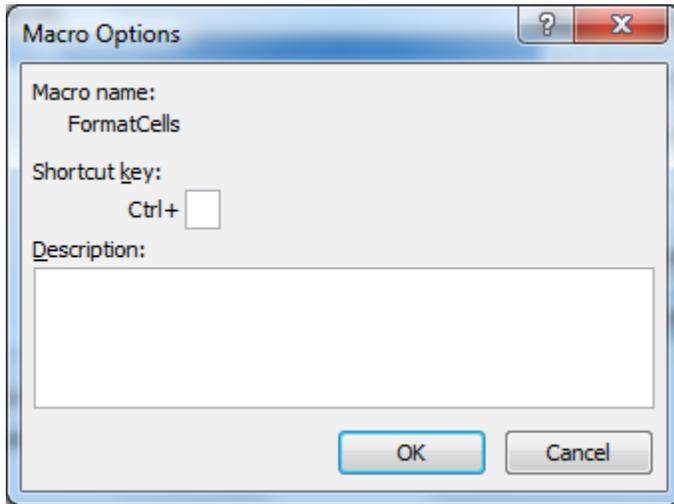

Figure 16.9

The Macro Options dialog box appears. In this screen, you can assign *almost* any key as the shortcut key. The macro runs when you press [Ctrl] and the shortcut key. The only thing you need to remember is that you shouldn't assign a standard shortcut key, like [Ctrl]+c to copy or [Ctrl]+f to find. Let's assign a shortcut key of **a** to this macro.

2. *In the* **Macro Options** *dialog box, type the letter* **a** *(lower case) in the* **Shortcut key** *box and click* **OK***.*
3. *Close out of the* **Macro** *dialog box.*
4. *Press* **[Ctrl]+a** *to run the macro***.**

Step Into

If you blinked, you may not have seen it, but the macro ran. You can tell it ran because some of the cells changed their formatting and the range E11 through F11 is now selected. Sometimes when you run a macro, Excel returns an ugly error message. Unfortunately, it doesn't tell you exactly what the problem is. In these cases, you will want to run each step of the macro until you figure out where the problem is. The Macro dialog box allows you to run the macro in steps by using the **Step Into** option. Let's try it.

5. *Undo all of the bolding and italics.*
6. *Press* **[Alt]+[F8]** *(the shortcut key to open the* **Macro** *dialog box).*
7. *Make sure* **FormatCells** *is selected and click the* **Step Into** *button.*
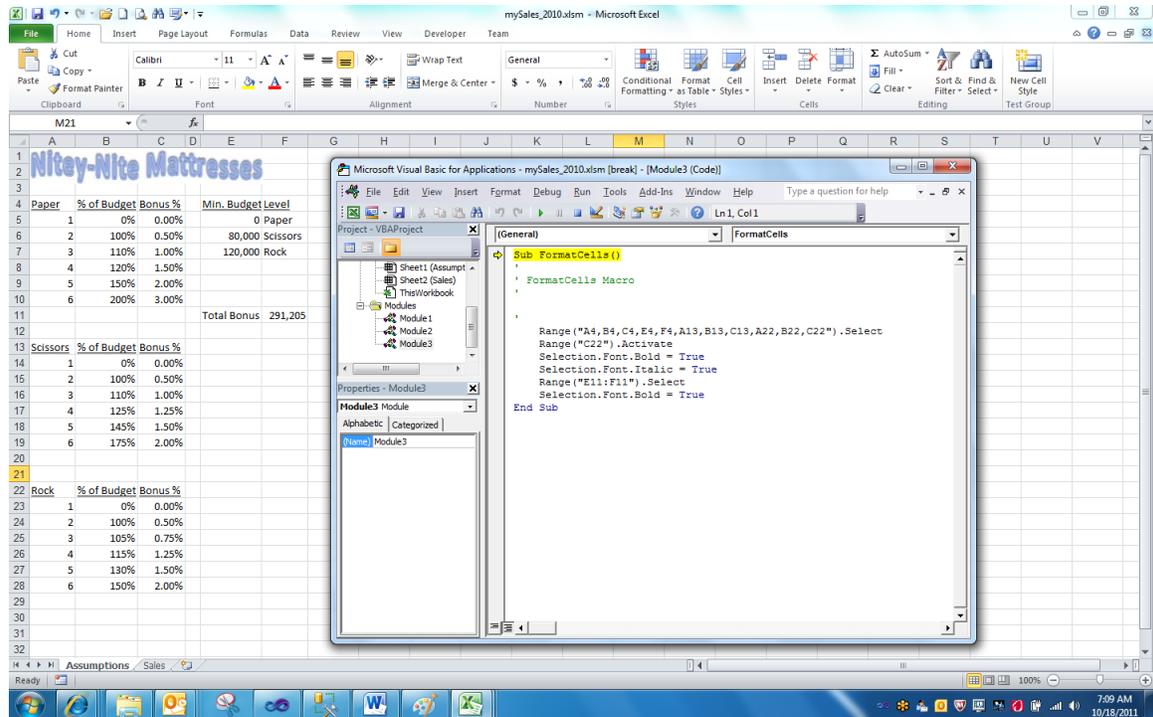8. *Rearrange the windows to make it look like* **Figure 16.10.**

Figure 16.10

Notice that the text **Sub FormatCells()** is highlighted in yellow with a right arrow to the left of the text. The current step the macro is on is always highlighted in yellow. This means that this is the step that will execute next. All this step tells you is that we're about to run the macro. To go to the next step, press the [F8] key.
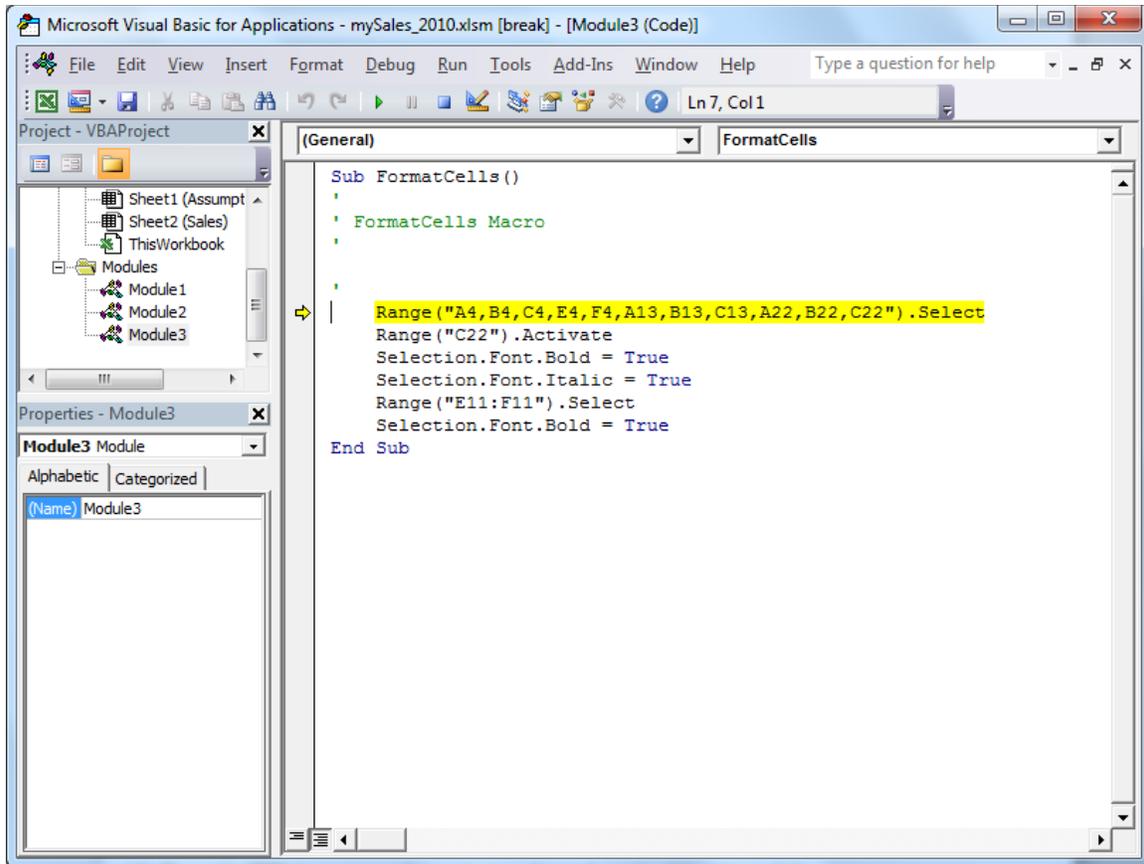
9.   Press the **[F8]** *key.*

Figure 16.11

The first few lines that begin with an apostrophe are comments. VBA skips over these lines. This is how you can type any comment to document what the code is doing. It is a good idea to document as much of your code as you can with comments like these.

The first step in the macro is to select the range. This is reflected in the VBA code as highlighted in yellow.

> 10. *Press the* **[F8]** *key over and over to step through each of the steps while watching the results in the* **Excel** *spreadsheet in the background.*

Once you get to the last step, close the Microsoft Visual Basic screen.

> 11. *Once the steps have completed and there are no more yellow highlighted lines, close the* **Microsoft Visual Basic** *screen.*

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* ***Excel 2010 Review Questions, Chapter 16, Section 1 of 2*** *option and complete the review questions.*

Create a Macro

For me, the easiest way in Excel to create a macro is to use the **macro recorder**. The recorder is just that – functionality you use to record your actions and save them. In the next exercise, you will create a macro that adjusts the column widths after the formatting changes you did in the FormatCells macro. The command is very simple to do – just select all columns and double-click on the column lines.

1. *With the* **Assumptions** *tab selected, click on the* **Macros** *drop down menu in the* **View** *tab and make sure the* **Relative Reference** *icon button is* **not** *selected (it will be highlighted if it is selected). If it is highlighted, click on it to deselect it.*
2. *Click on* **Record Macro…**
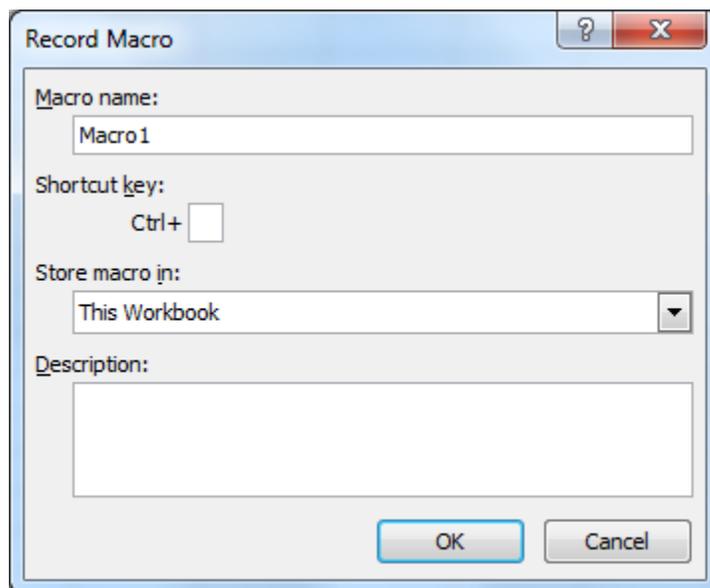
The Record Macro dialog box opens.

Figure 16.12

Note that when you click on the Macros drop down menu, you will see an option called Relative Reference that can be turned off and on. When the **Relative Reference** button is not selected (i.e., not highlighted), the macro actions are recorded at the cell's actual address (like Cell A4). When it is selected, it records the macro in reference to the position of the cursor. For example, let's suppose you had recorded a macro that began at Cell A1 and moved the cursor down two cells to Cell A3 with the Relative Reference not selected. Before running the macro, you moved your cursor to Cell B1. When you run the macro, Excel would go directly to Cell A3. If the Relative Reference button was selected, it would go down two cells from Cell B1 to Cell B3.

3. *In the* **Record Macro** *dialog box, replace* **Macro1** *in the* **Macro name:** *box with* **AdjColumns**

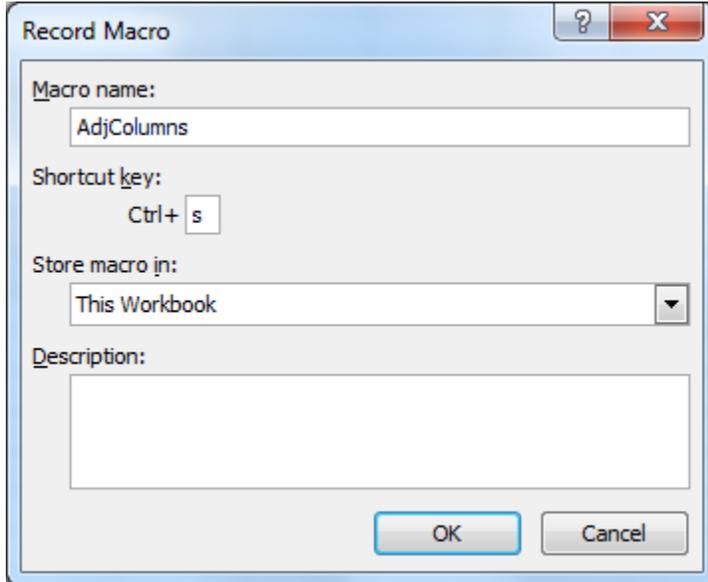4. *In the* **Shortcut key:** *box, type a lower case letter "s".*

Figure 16.13

5. *Leave all other boxes with the default values and click* **OK**.

Figure 16.14

On the bottom left corner of your screen next to the Ready text, you should see a small blue box. Hold your cursor over the box and you will see a screentip that reads "*A macro is currently recording. Click to stop recording.*" Every keystroke and action made with the mouse is now being recorded. Excel is converting all of the keystrokes and clicks in VBA code and is saved in the macro. Let's record our first macro then stop it. All we want this macro to do is to select the entire spreadsheet and adjust the column widths.

6. *Select the entire spreadsheet by clicking on the gray box in the upper left section of the spreadsheet where the columns meet the rows.*
7. *Double-click on any column line to auto adjust all columns.*
8. *Click on* **Cell F11** *of the* **Assumptions** *tab and click the* **Stop Recording** *button.*

The Stop Recording button disappears, but in the background you have a recorded macro.
Let's try out the macro by using the shortcut key you defined.

> 9. *Make sure you are on the* **Assumptions** *tab.*
> 10. *Adjust* **Column E** *to be* **20.00 (145 pixels)** *and click on* **Cell A4.**
> 11. *Press* **[Ctrl]+s.**

In a split second, you can see the screen blip and the width of Column E is adjusted, and
your cursor moves to Cell F11. This indicates the macro is working.

Editing a Macro

To format our spreadsheet, the user has to run two macros, the FormatCells and
AdjColumns macros. Do you think we could combine them into one macro? Sure we
can. There are two ways to do it. First, you could create a third macro that runs the first
two macros. Even though it's easy to do, I don't like to do that, as you end up with three
macros when you should have just one. I prefer the second method, which is to copy the
VBA code from one macro and paste it into the other. Let's do that now. In this next
exercise, you will copy the AdjColumns macro code into the FormatCells macro.

> 1. *Open the* **Macro** *dialog box.*
> 2. *Select the* **AdjColumns** *macro and click the* **Edit** *button.*
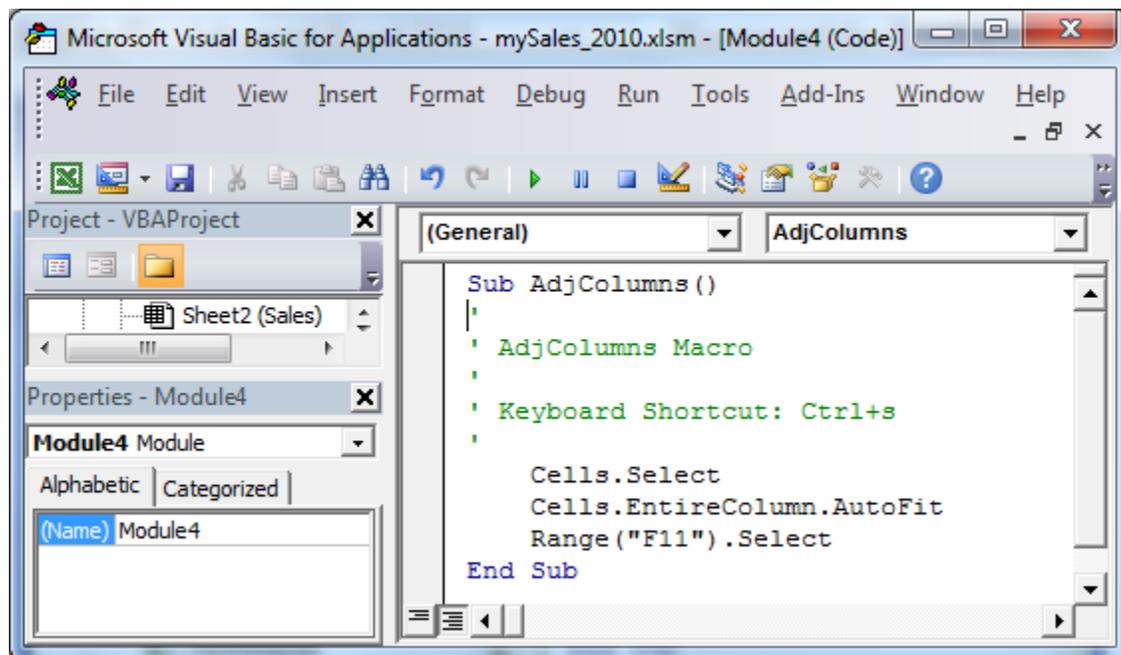

Figure 16.15

The VBA Editor opens up.

3. *Select the three lines in black that make up the text of the macro (**Cells.Select** through **Range("F11").Select**) and copy the text into memory.*
4. *Close the **VBA Editor** screen.*
5. *Open the **Macro** dialog box again, select the **FormatCells** macro and click the **Edit** button.*
6. *Go to the last line of the macro, just before the **End Sub** statement, and paste the text from the **AdjColumns** macro.*
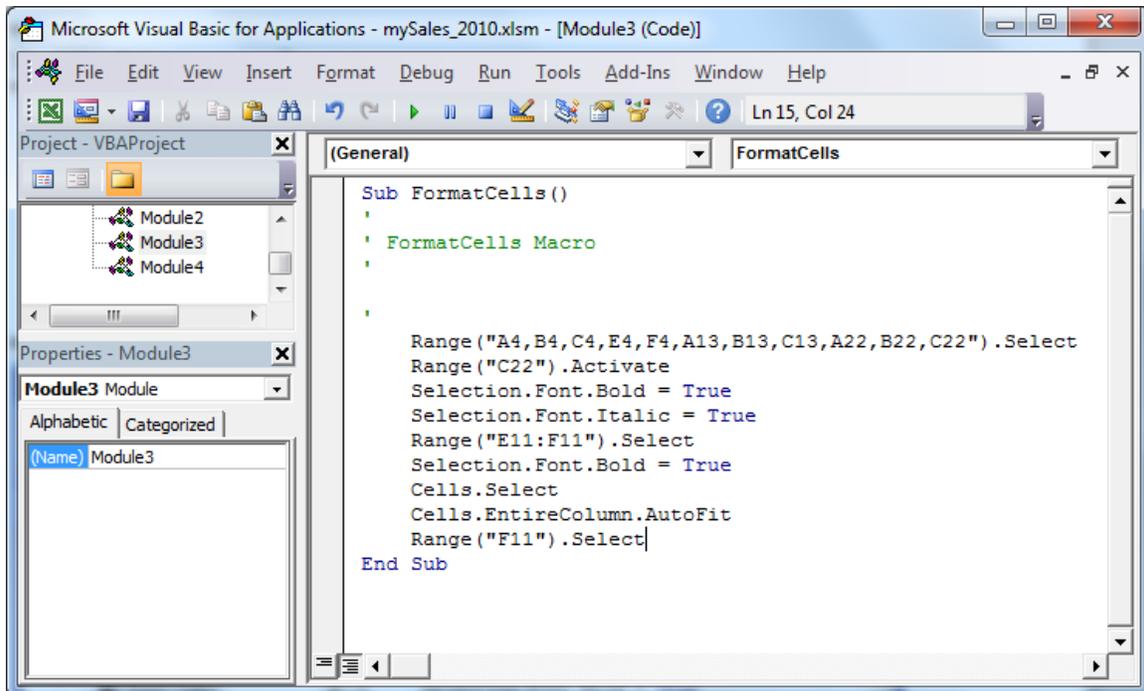
Figure 16.16

7. *Close the **VBA Editor** screen.*
8. *Make sure the "**a**" shortcut is still valid. (Sometimes VBA resets the shortcut to nothing when changes are made to the macro.)*
9. *Adjust the column width of **Column E** to be something much larger than it currently is, unbold the bolded cells, and press **[Ctrl]+a** to run the **FormatCells** macro.*

As you will see, the width of Column E is now shorter and all of the cells in the FormatCells macro have changed their formatting. This is the evidence you needed to confirm that both macros are now combined into one. Now that they are combined, you don't need the AdjColumns macro.

10. *Open up the **Macro** dialog box, click on the **AdjColumns** macro, and click the **Delete** button.*
11. *Click **Yes** to confirm the deletion of the macro.*

Figure 16.17

> *12. Save the file.*

One problem with the way we currently have our spreadsheet set up is that the user has to remember to use [Ctrl]+a to run the macro. We could type the instructions somewhere on the Assumptions page, but that could take up a lot of space. One way to make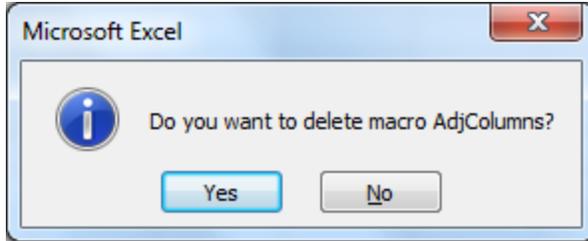 it *bone stupid simple* is to use a **Command Button**. I really like Command Buttons, and since this is my course, we'll do some now.

Command Buttons

You are probably already familiar with a **Command Button**. A Command Button is a button that does something when you click on it. There are many examples of Command Buttons on almost every Internet page. You can create Command Buttons in Excel, Access, HTML, and many other programs. When you open a macro-enabled workbook, you see the Enable Content button, which is an example of a Command Button. In our example, we'll create a command button that executes the FormatCells macro. Command Buttons, as well as other tools we'll use later in this chapter, are contained in the **Developer tab**.

1. *While on the* **Assumptions** *tab, click on the* **Developer** *tab.*
2. *In the* **Controls** *group, click on the* **Insert** *icon.*
3. *Click on the* **Button (Form Control)** *icon* ▭*.*
4. *With your mouse, draw a rectangle at about* **Cell E13** *below the* **Total Bonus** *row and release.*

When you release the mouse, the Assign Macro dialog box pops up.
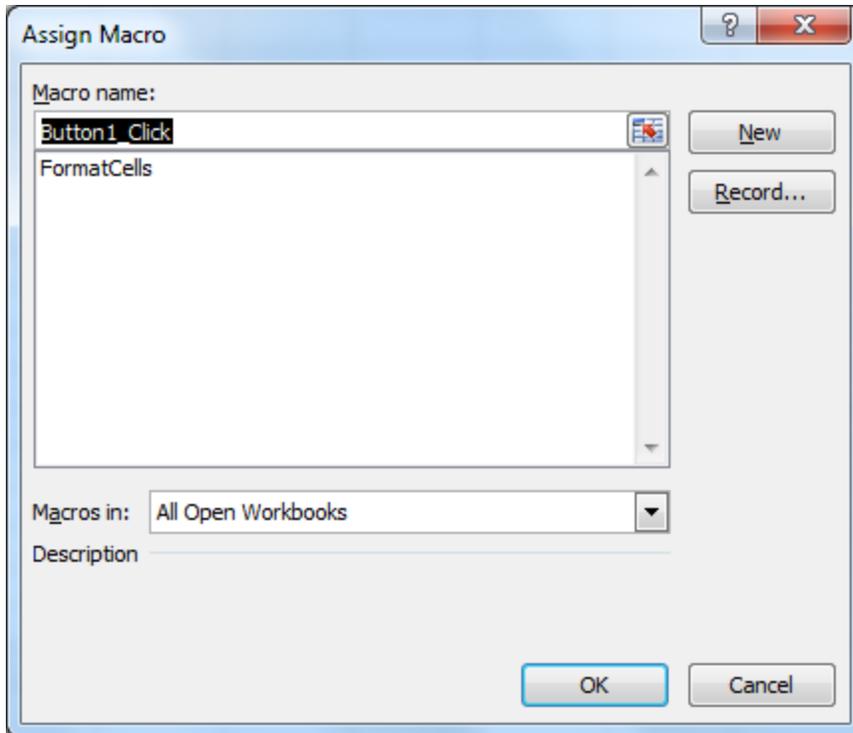
Figure 16.18

    5. *Select* **FormatCells** *in the* **Macro name***: box and click* **OK***.*

Excel creates a button that looks like this:

Figure 16.19

    6. *While the* **Command Button** *is selected (i.e., handles appear around it),*
       select the text **Button 1** *inside the button and replace it with* **Format**
       Cells
    7. *Click the* **[Esc]** *key to exit out of the button* **Design** *mode.*

To edit the button, move it around, reassign the macro or resize it, simply right-click on the button and either choose an option from the list or click [Esc]. If you left click the button, it will execute the macro that you assigned to it

    8. *Right-click on the* **Format Cells** *command button, press* **[Esc]***, and*
       position your cursor over the button's shaded area where the cursor turns
       to a four arrow symbol.
    9. *Drag the button just to the right of the* **Nitey-Nite** *graphic and release.*
    10. *Click anywhere outside of the button (to exit out of design mode).*

Figure 16.20

> 11. *Adjust the width of* **Column E** *and click on the* **Format Cells** *command button to test the macro.*
> 12. *Save the file.*

Macros in the Quick Access Toolbar

Another way to store a macro in your spreadsheet is to put it in the Quick Access Toolbar. This comes in particularly handy when you have lots of macros and you want to organize them in an easy-to-use fashion. In this next example, we'll put the FormatCells macro in the Quick Access Toolbar.

> 1. *Click on the* **Customize Quick Access Toolbar** *drop down arrow and choose* **More Commands…**

The Excel Options dialog box appears, and the Customize section of the dialog box is activated.

> 2. *Make sure the* **Choose commands from:** *box is set to* **Popular Commands**.
> 3. *Scroll to the bottom of the list and click on* **View Macros**.
> 4. *Click* **Add>>**

The View Macros object is moved over to the section that displays all of the icons currently available in the Quick Access Toolbar.

> 5. *Click on the* **Choose commands from** *drop down menu and choose* **Macros.**
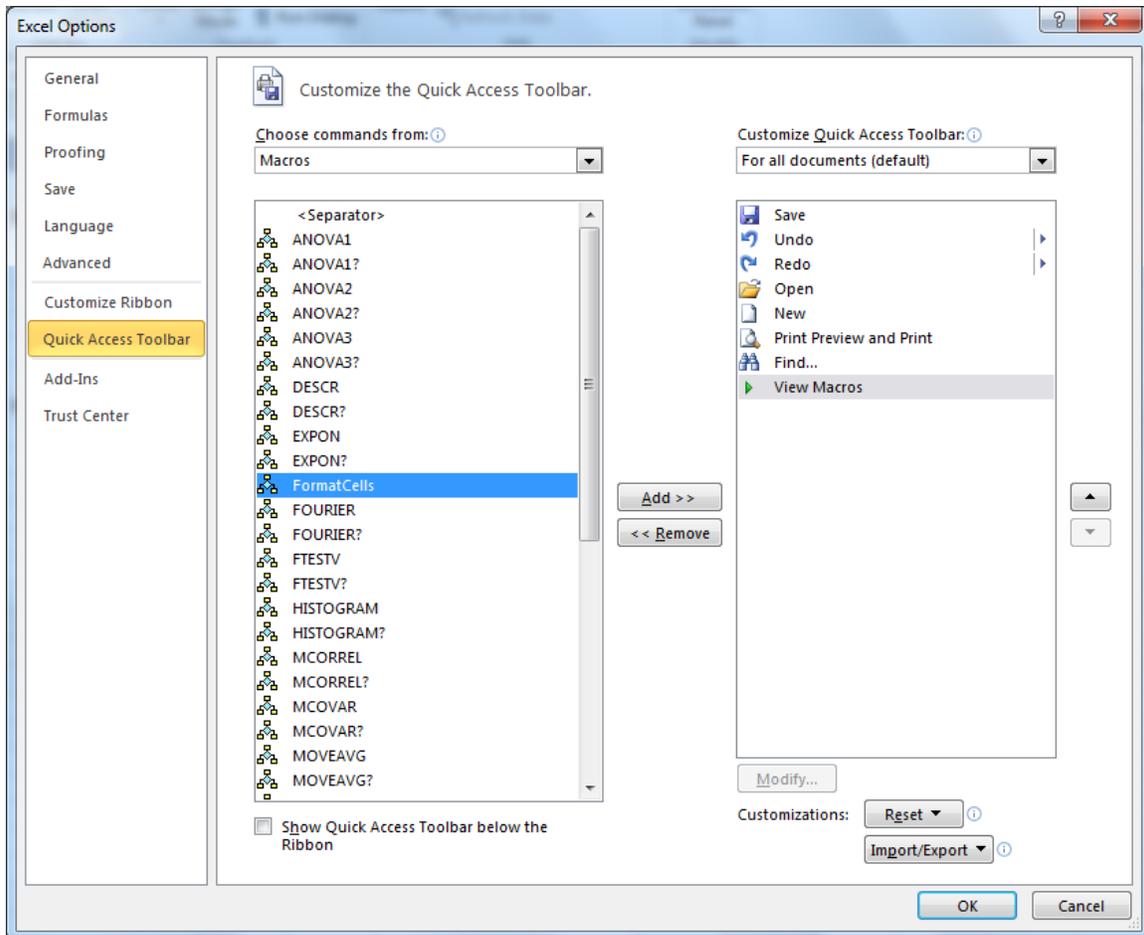
Figure 16.21

6. *Click on the* **FormatCells** *macro and click* **Add>>**
7. *Click on the* **FormatCells** *macro in the right section and click the* **Modify** *button at the bottom of the section.*

The Modify Button dialog box appears.
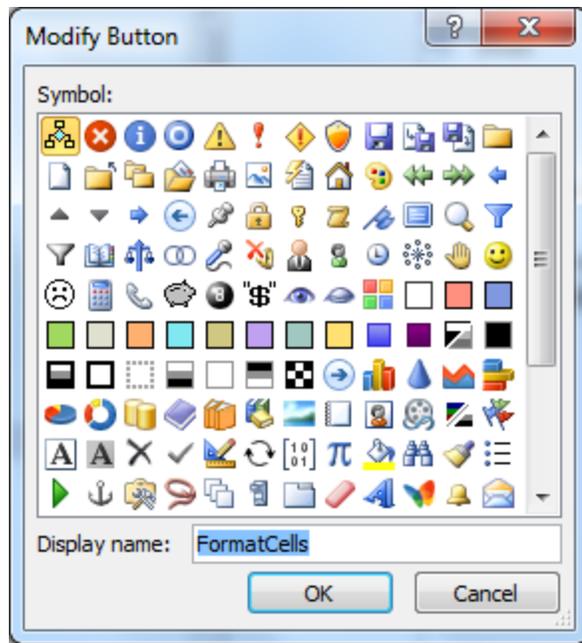
Figure 16.22

8. *Click on the button in the second row that looks like a painter's palette
   and click* **OK** *to close the* **Modify Button** *dialog box, then click* **OK** *again
   to close the* **Excel Options** *dialog box.*

You have now assigned that image to the FormatCells macro. Whenever you want to use
that macro, simply click on that image.

9. *Click on the* **palette** *icon to run the* **FormatCells** *macro and make sure it
   works.*

Spin Buttons

Another object from the Developer tab that I use a lot is the **Spin Button**, sometimes
called a **Spin Box** or **Spinner Button**. Users, particularly upper management, like to see
what happens with the bottom line with each unit change in a variable. At Nitey-Nite
Mattresses, there is an on-going argument over the entry point at which management
wants to pay bonuses. Some management people say that each store must reach 100%
before making a bonus. Others say you can make more sales if the entry point is more
lenient, like at 90%, and yet other hard-core individuals believe 100% is the minimum
acceptable to keep your job and that the bonus entry point should be at about 110%.
With a Spin Button, you can create an analysis to show them the end result (Total Bonus
Payable) with every percentage point change in the entry point without having to type in
each assumption. It's so simple to use that even upper management people who have
little experience with Excel can use it and they LOVE it! Let's create a Spin Button.

1. *Make sure you are on the **Assumptions** tab of the **mySales_2010.xlsx** file and click on the **Insert** button of the **Controls** group of the **Developer** tab.*
2. *In the **Form Controls** box, click on the **Spin Button** .*
3. *Draw a vertically shaped rectangle box on the right side of **Cells F14** and **F15** and release.*
4. *Right-click on the **Spin Button** and choose **Format Control…***

The Format Control dialog box appears.
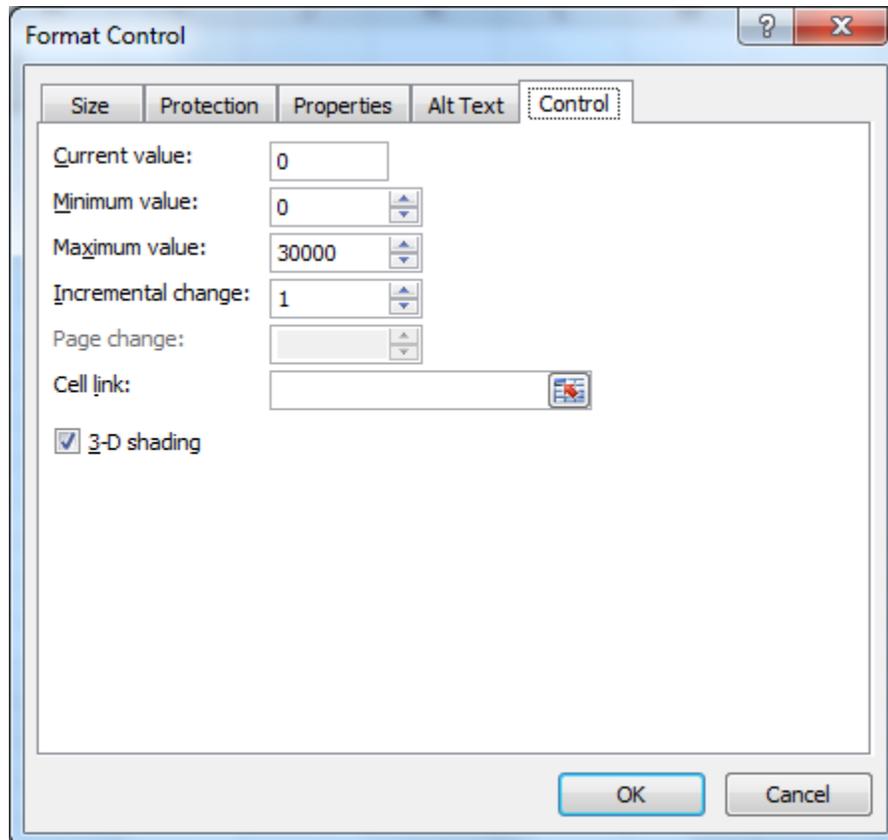
Figure 16.23

5. *Click on the **Control** tab.*
6. *Click inside the **Cell link***: box then click on **Cell F14** *(you may have to move the dialog box out of the way to click on **Cell F14**) and click **OK**.*
7. *Click outside the **Spin Button** to take it out of design mode.*
8. *Click on the up and down arrows of the spinner button and you will see the value in **Cell F14** go up and down accordingly.*

With the spin button set up, all we have to do is write a formula using the number in Cell F14 to calculate the change in the entry point. If you look at the values in Cells B15 and B24, you will see that all of the percentages are based on the value in Cell B6, which is currently set to 100%. We want to write a formula that will take the number in Cell B6 up and down by one percentage point. Notice that the spin button's value in Cell F14 can

go up a lot but stops at 0 when clicking the down arrow. It would seem that we can't go below zero, but we can change around some assumptions in the dialog box that will solve that issue.

9. *Right-click on the* **Spin Button** *and choose* **Format Control…**
10. *Change the* **Current Value** *to* **100***, leave the* **Minimum Value** *at* **0***, change the* **Maximum value** *to* **200***, leave the* **Incremental change** *at* **1** *(you can't go below 0 on the Incremental value – that's why we have to write a formula), click* **OK** *and exit out of the* **Spin Button's** *design mode.*

The value in Cell F14 changes to 100. Click on the up and down arrows of the Spin Button and you will see that you can go up to 200 and down to 0.

11. *Replace the value in* **Cell B6** *with this formula:* **=F14/100***.*
12. *Hide the contents of* **Cell F14** *(use a* **Custom** *format of* **;;;** *in the* **Format Cells** *dialog box).*
13. *Type* **Entry Point** *in Cell E14*.
14. *In* **Cell E15***, type* **=F14/100**   *and format it as* **Percent, zero decimal places***.*
15. *Take the* **Entry Point** *down to* **95%** *using the* **Spin Button***.*

◢	A	B	C	D	E	F	G	H
1	Nitey-Nite Mattresses					Format Cells		
2								
3								
4	*Paper*	*% of Budget*	*Bonus %*		*Min. Budget*	*Level*		
5	1	0%	0.00%		0	Paper		
6	2	95%	0.50%		80,000	Scissors		
7	3	105%	1.00%		120,000	Rock		
8	4	115%	1.50%					
9	5	145%	2.00%					
10	6	195%	3.00%					
11					**Total Bonus**	317,496		
12								
13	*Scissors*	*% of Budget*	*Bonus %*					
14	1	0%	0.00%		Entry Point	▲		
15	2	95%	0.50%		95%	▼		
16	3	105%	1.00%					
17	4	120%	1.25%					
18	5	140%	1.50%					

Figure 16.24

The Total Bonus becomes $317,496. Notice that the % of Budget numbers are all based on the Entry Point in Cell B6.   With every click on the Spin Button, there is instantaneously a new Total Bonus value.

Check Boxes

The next object in the Developer tab I think is very useful is the **check box**. If you've spent any time in computer programs or on the Internet, you're probably already familiar with check boxes. A check box is used when you want the user to simply check and uncheck an assumption, or in other words, turn an assumption off and on.   In our example, let's assume there are discussions with upper management as to whether or not Paper stores should be eligible for a bonus, as they are smaller stores that don't contribute much to the bottom line of the company. We will create a check box to include them as eligible for a bonus when checked or uncheck it if they are not eligible and see the difference in the Total Bonus. Let's do it.

1. *In **Cell E17**, type:* **Include Paper**
2. *Click on the **Check Box** icon ☑ in **Form Controls**.*
3. *With your cursor, draw a small box in the middle of **Cell F17**.*

You should get something similar to the following:

9	5	145%	2.00%			
10	6	195%	3.00%			
11				**Total Bonus**	317,496	
12						
13	*Scissors*	*% of Budget*	*Bonus %*			
14	1	0%	0.00%	Entry Point	▲	
15	2	95%	0.50%	95%	▼	
16	3	105%	1.00%			
17	4	120%	1.25%	Include Paper	☐ Check	
18	5	140%	1.50%			
19	6	170%	2.00%			

Figure 16.25

4. *Delete the text to the immediate right of the check box inside the shaded area.*
5. *Right-click on the check box and choose **Format Control…***
6. *On the **Control** tab, click inside the **Cell link:** box.*
7. *Click on **Cell F17** on the spreadsheet or type **F17**.*
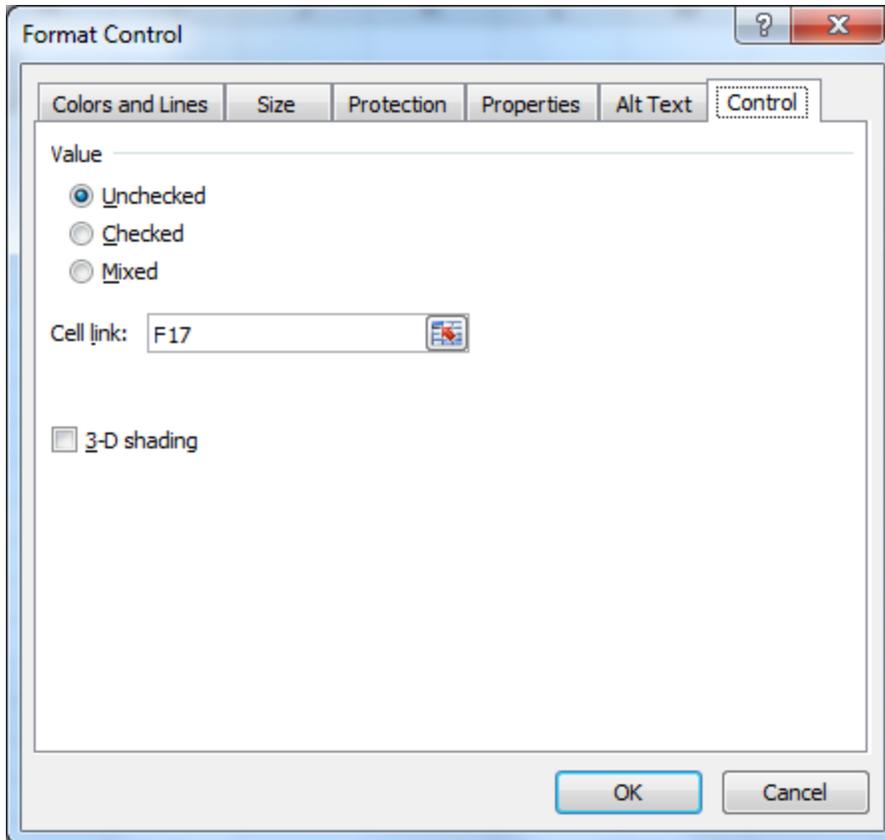
Figure 16.26

8. *Leave all default values and click* **OK**.
9. *Exit out of the* **check box** *design mode*.

Check and uncheck the check box. You will see that Cell F17 returns **TRUE** when it is checked and **FALSE** when it is unchecked.

10. *Make sure the check box is unchecked.*
11. *Format* **Cell F17** *(the cell, not the check box) as* **hidden**.
12. *Resize* **Column E** *if necessary.*
13. *Go to the* **Sales** *page.*
14. *Insert a column between the* **Store_Type** *and* **Bonus** *fields. The new column should be* **Column K.** *Name it* **Include***.*
15. *In* **Cell K5***, write a formula that says if the* **Store_Type** *is not* **Paper***, return a* **Y***, else, if* **Cell F17** *on the* **Assumptions** *page is* **TRUE***, then return a* **Y***, else, return* **N***.*
16. *Copy the formula down to all cells below.*

	K5		▾		f_x	=IF(J5<>Assumptions!$F$5,"Y",IF(Assumptions!$F$17=TRUE,"Y","N"))							

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Nitey-Nite Mattresses**											
2												
3												
4	Year	Month	Store_No	Store_ID	attress_Re	illow_Rev	Total_Rev	Budget	Budget_%	tore_Type	Include	Bonus
5	2010	1	1001	19	37,107	4,613	41,720	98,000	42.6%	Scissors	Y	0
6	2010	3	1001	19	46,224	4,021	50,245	98,000	51.3%	Scissors	Y	0
7	2010	10	1001	19	51,256	4,578	55,834	98,000	57.0%	Scissors	Y	0
8	2010	5	1001	19	54,584	3,595	58,178	98,000	59.4%	Scissors	Y	0
9	2010	2	1001	19	55,027	3,662	58,689	98,000	59.9%	Scissors	Y	0
10	2010	4	1001	19	56,609	3,911	60,520	98,000	61.8%	Scissors	Y	0
11	2010	7	1001	19	63,045	3,681	66,726	98,000	68.1%	Scissors	Y	0
12	2010	6	1001	19	63,376	4,095	67,471	98,000	68.8%	Scissors	Y	0
13	2010	11	1001	19	77,923	8,318	86,241	98,000	88.0%	Scissors	Y	0
14	2010	8	1001	19	86,017	9,506	95,523	98,000	97.5%	Scissors	Y	478
15	2010	12	1001	19	101,484	7,430	108,913	98,000	111.1%	Scissors	Y	1,089
16	2010	9	1001	19	101,337	9,197	110,533	98,000	112.8%	Scissors	Y	1,105
17	2010	1	1002	16	31,686	2,817	34,502	63,000	54.8%	Paper	N	0
18	2010	2	1002	16	57,618	2,278	59,896	63,000	95.1%	Paper	N	299
19	2010	7	1002	16	72,269	3,554	75,823	63,000	120.4%	Paper	N	1,137

Figure 16.27

Notice that in my formula, I did not hard code in the word "Paper". I referred to Cell F5 on the Assumptions tab. This way, if Nitey-Nite every decided to change the names Paper, Scissors, Rock to Bronze, Silver, Gold (or something similar), all they would have to do is make the change on the Assumptions page and all of the formulas would continue to work.

> *17. Edit the formula in* **Cell L5** *to return* **0** *if the* **Include** *column is* **N**.
> *18. Copy the new formula down to all cells below.*

The new formula in Cell L5 should be as follows:

=IF(K5="N",0,IF(J5=Assumptions!$F$5,VLOOKUP(MATCH(I5,Assumptions!$B$5:$B$10,1),Assumptions!$A$5:$C$10,3,FALSE)*G5,IF(J5=Assumptions!$F$6,VLOOKUP(MATCH(I5,Assumptions!$B$14:$B$19,1),Assumptions!$A$14:$C$19,3,FALSE)*G5,VLOOKUP(MATCH(I5,Assumptions!$B$23:$B$28,1),Assumptions!$A$23:$C$28,3,FALSE)*G5)))

The only real change to the formula is "IF(K5=0,"N",0, ", and adding an ending parenthesis at the end.

> *19. Go to the* **Assumptions** *page.*
> *20. Check and uncheck the* **check box**.

You should see that the Total Bonus is $317,496 when it is checked and $198,556 when it is unchecked. You now have a fully functional application that will allow management to change almost any assumption in the Sales program. Trust me, management and clients LOVE this kind of analysis. It gives them the opportunity to make any change they want and immediately see the results.

21. Save and close the file.

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 16, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you learned about macro security and why you should be cautious about receiving files containing macros from others. We reviewed the VBA (Visual Basic for Applications) programming language, which is the language behind macros. You learned how to create, edit, run, step into and delete a macro, as well as how to work with relative references as it applies to macros. You learned about shortcut keys and created a shortcut key within a macro. You added a macro to the Quick Access Toolbar and finally you created a Command Button, a Spin Button and a Check Box using Form Controls.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

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CHAPTER SEVENTEEN – THE WEB AND NEW 2010 FEATURES

In this chapter, you will:

- Create a simple HTML page using NotePad.
- Save an Excel file as an HTML file.
- Create a Web Query.
- Format a Table.
- Delete records in a table but not in the worksheet.
- Work with advanced Date filtering.
- Create a Background in a spreadsheet.

Working with the Web

One enhancement that was made in more recent versions of Excel is its capability of saving documents to the World Wide Web (Web). When a document is saved on the Web, it can be viewable to everyone or just to people that you allow access to it. One of the great points about saving documents to the web is the distribution of the document or report. Once it is on the Web, all you have to do is tell people where it is at, usually by sending them a link in an email, and they can click on the link to access it. Even though you can make an Excel file itself available via the Web, that is sometimes not a good idea, particularly if that person is accessing the Web using a dial up or wireless connection. Sometimes large files can take a lot of time to open. Additionally, the user would have to have Excel installed on their computer in order to view it. However, as many people in a business environment share files, we'll review how to post Excel files on the web in this chapter.

To make an Excel file viewable on a browser (like Microsoft Internet Explorer), it is necessary to save the file in some type of browser-viewable format. The basic format for viewing documents on the web is in an **HTML** format. HTML stands for Hypertext Markup Language. An HTML file is a page that is programmed to make it readable for a browser. Although programming HTML is beyond the scope of this course, it would be helpful to know at least some basics.

Create a Simple HTML Page

An HTML file is programmed with **tags** which tell the browser how to display its contents. HTML is not a programming language per se but a markup language, and is very easy to learn how to code. You don't even need any special software to program it – just open Notepad or Word and start programming. Let's create a simple HTML file using NotePad.

1. *Open a blank* **NotePad** *file (***Start, All Programs, Accessories, NotePad***).*
2. *In the* **NotePad** *file, type the text as shown in* **Figure 17.1.**
3. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter17\hello.html**. *(Make sure to save the file name as* **hello.html** *and the* **Save as** *type of* **All Files.***)*
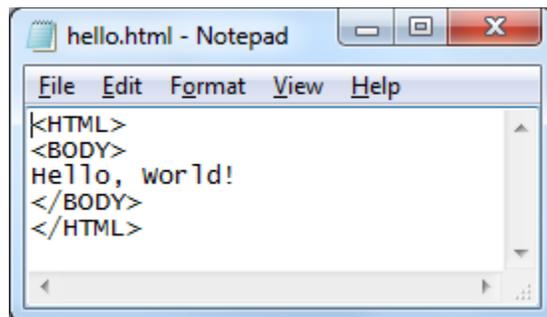

Figure 17.1

In this file, there are five lines of code. The text surrounded by the "<" and ">" signs are called **tags**. Tags are the basics behind HTML files. There is only one required tag in an HTML file. That tag is the <HTML> tag, which tells the browser that this is an HTML page. All other tags are optional. The last tag, </HTML>, tells the browser it is the end of the HTML page. The <BODY> tag begins what is contained in the body of the page, and the </BODY> tag ends the <BODY> tag, or ends the body of the page. You must save an HTML file with the extension .htm or .html.

> 4. *Open your* **Internet browser**.
> 5. *Click on* **File, Open…***, click on the* **Browse** *button, navigate to*
>   **C:\ClineSys\Excel 2010\Chapter17\hello.html** *and open the file.*
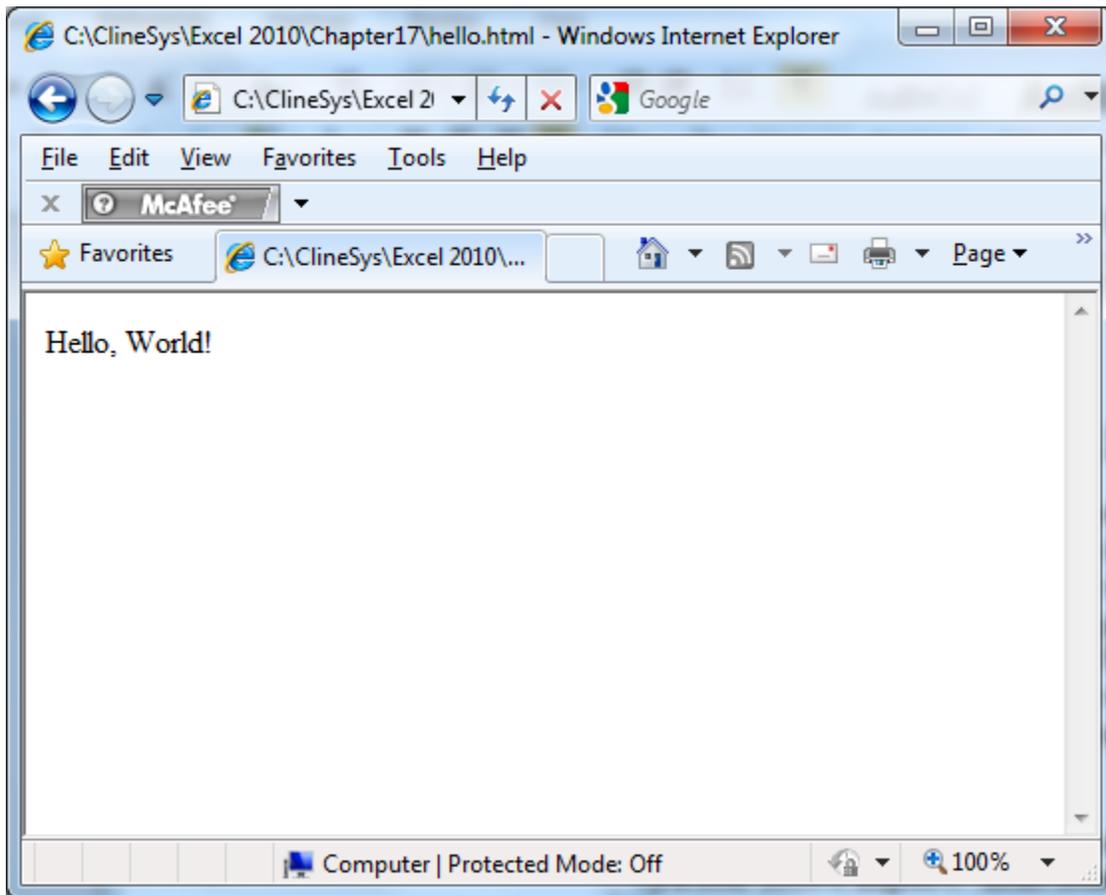
Figure 17.2

Again, this is a very simple HTML page that is viewable currently only by you since it is on your computer's hard drive. If you want the whole world to see it, you would have to copy the file on to a web server, which is simply a computer that is connected to the web.

At this point, you can start changing some of the text and tags to make it more useful, meaningful or just pretty it up.

> 6. *In the* **NotePad** *file, add the* **<B>** *and* **</B>** *tags around the word* **Hello**.

7. *Save the* **NotePad** *file.*
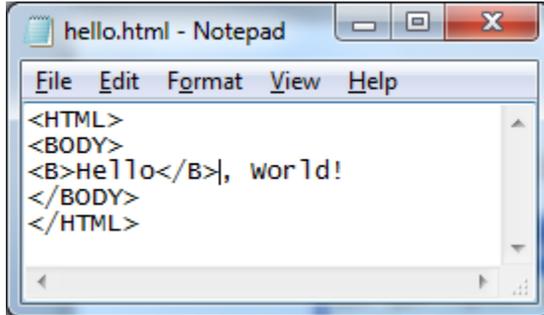
Figure 17.3

The <B> and </B> tags tell the browser to display a bold format starting with the letter **H** in Hello and end the bold after the letter **o**. To see how it looks on your browser, just click the Refresh icon after you save the NotePad file. You can also use the <STRONG> tag to bold text.

8. *Click the* **Refresh** *icon on your browser.*
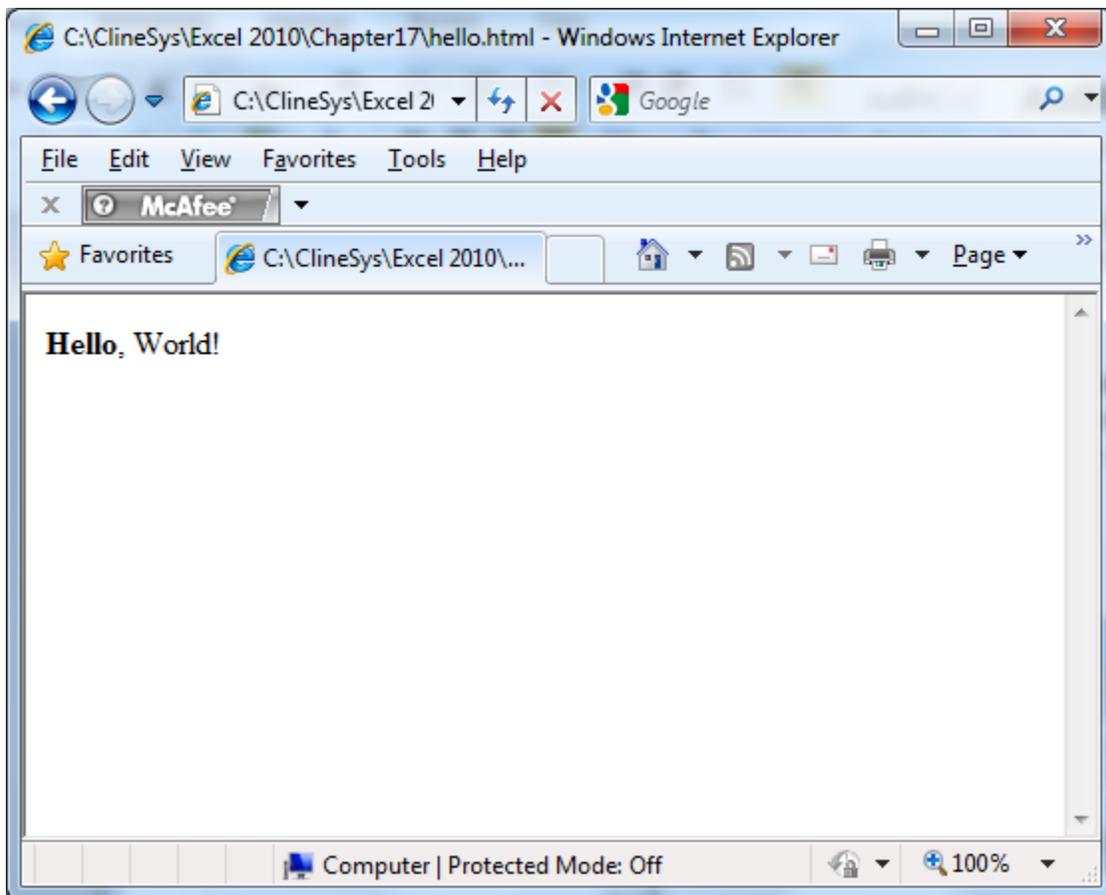
Figure 17.4

Now you see that the word Hello is in a bold format. It is beyond the scope of this course to give a complete lesson on creating HTML files, but learning to write HTML is essential if you want to learn web development, and it is relatively easy to learn.

9. *Close your* **Internet browser** *and* **NotePad**.

Save as Single File Web Page

There are many types of web pages that can be created for the web. Other types of web pages include ASP, ASPX (or ASP.Net), PHP, JSP, and CFM, just to name a few. In this next exercise, you will open an Excel file and save the file as a **web page**. When you save an Excel file as a single web page using Excel's publishing tools, it is created with an mht (MHTML, or Microsoft HTML) extension. Creating this kind of file is not much more than clicking File, Save As… and choose a save as format. Let's do it.

1. *In* **Excel***, open the* **Q1_Sales**.**xlsx** *file located at* **C:/ClineSys/Excel 2010/Chapter17.**

◢	A	B	C	D	E	F
1	Store_No	Year	Month	Merchandise Sales	Warranty Sales	Delivery Sales
2	1001	2010	1	35,430	440	935
3	1002	2010	1	23,619	560	990
4	1005	2010	1	51,581	1,120	1,485
5	1009	2010	1	28,460	600	495
6	1011	2010	1	59,323	1,600	1,760
7	1012	2010	1	53,462	1,240	1,540
8	1018	2010	1	60,420	1,480	1,595
9	1019	2010	1	62,773	1,520	1,210
10	1021	2010	1	30,801	680	715
11	1024	2010	1	66,012	1,280	1,265
12	1026	2010	1	57,845	960	1,760
13	1027	2010	1	56,040	1,400	1,925
14	1029	2010	1	35,139	520	1,045
15	1032	2010	1	67,055	960	1,760

Figure 17.5

This is a simple file we've worked with before. It contains three tabs: January, February, and March. Each tab contains sales data by store and merchandise type.

2. *Click on the* **File** *tab,* **Save As**.
3. *In the* **Save As** *dialog box, click on the* **Save as type** *drop down menu and choose* **Single File Web Page**.
4. *Make sure the* **Entire Workbook** *radio button is selected*.
5. *Click* **Save**.

6. *Click* **Yes** *in the warning dialog box, as all we're trying to do is create a static web page.*

It may not look like anything happened, but you just saved the file as a web page viewable via your browser.

7. *Open* **Internet Explorer** *(or your own Internet browser).*
8. *Click* **File, Open…***, navigate to* **C:\ExcelCEO\Excel 2010\Chapter17\Q1_Sales.mht** *and open the file.*
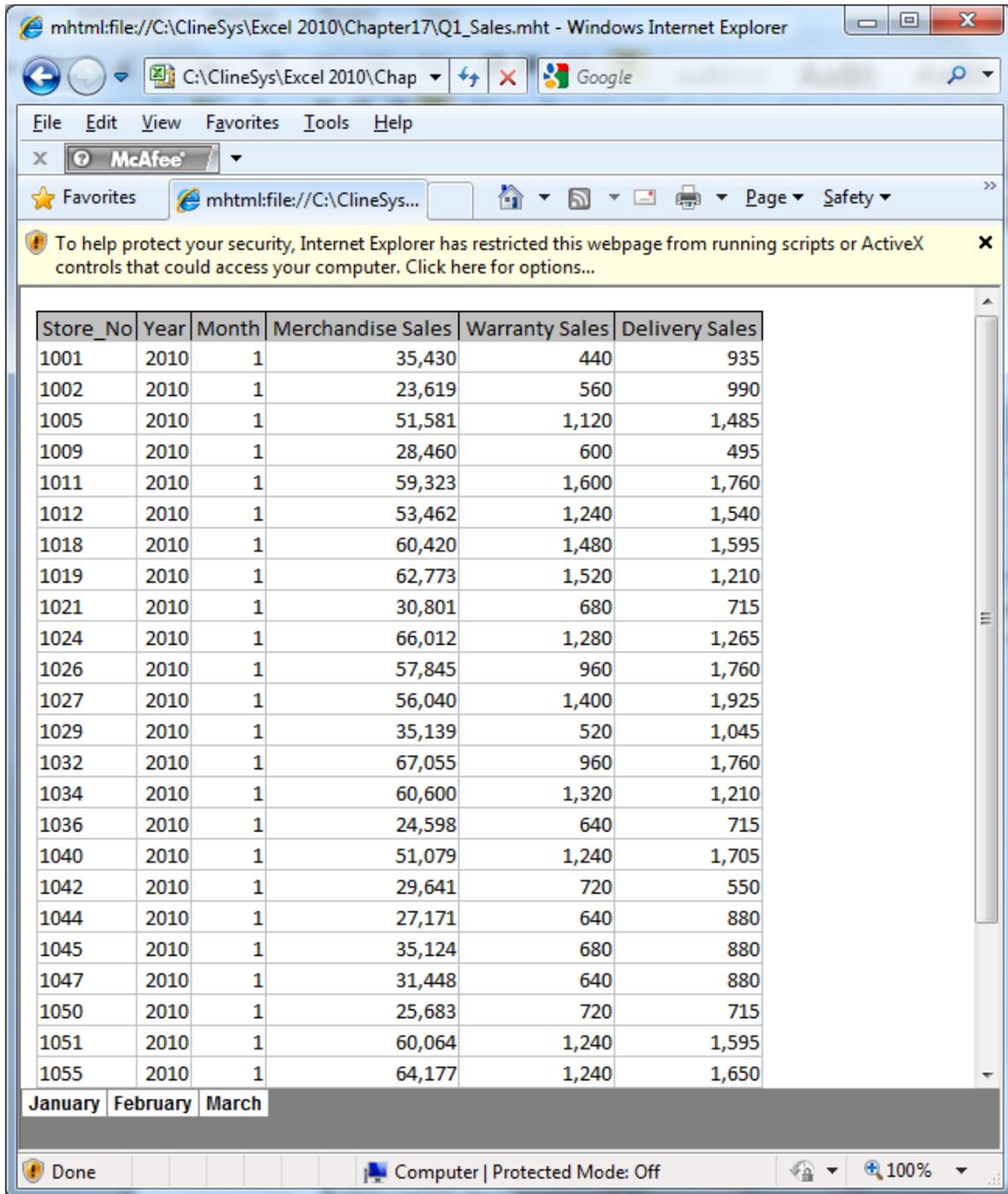
Figure 17.6

    9. *Close the* **ActiveX Security** *message in yellow*.

You should see something like Figure 17.6. Depending on your browser, you may see a warning message telling you that the browser restricted access to the file. Since it is on your computer and no one else sees it, it is OK to allow access to it.

10. Click on the **February** *tab at the bottom left of your screen to see the numbers change to* **February** *data.*

A note on Web reporting: Microsoft is moving away from allowing users to share their Excel files and making them interactive, meaning allowing users to update the data, via the Web. Creating a web page from an Excel file like we just did is simply putting the data in a read-only format. If you are interested in sharing data over the web and allowing users to interact with the data in reports that sort, filter, and update data, I suggest you explore other web tools such as Microsoft SharePoint Services or ASP.Net, There are also some good non-Microsoft tools that have that functionality, like PHP, JSP and ColdFusion. If you want to simply report numbers in a formatted report that is printable (i.e., the headers and footer appear on each page and you can control the margins) but cannot update, add or delete records in a database, I suggest using tools like MacroMedia's Business Objects (Crystal Reports) or my favorite Microsoft SQL Server Reporting Services. A discussion of these tools is beyond the scope of this course. However, if you complete the Excel course AND the subsequent Access course, you will be adequately prepared to start learning to use any one of these tools.

> ***Review Questions****: It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* ***Excel 2010 Review Questions, Chapter 17, Section 1 of 2*** *option and complete the review questions.*

11. Close your browser and close the **Q1_Sales.mht** *file.*

Create a Web Query

While there is an enormous amount of data on the Web, it doesn't do you any good unless you can access it and manipulate it in a way that is meaningful to you. Excel has the capability of creating a **web query** by letting you copy the data on a web page and pasting it into an Excel spreadsheet. Once you paste it into the spreadsheet, a Paste Options button will appear that allows you to create and save the query so you can run it over and over again (assuming the data changes). Let's create a web query on a simple web page I built.

1. *Open a blank* **Excel** *spreadsheet, then open* **Internet Explorer** *(or your own browser).*
2. *Type this address into the address bar of your browser:* **www.ExcelCEO.com/dates.asp**.
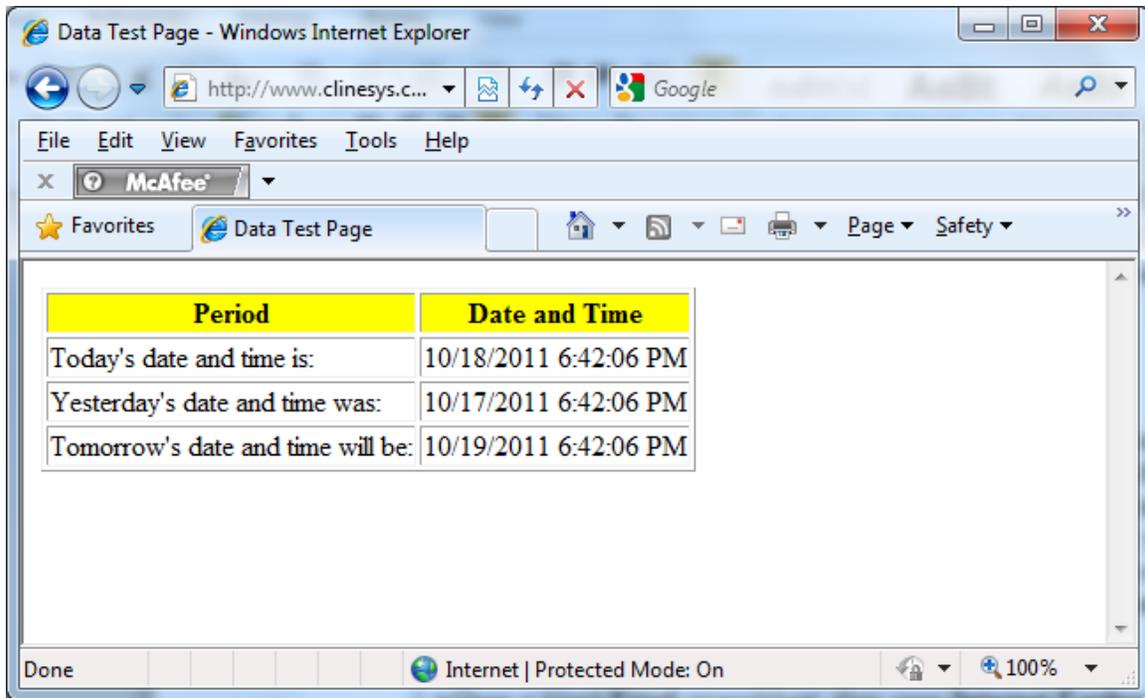
Figure 17.17

3. *With your mouse, select the entire table in the browser window, copy it, toggle over to the blank* **Excel** *spreadsheet and paste the contents into* **Cell A1** *of the blank spreadsheet.*
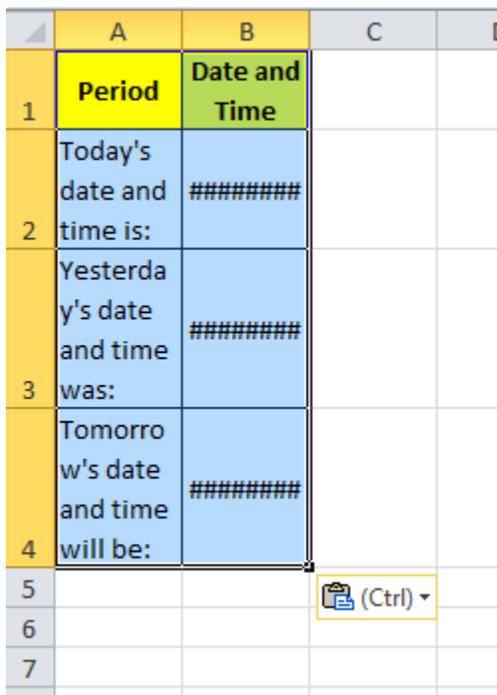
Figure 17.18

The table is pasted onto the spreadsheet and the Paste Options button appears at the lower right corner of the table.

4. *Click the* **Paste Options** *button.*
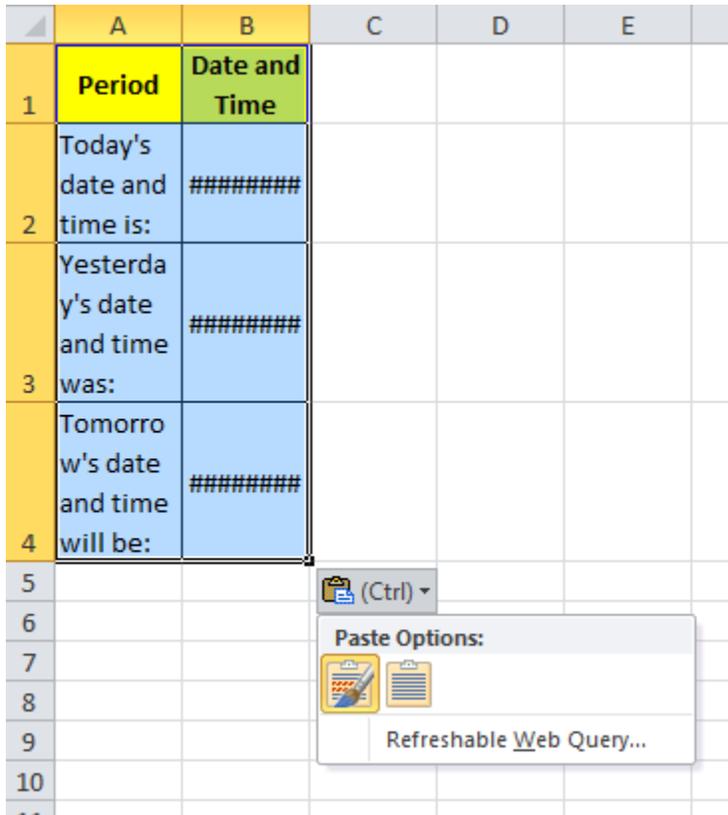
Figure 17.19

5. *Click on the* **Refreshable Web Query…** *option.*
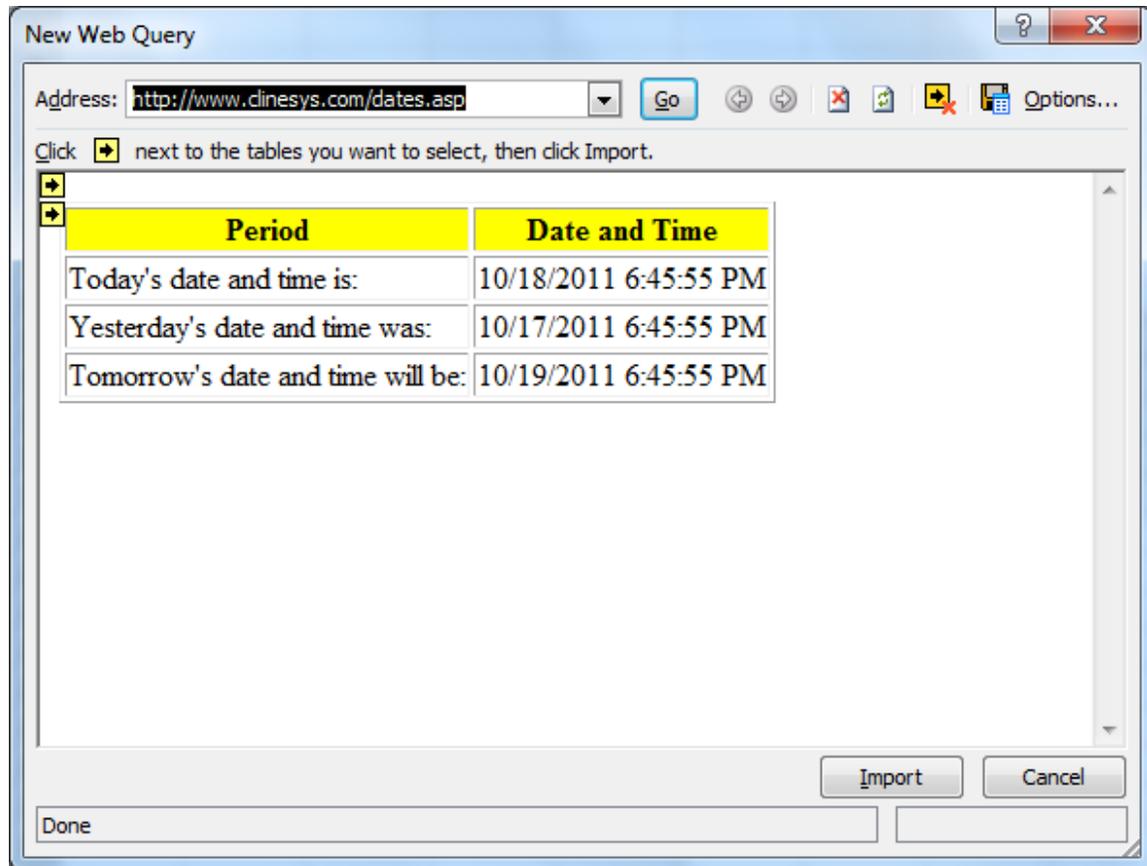
Figure 17.20

The New Web Query dialog box appears.

> 6. *Click on the arrow pointing to the table (to select the table) and click the* **Import** *button.*

The web query is created. To refresh the data in the spreadsheet, just right-click anywhere on the table in Excel and choose Refresh.

> 7. *Right-click anywhere in the table and choose* **Refresh**.

Figure 17.21

The data will change according to the time on the webpage's server (it is in United States Eastern time). The great thing about this kind of query is that you can set it up to pull data from any site you have permission to on the Web, and you don't have to continually go to the web site to copy the data. Just refresh the Excel file and your data is updated in real time. How about using this for some stock quotes?

8. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter17\myWebQuery.xlsx** *and close it.*

More New Stuff in Excel 2007 and 2010

To conclude this chapter, let's look at some of the miscellaneous new things that have built into Excel 2007 and 2010. I chose to include some of the new things incorporated into Excel 2007 as well because I realize some people may be upgrading from Excel 2003 straight to Excel 2010. Most of these enhancements came out with the release of Excel 2007, and I will note those things that are specific to 2010. There is already a list of new items for Excel 2010 in the Introduction section of this course, and I encourage you to review that list again now that you are coming to the end of the course. Let's start off this discussion reviewing Excel 2010 Tables.

Excel 2010 Tables

1. *Open the file at* **C:\ExcelCEO\Excel 2010\Chapter17\New2010.xlsx**.
2. *Save the file as* **C:\ExcelCEO\Excel 2010\Chapter17\myNew2010.xlsx**.
3. *Click* **Enable Content**.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Store_ID	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt				Store_ID	Store_No	Store_Name	
2	18	5/15/2010	1012200300407	SPDG172	3	69	0	0	0				1	HO	Home Office	
3	15	4/30/2010	1051200300536	DMQB133	2	659	0	0	55				2	1005	Nitey-Nite Glynn	
4	3	12/12/2010	1063200301363	SMDE120	4	799	0	40	55				3	1063	Nitey-Nite Alan	
5	32	12/1/2009	1027200201627	SMKE112	1	1309	0.15	40	50				4	1034	Nitey-Nite Capri	
6	11	9/13/2009	1040200201042	SMTG123	1	339	0	0	50				5	1029	Nitey-Nite Marakas	
7	20	9/24/2008	N/A	OTHER	1	96.81	0	0	0				6	1050	Nitey-Nite Reid	
8	31	9/12/2009	N/A	OTHER	1	109.81	0	0	0				7	1032	Nitey-Nite Pease	
9	3	1/28/2009	1063200200067	LMTG168	1	99	0	0	50				8	1009	Nitey-Nite Isidor	
10	25	8/13/2009	1047200200534	SPDG172	1	69	0	0	0				9	R01	Northern Region	
11	23	12/8/2009	1062200201460	LMFG165	3	239	0	0	50				10	1011	Nitey-Nite McKinny	
12	25	9/6/2010	1047200300656	LMQE163	1	279	0	0	0				11	1040	Nitey-Nite Chachy	
13	27	1/7/2010	1026200300017	SPKG176	2	99	0	0	0				12	1019	Nitey-Nite Alameda	
14	2	11/10/2009	1005200201180	SMQE116	1	1009	0	40	0				13	1059	Nitey-Nite LaMontage	
15	31	1/22/2009	N/A	OTHER	1	173.71	0	0	0				14	1057	Nitey-Nite Braman	
16	32	7/21/2008	1027200100789	SPDG172	1	59	0	0	0				15	1051	Nitey-Nite Eitan	
17	12	12/5/2008	1019200101409	CMDG151	1	449	0	0	50				16	1002	Nitey-Nite Sariel	
18	18	7/4/2009	1012200200609	SPDE173	1	89	0.2	0	0				17	1036	Nitey-Nite Garcia	
19	5	9/9/2009	N/A	OTHER	1	85.07	0	0	0				18	1012	Nitey-Nite Redmon	
20	10	2/16/2008	N/A	OTHER	1	7.46	0	0	0				19	1001	Nitey-Nite Miami	
21	29	6/30/2010	1024200300736	DMQF130	1	509	0	0	0				20	1042	Nitey-Nite Carter	
22	31	6/2/2010	1018200300789	CMQE148	1	559	0	40	0				21	R02	Southern Region	
23	30	3/4/2008	1060200100123	SMTB125	2	409	0	0	0				22	1055	Nitey-Nite Dallas	
24	2	12/9/2008	1005200101147	DMQF130	1	469	0	0	0				23	1062	Nitey-Nite Jefferson	

Figure 17.22

The Tickets tab is an import from an Access database of records (sales) for each store. It also contains another table of data off to the right that we'll use in a few minutes. When records are imported from an Access database, Excel sets up the record set and formats it as a table. This is important to understand because a table in Excel 2010 has additional

features as compared with a simple record set of data. You can also define a table by using the Format as Table functionality in the Home tab. Let's do that.

4. *Click on* **Cell A1** *(or any cell in the table).*
5. *On the* **Home** *tab in the* **Styles** *group, click on the* **Format as Table** *button.*
6. *Choose* **Table Style Medium 2**.

	A	B	C	D	E	F	G	H	I
1	Store_ID	Sale_Date	Ticket_No	Item_Cd	Qty	Unit_Sale_Amt	Disc_Pct	Warr_Amt	Deliv_Amt
2	18	5/15/2010	1012200300407	SPDG172	3	69	0	0	0
3	15	4/30/2010	1051200300536	DMQB133	2	659	0	0	55
4	3	12/12/2010	1063200301363	SMDE120	4	799	0	40	55
5	32	12/1/2009	1027200201627	SMKE112	1	1309	0.15	40	50
6	11	9/13/2009	1040200201042	SMTG123	1	339	0	0	50
7	20	9/24/2008	N/A	OTHER	1	96.81	0	0	0
8	31	9/12/2009	N/A	OTHER	1	109.81	0	0	0
9	3	1/28/2009	1063200200067	LMTG168	1	99	0	0	50
10	25	8/13/2009	1047200200534	SPDG172	1	69	0	0	0
11	23	12/8/2009	1062200201460	LMFG165	3	239	0	0	50
12	25	9/6/2010	1047200300656	LMQE163	1	279	0	0	0
13	27	1/7/2010	1026200300017	SPKG176	2	99	0	0	0
14	2	11/10/2009	1005200201180	SMQE116	1	1009	0	40	0
15	31	1/22/2009	N/A	OTHER	1	173.71	0	0	0
16	32	7/21/2008	1027200100789	SPDG172	1	59	0	0	0
17	12	12/5/2008	1019200101409	CMDG151	1	449	0	0	50

Figure 17.23

The data table is now formatted with a new, lighter style. Let's write a VLOOKUP() function that looks up the Store Number based on the Store ID.

7. *In* **Cell J1**, *type* **Store_No**.

As Column J is a column adjacent to the data table, Excel automatically recognizes the column as part of the data table and applies the Medium 2 formatting to it.

8. *In* **Cell J2**, *write a* **VLOOKUP()** *formula that looks up the* **Store_No** *on* **Store_ID** *based on the lookup table to the right of the data table. When writing the formula, choose the* **Cell A2** *with your mouse or with the arrow keys (do not type* **A2** *in the formula).*

	A	B	C	D	E	F	G	H	I	J
	J2	▾	⌃	*fx*	=VLOOKUP([@[Store_ID]],$M$2:$N$33,2,FALSE)					
1	Store_ID ▾	Sale_Date ▾	Ticket_No ▾	Item_Cd ▾	Qty ▾	Unit_Sale_Amt ▾	Disc_Pct ▾	Warr_Amt ▾	Deliv_Amt ▾	Store_No ▾
2	18	5/15/2010	1012200300407	SPDG172	3	69	0	0	0	1012
3	15	4/30/2010	1051200300536	DMQB133	2	659	0	0	55	1051
4	3	12/12/2010	1063200301363	SMDE120	4	799	0	40	55	1063
5	32	12/1/2009	1027200201627	SMKE112	1	1309	0.15	40	50	1027
6	11	9/13/2009	1040200201042	SMTG123	1	339	0	0	50	1040
7	20	9/24/2008	N/A	OTHER	1	96.81	0	0	0	1042
8	31	9/12/2009	N/A	OTHER	1	109.81	0	0	0	1018
9	3	1/28/2009	1063200200067	LMTG168	1	99	0	0	50	1063
10	25	8/13/2009	1047200200534	SPDG172	1	69	0	0	0	1047
11	23	12/8/2009	1062200201460	LMFG165	3	239	0	0	50	1062
12	25	9/6/2010	1047200300656	LMQE163	1	279	0	0	0	1047
13	27	1/7/2010	1026200300017	SPKG176	2	99	0	0	0	1026
14	2	11/10/2009	1005200201180	SMQE116	1	1009	0	40	0	1005
15	31	1/22/2009	N/A	OTHER	1	173.71	0	0	0	1018

Figure 17.24

Notice how the formula reflects the name of the data table (Excel automatically named the table when we formatted it) and a reference to the Store_ID field instead of the A2 reference. Additionally, Excel assumes you will apply that formula to all cells beneath it, so it populated all cells in the data table for you. Let's assume that the boss told us to delete Rows 7 and 8 in the data table. We could encounter a problem doing that because of the lookup table to the right of the data table. If you delete Rows 7 and 8 in the data table, it will delete Store_IDs 6 and 7 in the lookup table. Excel 2007 and 2010 has a new feature that allows you delete rows and columns in the data table without affecting any other tables beside or beneath it.

9. *With your mouse, select* **Cells A7** *and* **A8**.
10. *On the* **Home** *tab in the* **Cells** *group, click on the drop down arrow on the* **Delete** *button*

Σ AutoSum ▾

Fill ▾

Delete   Format   Clear ▾

▾   ▾

▤✕ Delete Cells...

▤✕ Delete Sheet Rows

▦✕ Delete Sheet Columns

▦✕ Delete Table Rows

▦✕ Delete Table Columns
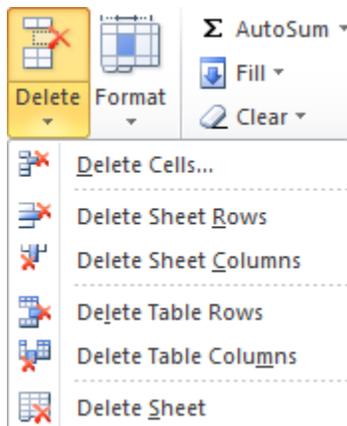
▤✕ Delete Sheet

Figure 17.25

11. *Click on* **Delete Table Rows**.

When you clicked on Delete Table Rows, Excel deleted the rows in the table, but not in the lookup table to the right. You can delete rows and columns from tables using this new functionality.

Zoom In and Zoom Out

Another nifty feature in Excel 2007 and 2010 is the Zoom functionality. Zoom In and Zoom Out buttons are located at the bottom right of your screen. You can click these buttons to see larger and smaller views of the spreadsheet.
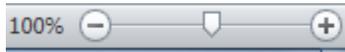

Figure 17.26

1. *Click on the* **Zoom Out** *button until you can see all columns in both the data and lookup tables.*
2. *Click on the* **Zoom In** *button until the data table columns take up your entire screen.*
3. *Return the view of the data table to* **100%.**
4. *Click on the* **100%** *image.*
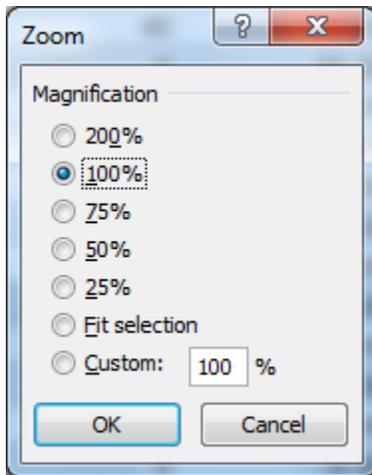
Figure 17.27

The Zoom dialog box appears. Using this dialog box, you can customize the size of the data to any size you want. The Zoom features are MUCH easier than playing around with the display in Control Panel to adjust the size of your screen.

5. *Cancel out of the* **Zoom** *dialog box.*

Filtering on Dates

Excel 2007 and 2010 has added in a new feature that makes it easier to filter on dates. This functionality is available whenever the data in a column is formatted as a date, and Filter is turned on.

1. *If the **Filter** is not turned on in the data table, turn it on.*
2. *Click on the drop down arrow next to **Sale_Date**.*

Figure 17.28

Notice the ⊞ boxes next to each year. You can click on the ⊞ boxes to filter for specific years, months and/or days.

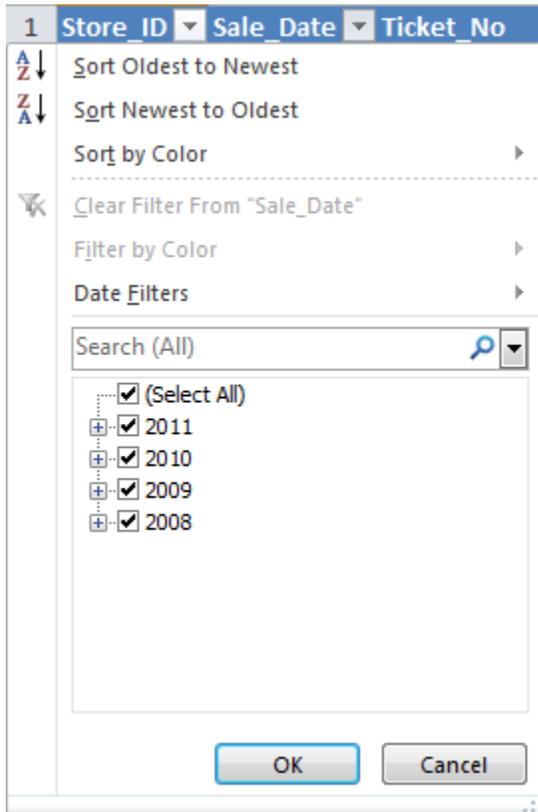3. *Uncheck the **2008**, **2009** and **2011** check boxes.*
4. *Click on the ⊞ box next to **2010** and deselect all boxes except for* **January**, **February** *and* **March** *and click* **OK**.
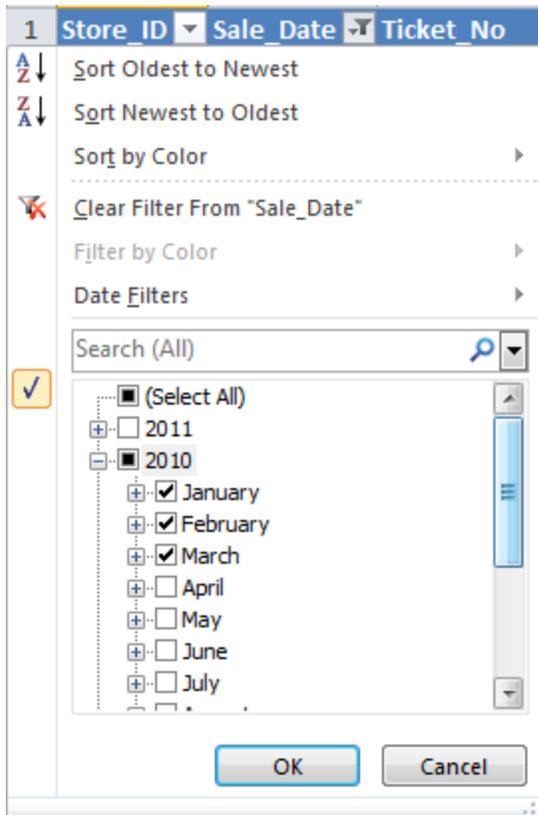
Figure 17.29

The data table is now filtered for data in the first quarter of 2010.

Background

Have you ever seen a Word document that has a "**watermark**" on it?   These are documents that usually have something like "**Draft**" or "**Tentative**" pasted as a background so the user of the report knows that it is not a final document.   You can include such a background in an Excel 2010 spreadsheet as well.   I created a simple "**Draft**" jpg file with WordArt and included it in the Chapter17 folder.   Let's use that as a background.

1.   *Click on the* **Bonus_Summary** *tab of the* **myNew2010.xlsx** *file.*
2.   *Click on the* **Page Layout** *tab.*
3.   *In the* **Sheet Options** *group, deselect the* **View** *box under* **Gridlines***.*
4.   *Click on the* **Background** *button in the* **Page Setup** *group.*
5.   *In the* **Sheet Background** *dialog box, navigate to the* **C:\ExcelCEO \Excel 10\Chapter17** *folder and double-click on the* **draft.jpg** *file.*

Figure 17.30

Notice that the background repeats in all columns and rows of the spreadsheet.

    6. *Save and close the file.*

Microsoft has gone to great lengths to try to improve Excel. As you continue to use Excel 2010, take some time to play around with features that pop up on the right-click menu, or button in the ribbon that you haven't used before.

> **Review Questions**: *It is now time to complete the hands-on Review Questions. Log on to www.ExcelCEO.com with your Email and Password, click on the* **Excel 2010 Review Questions, Chapter 17, Section 2 of 2** *option and complete the review questions.*

Conclusion

In this chapter, you created a simple HTML page by using NotePad. You learned how to save an Excel file as a web file to make it readable on a browser. You saved an Excel file as an XML file and created a web query. You also explored some of the new features of Excel 2007 and 2010, like working with tables and filtering on dates. You deleted rows in a data table without deleting the data in another table on the same spreadsheet. You finised the chapter by including a background in your file so that users of the file would know it is still in Draft mode.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the sample files on, as some of the questions on the exam may refer to some of the completed examples.

*Excel*CEO
Chief Excel Officer

Excel 2010

Complete Self-study Course

SECTION IV: THE EXCEL 2010 MASTER

It is this section of the course that goes beyond the traditional Excel learning. This last chapter of the course is hard. In fact, it is by far the hardest chapter in the entire course. But the knowledge that you will gain by completing this chapter is unparalleled in the market today. If you can complete this chapter, you are truly an Excel Master, and upon completion, I will send you an Excel Master Certification to prove to the world how good you really are.

If you have completed ALL of the exercises in the previous chapters, you are now ready to start the Excel 2010 Comprehensive Project. I previously asked you to complete all of the exercises because the tasks I will ask you to do in the Comprehensive Project contain Beginning, Intermediate and Advanced features you should have learned throughout the course. I have had students in the past who completed through Chapters 1 – 17 by just getting by and barely passing the tests. These students picked up a number of tricks, but they didn't master Excel enough to be able to complete the Comprehensive Project and the last exam. Some of them just gave up. Others went back and worked the exercises they skipped over. I hope you have completed all of the exercises up to this point and I encourage you to continue on.

The Comprehensive Project is a project where I will give you basic instructions on how to complete it, but I will not give you the details on how to complete the tasks like I have before. Actually, I don't care how you get the right answer, as long as you get it. In that sense, the project is much more like an actual project you will get on the job. **All** of the questions on the Chapter 18 exam are based on the completed project, so it is imperative that you complete it <u>exactly</u> as I explain it. To further assist you, I will give you some check figures along the way just to make sure you are on the right path.

As I have stated many times in this course, I believe the three most important things an Excel user should know are 1) how to write a nested IF() statement; 2) how to create and use PivotTables and 3) how to use a VLOOKUP() function. With those three pieces of knowledge, you can do almost unlimited analyses in Excel. The Comprehensive Project will test your ability to follow simple and complex logic using all three of these tools, as well as using other functions and formula-writing skills learned in this course. With that said, let's get started, and GOOD LUCK!

*Excel*CEO

Chief Excel Officer

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THE COMPREHENSIVE PROJECT

In this chapter, you will:

- Complete the Comprehensive Project.

The Comprehensive Project

The data for the Comprehensive Project will come from the file located at C:\ExcelCEO\Excel 2010\Chapter18\Comp_Project.xlsx.

1. *Open the* **Comp_Project.xlsx** *file located at* **C:\ExcelCEO \Excel 2010\Chapter18\Comp_Project.xlsx.**
2. *Save the file in the same folder as* **myComp_Project.xlsx.**

This file contains three tabs of data. The format of this data is probably very similar to databases you will find at your own company. The first tab is called Stores. It contains information about each store. We've used this data in other exercises, so you should be familiar with the data and the format. As you will learn when you take the Access course, each table in a database should contain a Primary Key. A **Primary Key** is a field of data in a table that serves as a unique identifier for each record. For programming purposes, it is typically better for the primary key to be a number field instead of a text field. Using a number field as a primary key generally improves the speed when querying the tables. In the Stores tab, the Store_ID is the primary key field.

Let me take some time to explain how the Stores table is set up. All of the fields in the table are probably self-explanatory, except for the Parent_ID field. The Parent_ID field records the rollup structure of all stores in the organization. In relational databases, you will become familiar with a **parent/child relationship**, and this is a good example of how that relationship works. Take for example Store_ID 12, which is Store_No 1019, Nitey-Nite Alameda. This store is located in Baltimore, Maryland. You can also see the store's address, city, state, ZIP Code, phone number, and area in square feet. It would be easy to query or filter for Store No 1019, or even for all stores in the city of Baltimore, or the state of Maryland, or any other city or state. However, Nitey-Nite's stores are also organized in regions, namely, the Northern and Southern Regions. The organization of stores in regions is maintained in the Parent_ID field. For Store No 1019, you see that the Parent_ID is 21. The Parent_ID of 21 is the "parent", or one level higher, than Store_ID 12. If you look down the Store_ID field, you will see that Store_ID 21 is Store No R02, which is the Southern Region. Store_ID 21's "parent" is Store_ID 1, which is the Home Office.

Using the Store_ID in this manner, a database programmer can maintain several levels of structures with just two fields called the parent and child fields. This could also be accomplished by maintaining a separate field for each level, and that usually works best when working with a flat file like Excel. Most relational databases are set up using a parent/child structure, also referred to as a **hierarchical structure**. It is important for you to understand a parent/child relationship or hierarchical structure for database programming, and in the Comprehensive Project you will turn the various parent/child fields into a flat file as it is easier to work with in Excel.

The second tab is called Accounts. It represents a simple chart of accounts, and includes the Account_ID, Level, Rollup_ID, Account and Acct_Desc fields. The Account_ID

field is the primary key for this table. This table is another example of a parent/child relationship. For example, Account 190-3: Employee Discounts has an Account_ID of 1043 and a Rollup_ID (or parent ID) of 1007. The programmer included a field called Level simply to make the table easier to read and understand the rollup levels. Account ID 1007 is Discounts, which rolls up to Rollup_ID 1002, Revenue, which rolls up to Net Income. Level 4, therefore, is at the lowest level of the account structure, and level 1 is the highest level, Net Income. In actuality, companies usually have more than four rollup levels, but I created this simple table to show you theoretically how hierarchical files work.

The third tab, Finl_Data, is the meat of the file. The data in this tab is kind of scary when you first look at it, but it becomes easier to understand when you grasp the concept of parent/child relationships and Primary Keys. The first field in the Finl_Data tab is Month. That one is easy to understand. The Month is simply the month in which the transaction occurred. As you can see, the first record occurred in Month 08, or August.

The second field, Store_ID, gets more complicated, but not to worry -- we can work through it. This field refers to the Store_ID field in the Stores tab. When creating a database, it is usually a good idea to name parent/child fields with the same names in the tables they relate to. Sometimes that is feasible and sometimes not. It is good practice to try to do so whenever possible. The first record in the Finl_Data tab has a Store_ID of 30. Store_ID 30 in the Stores tab is Store No 1060: Nitey-Nite Elamin in Baltimore, MD. All you have to do is to write a VLOOKUP() formula to pull in the right data.

The third field, Acct_ID, refers to the Account_ID field in the Accounts tab. The first record in the Finl_Data tab has an Acct_ID of 1021, which is Account 103-4: Double Fair in the Accounts tab.

The next three columns in the Finl_Data tab, Amt_2010, Amt_2009 and Amt_2008 are the dollar amounts of each month, store and account activity. Based on the references that we've discussed, that first record in the Finl_Data tab tells us that Store No 1060 (Store ID 30) had amounts $4,631, $10,004, and $2,809 in August of 2010, 2009 and 2008, respectively. The tables also tell us that Store No 1060 rolls up to the Southern Region which rolls up to the Home Office, and that Account 103-4 rolls up to Mattress Revenue, which rolls up to Revenue which rolls up to Net Income. That's a lot of information contained in very few fields of data.

The last column in the table is Bgt_2010. You will populate that field with budget numbers towards the end of the Comprehensive Project.

I hope you can now grasp the concept of relational databases and parent/child or hierarchical structures. You have become an expert in writing formulas, including VLOOKUP() and many other useful functions. In the following steps, I will ask you to create a budget for each store at Nitey-Nite Mattresses, record that budget in a table, and analyze the company's performance based on that budget. If you have not completed all of the exercises in this course, this will not be an easy project, and most likely it will be

impossible. Again, I will not give you step-by-step instructions on how to complete the project, but I will give you general guidance and leave it up to you to decide on how it is to be accomplished.

In the following exercises, you will be creating a lot of formulas and PivotTables. Try not to hard-code anything, as the exam questions require you to change some of the data and assumptions that are dependent on those formulas. With that said, let's get started.

1. Copy the **Finl_Data** tab and rename the new tab **myFinl_Data**.
2. Insert a column in the **myFinl_Data** tab to the right of **Store_ID** and call that column **Store**.
3. Populate the **Store** field with a concatenated **VLOOKUP()** formula that looks up the **Store No** followed by a space, a dash, a space, then the name of the store, based on the **Store_ID** field and the data in the **Stores** tab.
4. Insert a column between **Month** and **Store_ID** and call it **City**.
5. Write a **VLOOKUP()** formula that brings in the name of the city.
6. Insert a column between **Month** and **City** and call it **Region**.
7. Populate that field with the name of the **Region** for each record (Tip: The Northern and Southern Region offices roll up to the Home Office, NOT into their own regions).
8. Insert a column between **Acct_ID** and **Amt_2010** and call it **Account**.
9. Write a formula that shows the **Account**, followed by a colon and a space, then the **Acct_Desc** based on the **Acct_ID** and the **Accounts** tab (example: **101-1: King Best**).
10. Insert two columns between the **Acct_ID** and **Account** columns. Call the new fields **Lvl3_ID** and **Lvl3_Acct**. This is the first rollup level of accounts.
11. Write formulas that look up the **Level 3 Acct_ID** and **Acct_Desc** in the **Accounts** tab (like **Mattress Revenue** or **Variable Expenses**).

	A	B	C	D	E	F	G	H	I	J
1	Month	Region	City	Store_ID	Store	Acct_ID	Lvl3_ID	Lvl3_Acct	Account	Amt_2010
2	08	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1021	1004	Mattress Revenue	103-4: Double Fair	4631
3	10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1098	1009	Fixed Expenses	330-0: Utilities Expense	-612
4	05	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1039	1006	Other Revenue	130-1: Warranty Sales	3996
5	09	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1084	1009	Fixed Expenses	308-0: Rent Expense	-1556
6	07	Northern Region	Philadelphia	3	1063 - Nitey-Nite Alan	1020	1004	Mattress Revenue	103-3: Double Good	6378
7	01	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1063	1008	Variable Expenses	205-1: COM-Twin	-816
8	10	Northern Region	Jersey City	16	1002 - Nitey-Nite Sariel	1019	1004	Mattress Revenue	103-2: Double Excellent	3688
9	03	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1055	1008	Variable Expenses	203-1: COM-Double	-4740
10	05	Northern Region	New York	19	1001 - Nitey-Nite Miami	1013	1004	Mattress Revenue	101-4: King Fair	2119
11	10	Northern Region	New York	22	1055 - Nitey-Nite Dallas	1028	1004	Mattress Revenue	105-3: Twin Good	417
12	10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1018	1004	Mattress Revenue	103-1: Double Best	6026
13	09	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1027	1004	Mattress Revenue	105-2: Twin Excellent	4864
14	12	Southern Region	Washington	27	1026 - Nitey-Nite Reagans	1015	1004	Mattress Revenue	102-2: Queen Excellent	9333
15	03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1096	1009	Fixed Expenses	326-0: Office Supplies	-22
16	05	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1032	1005	Pillow Revenue	112-1: Pillow Queen Excellent	289
17	02	Southern Region	Washington	32	1027 - Nitey-Nite Johnson	1026	1004	Mattress Revenue	105-1: Twin Best	4549
18	08	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1014	1004	Mattress Revenue	102-1: Queen Best	18645
19	09	Southern Region	Baltimore	6	1050 - Nitey-Nite Reid	1019	1004	Mattress Revenue	103-2: Double Excellent	12320
20	03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1084	1009	Fixed Expenses	308-0: Rent Expense	-2292
21	08	Northern Region	Philadelphia	8	1009 - Nitey-Nite Isidor	1033	1005	Pillow Revenue	112-2: Pillow Queen Good	827
22	01	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1023	1004	Mattress Revenue	104-2: Full Excellent	0
23	06	Southern Region	Raleigh	25	1047 - Nitey-Nite Karlin	1012	1004	Mattress Revenue	101-3: King Good	4647

Figure 18.1

Format and spot-check your file with Figure 18.1.

> 12. Insert two columns between **Acct_ID** and **Lvl3_ID**. Call the new fields **Lvl2_ID** and **Lvl2_Acct**.
> 13. Write a formula that looks up the **Lvl2_ ID** and **Lvl2_Acct** in the **Accounts** tab (Hint: It will be either **Expenses** or **Revenue**).

	A	B	C	D	E	F	G	H	I	J	K	L
1	Month	Region	City	Store_ID	Store	Acct_ID	Lvl2_ID	Lvl2_Acct	Lvl3_ID	Lvl3_Acct	Account	Amt_2010
2	08	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1021	1002	Revenue	1004	Mattress Revenue	103-4: Double Fair	4631
3	10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1098	1003	Expenses	1009	Fixed Expenses	330-0: Utilities Expense	-612
4	05	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1039	1002	Revenue	1006	Other Revenue	130-1: Warranty Sales	3996
5	09	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1084	1003	Expenses	1009	Fixed Expenses	308-0: Rent Expense	-1556
6	07	Northern Region	Philadelphia	3	1063 - Nitey-Nite Alan	1020	1002	Revenue	1004	Mattress Revenue	103-3: Double Good	6378
7	01	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1063	1003	Expenses	1008	Variable Expenses	205-1: COM-Twin	-816
8	10	Northern Region	Jersey City	16	1002 - Nitey-Nite Sariel	1019	1002	Revenue	1004	Mattress Revenue	103-2: Double Excellent	3688
9	03	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1055	1003	Expenses	1008	Variable Expenses	203-1: COM-Double	-4740
10	05	Northern Region	New York	19	1001 - Nitey-Nite Miami	1013	1002	Revenue	1004	Mattress Revenue	101-4: King Fair	2119
11	10	Northern Region	New York	22	1055 - Nitey-Nite Dallas	1028	1002	Revenue	1004	Mattress Revenue	105-3: Twin Good	417
12	10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1018	1002	Revenue	1004	Mattress Revenue	103-1: Double Best	6026
13	09	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1027	1002	Revenue	1004	Mattress Revenue	105-2: Twin Excellent	4864
14	12	Southern Region	Washington	27	1026 - Nitey-Nite Reagans	1015	1002	Revenue	1004	Mattress Revenue	102-2: Queen Excellent	9333
15	03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1096	1003	Expenses	1009	Fixed Expenses	326-0: Office Supplies	-22
16	05	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1032	1002	Revenue	1005	Pillow Revenue	112-1: Pillow Queen Excellent	289
17	02	Southern Region	Washington	32	1027 - Nitey-Nite Johnson	1026	1002	Revenue	1004	Mattress Revenue	105-1: Twin Best	4549
18	08	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1014	1002	Revenue	1004	Mattress Revenue	102-1: Queen Best	18645
19	09	Southern Region	Baltimore	6	1050 - Nitey-Nite Reid	1019	1002	Revenue	1004	Mattress Revenue	103-2: Double Excellent	12320
20	03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1084	1003	Expenses	1009	Fixed Expenses	308-0: Rent Expense	-2292
21	08	Northern Region	Philadelphia	8	1009 - Nitey-Nite Isidor	1033	1002	Revenue	1005	Pillow Revenue	112-2: Pillow Queen Good	827
22	01	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1023	1002	Revenue	1004	Mattress Revenue	104-2: Full Excellent	0
23	06	Southern Region	Raleigh	25	1047 - Nitey-Nite Karlin	1012	1002	Revenue	1004	Mattress Revenue	101-3: King Good	4647

Figure 18.2

> 14. Create tabs that contain the **Budget** numbers as per the following instructions.

BUDGET RULES

REVENUE

Revenue Budgets at Nitey-Nite are simple. They are calculated by first taking the average of the previous two years (in this case, the two previous years are 2008 and 2009). You then calculate the percent achievement of the previous year and apply that growth rate (with a cap and a floor) to the average revenue. Discount budgets are a little more complex, but doable.

Mattress Revenue Budget
> a) Create a PivotTable based on the myFinl_Data tab. Name the new tab Bgt_Mattress.

In the following steps, you will create a number of calculated fields. Do all of the calculated fields within the PivotTable, except where indicated to do them outside the PivotTable.

> b) Use Lvl3_Acct as a Report Filter and set it to Mattress Revenue.
> c) Bring in the Store field as a Row Label.

d) In a calculated field, calculate the average of 2009 and 2008 Revenue by store. Call the formula Avg_Amt. Name that field Avg Mattress Rev in the PivotTable.

e) In another calculated field, calculate the percent of 2009 Revenue (Amt_2009) divided by 2008 Revenue (Amt_2008) by store. Call the calculated field Pct_2008. In the PivotTable, name the field Pct of 2008.

f) Create another field called Bgt_Pct. For stores with a Pct of 2008 over 120%, return 120%; for stores under 100%, return 100%; and for all other stores, return the actual percent. In this formula, use a nested IF() statement. In the PivotTable, call that field Budget Percent.

g) In another calculated field, multiply the Bgt_Pct by the Avg_Amt column, rounded to the nearest thousand. Name the calculation Annual_Bgt. In the PivotTable, call it Annual Budget.

h) Create another calculated field called Mo_Bgt. The Monthly Budget number is Annual_Bgt divided by 12.

i) Format all columns appropriately and sort by Store.

	A	B	C	D	E	F
1	Lvl3_Acct	Mattress Revenue				
2						
3	**Row Labels**	**Avg Mattress Rev**	**Pct of 2008**	**Budget Percent**	**Annual Budget**	**Monthly Budget**
4	1001 - Nitey-Nite Miami	720,118	100.1%	100.1%	721,000	60,083
5	1002 - Nitey-Nite Sariel	812,847	119.9%	119.9%	975,000	81,250
6	1005 - Nitey-Nite Glynn	1,042,979	119.8%	119.8%	1,249,000	104,083
7	1009 - Nitey-Nite Isidor	502,021	155.4%	120.0%	602,000	50,167
8	1011 - Nitey-Nite McKinny	1,195,558	84.9%	100.0%	1,196,000	99,667
9	1012 - Nitey-Nite Redmon	1,111,875	98.2%	100.0%	1,112,000	92,667
10	1018 - Nitey-Nite Hialeah	1,176,439	129.7%	120.0%	1,412,000	117,667
11	1019 - Nitey-Nite Alameda	1,068,400	111.2%	111.2%	1,188,000	99,000
12	1021 - Nitey-Nite Lincoln	237,763	130.0%	120.0%	285,000	23,750
13	1024 - Nitey-Nite Neal	959,688	140.7%	120.0%	1,152,000	96,000
14	1026 - Nitey-Nite Reagans	960,633	105.8%	105.8%	1,017,000	84,750
15	1027 - Nitey-Nite Johnson	1,270,616	121.9%	120.0%	1,525,000	127,083
16	1029 - Nitey-Nite Marakas	332,212	104.2%	104.2%	346,000	28,833
17	1032 - Nitey-Nite Pease	1,267,798	109.8%	109.8%	1,392,000	116,000
18	1034 - Nitey-Nite Capri	1,197,456	126.0%	120.0%	1,437,000	119,750
19	1036 - Nitey-Nite Garcia	349,755	101.7%	101.7%	356,000	29,667
20	1040 - Nitey-Nite Chachy	1,319,830	109.8%	109.8%	1,450,000	120,833
21	1042 - Nitey-Nite Carter	761,564	118.3%	118.3%	901,000	75,083

Figure 18.3

Check your Mattress Budget numbers with Figure 18.3.

Pillow and Other Revenue

Calculating the Pillow and Other Revenue budgets uses the same theory as the Mattress Revenue Bgt except use the Pillow and Other Revenue numbers. Therefore, you can copy the Bgt_Mattress tab twice and rename the new tabs Bgt_Pillow and Bgt_Other. Change the Lvl3_Acct Page Header and column names appropriately.

	A	B	C	D	E	F
1	Lvl3_Acct	Pillow Revenue				
2						
3	**Row Labels**	**Avg Pillow Rev**	**Pct of 2008**	**Budget Percent**	**Annual Budget**	**Monthly Budget**
4	1001 - Nitey-Nite Miami	59,568	107.6%	107.6%	64,000	5,333
5	1002 - Nitey-Nite Sariel	57,563	128.9%	120.0%	69,000	5,750
6	1005 - Nitey-Nite Glynn	40,066	136.3%	120.0%	48,000	4,000
7	1009 - Nitey-Nite Isidor	33,947	167.1%	120.0%	41,000	3,417
8	1011 - Nitey-Nite McKinny	62,419	84.8%	100.0%	62,000	5,167
9	1012 - Nitey-Nite Redmon	58,841	107.5%	107.5%	63,000	5,250
10	1018 - Nitey-Nite Hialeah	77,621	130.9%	120.0%	93,000	7,750
11	1019 - Nitey-Nite Alameda	87,687	127.9%	120.0%	105,000	8,750
12	1021 - Nitey-Nite Lincoln	17,553	112.0%	112.0%	20,000	1,667
13	1024 - Nitey-Nite Neal	49,848	173.0%	120.0%	60,000	5,000
14	1026 - Nitey-Nite Reagans	48,870	122.1%	120.0%	59,000	4,917
15	1027 - Nitey-Nite Johnson	73,490	130.4%	120.0%	88,000	7,333
16	1029 - Nitey-Nite Marakas	39,441	124.7%	120.0%	47,000	3,917
17	1032 - Nitey-Nite Pease	62,140	114.8%	114.8%	71,000	5,917
18	1034 - Nitey-Nite Capri	58,592	129.4%	120.0%	70,000	5,833
19	1036 - Nitey-Nite Garcia	43,853	114.0%	114.0%	50,000	4,167
20	1040 - Nitey-Nite Chachy	44,298	117.8%	117.8%	52,000	4,333

Figure 18.4

	A	B	C	D	E	F
1	Lvl3_Acct	Other Revenue				
2						
3	**Row Labels**	**Avg Other Rev**	**Pct of 2008**	**Budget Percent**	**Annual Budget**	**Monthly Budget**
4	1001 - Nitey-Nite Miami	80,399	109.9%	109.9%	88,000	7,333
5	1002 - Nitey-Nite Sariel	92,644	130.8%	120.0%	111,000	9,250
6	1005 - Nitey-Nite Glynn	115,221	121.0%	120.0%	138,000	11,500
7	1009 - Nitey-Nite Isidor	58,586	154.0%	120.0%	70,000	5,833
8	1011 - Nitey-Nite McKinny	132,421	92.8%	100.0%	132,000	11,000
9	1012 - Nitey-Nite Redmon	123,449	101.6%	101.6%	125,000	10,417
10	1018 - Nitey-Nite Hialeah	131,385	131.3%	120.0%	158,000	13,167
11	1019 - Nitey-Nite Alameda	116,442	115.2%	115.2%	134,000	11,167
12	1021 - Nitey-Nite Lincoln	25,439	131.4%	120.0%	31,000	2,583
13	1024 - Nitey-Nite Neal	108,126	148.3%	120.0%	130,000	10,833
14	1026 - Nitey-Nite Reagans	110,666	112.1%	112.1%	124,000	10,333
15	1027 - Nitey-Nite Johnson	136,323	121.2%	120.0%	164,000	13,667
16	1029 - Nitey-Nite Marakas	36,871	106.0%	106.0%	39,000	3,250
17	1032 - Nitey-Nite Pease	142,750	109.4%	109.4%	156,000	13,000
18	1034 - Nitey-Nite Capri	128,757	125.9%	120.0%	155,000	12,917
19	1036 - Nitey-Nite Garcia	41,365	108.5%	108.5%	45,000	3,750
20	1040 - Nitey-Nite Chachy	143,879	110.7%	110.7%	159,000	13,250

Figure 18.5

Discounts
a) Copy the Bgt_Mattress tab and rename the copy Bgt_Discounts.
b) In the Bgt_Discounts PivotTable, take out all existing amount and calculated fields and bring in the Avg_Amt field as the only data item.
c) Pivot the Lvl3_Acct Report Filter to be in columns containing only Mattress Revenue, Pillow Revenue, Other Revenue and Discounts fields in that order (*Hint: To change the order of a field, right-click on the field and point to Move. You can also click and drag it to its new location*).
d) Change the Sum of Avg_Amt field to be Avg Rev and format it appropriately.

e) Create the Discount % field as (Discounts / Sum of (Mattress Revenue + Pillow Revenue + Other Revenue)) **less 0.5%**. Do this and the following calculations outside the PivotTable.

f) Each store's Annual Discount Bgt is calculated by using the sum of (Annual Mattress Bgt plus Annual Pillow Bgt plus Annual Other Bgt) multiplied by the Discount %, rounded to the nearest thousand. (Hint: Use the Budget numbers, not Revenue.)

g) Create the Monthly Discount Bgt field.

	A	B	C	D	E	F	G	H
1								
2								
3	Avg Rev	Column Labels						
4	Row Labels	Mattress Revenue	Pillow Revenue	Other Revenue	Discounts	Discount %	Annual Discount Bgt	Monthly Discount Bgt
5	1001 - Nitey-Nite Miami	720,118	59,568	80,399	-31,971	-3.2%	-28,000	-2,333
6	1002 - Nitey-Nite Sariel	812,847	57,563	92,644	-33,893	-3.0%	-35,000	-2,917
7	1005 - Nitey-Nite Glynn	1,042,979	40,066	115,221	-41,327	-2.9%	-42,000	-3,500
8	1009 - Nitey-Nite Isidor	502,021	33,947	58,586	-21,451	-3.1%	-22,000	-1,833
9	1011 - Nitey-Nite McKinny	1,195,558	62,419	132,421	-49,978	-3.1%	-43,000	-3,583
10	1012 - Nitey-Nite Redmon	1,111,875	58,841	123,449	-44,550	-2.9%	-38,000	-3,167
11	1018 - Nitey-Nite Hialeah	1,176,439	77,621	131,385	-49,270	-3.1%	-51,000	-4,250
12	1019 - Nitey-Nite Alameda	1,068,400	87,687	116,442	-45,629	-3.1%	-44,000	-3,667
13	1021 - Nitey-Nite Lincoln	237,763	17,553	25,439	-9,933	-3.0%	-10,000	-833
14	1024 - Nitey-Nite Neal	959,688	49,848	108,126	-37,074	-2.8%	-38,000	-3,167
15	1026 - Nitey-Nite Reagans	960,633	48,870	110,666	-37,892	-2.9%	-35,000	-2,917
16	1027 - Nitey-Nite Johnson	1,270,616	73,490	136,323	-53,456	-3.1%	-55,000	-4,583
17	1029 - Nitey-Nite Marakas	332,212	39,441	36,871	-15,717	-3.3%	-14,000	-1,167
18	1032 - Nitey-Nite Pease	1,267,798	62,140	142,750	-44,838	-2.5%	-41,000	-3,417
19	1034 - Nitey-Nite Capri	1,197,456	58,592	128,757	-49,510	-3.1%	-51,000	-4,250
20	1036 - Nitey-Nite Garcia	349,755	43,853	41,365	-15,400	-3.0%	-14,000	-1,167
21	1040 - Nitey-Nite Chachy	1,319,830	44,298	143,879	54,979	3.1%	52,000	4,333

Figure 18.6

> *Note: When you create calculations on a PivotTable outside of the PivotTable, be careful! If you use the arrow keys to scroll over to a data item or the cursor to click on a data item, you will get a =GETPIVOTDATA() function that will not copy down properly. To overcome this, you have to manually type the cell reference in the formula instead of scrolling over to the cell.*

EXPENSES

Note: All actual and budgeted expense numbers will typically carry a minus ("-") sign.

Fixed Expenses
The Fixed Expenses budget for all stores is calculated by taking the average of the 2008 and 2009 Fixed Expenses increased by 3%, rounded to the nearest thousand.

a) Copy the Bgt_Mattress tab and name the new tab Bgt_FixedExp.
b) Change the Report Filter to Fixed Expenses and take out all data fields except for the Avg Mattress Rev field and rename it Avg Fixed Expenses in the PivotTable.
c) Calculate the Fixed Expenses budget in a calculated field according to the instructions above. (*Note: There will be a fixed expense budget for the Home Office, and Northern and Southern Region offices.*)

	A	B	C	D
1	Lvl3_Acct	Fixed Expenses 🔽		
2				
3	Row Labels 🔽	Avg Fixed Expenses	Annual Fixed Exp Bgt	Monthly Fixed Exp Bgt
4	1001 - Nitey-Nite Miami	-125,360	-129,000	-10,750
5	1002 - Nitey-Nite Sariel	-148,114	-153,000	-12,750
6	1005 - Nitey-Nite Glynn	-187,066	-193,000	-16,083
7	1009 - Nitey-Nite Isidor	-121,602	-125,000	-10,417
8	1011 - Nitey-Nite McKinny	-179,274	-185,000	-15,417
9	1012 - Nitey-Nite Redmon	-170,739	-176,000	-14,667
10	1018 - Nitey-Nite Hialeah	-218,244	-225,000	-18,750
11	1019 - Nitey-Nite Alameda	-165,242	-170,000	-14,167
12	1021 - Nitey-Nite Lincoln	-87,307	-90,000	-7,500
13	1024 - Nitey-Nite Neal	-191,116	-197,000	-16,417
14	1026 - Nitey-Nite Reagans	-179,076	-184,000	-15,333
15	1027 - Nitey-Nite Johnson	-226,422	-233,000	-19,417
16	1029 - Nitey-Nite Marakas	-74,618	-77,000	-6,417
17	1032 - Nitey-Nite Pease	-187,530	-193,000	-16,083
18	1034 - Nitey-Nite Capri	-203,588	-210,000	-17,500
19	1036 - Nitey-Nite Garcia	-77,647	-80,000	-6,667
20	1040 - Nitey-Nite Chachy	-204,468	-211,000	-17,583

Figure 18.7

Variable Expenses

    a) Create a new PivotTable based on the myFinl_Data tab. Call the new tab Bgt_VarExp.

    b) Calculate the Variable Expense ratio for each store (Variable Expenses / Total Revenue (including Discounts)) for 2008 and 2009 separately.

    c) Management tells us that the budget for variable expenses are more representative in 2009 than they were in 2008, so assign a 75% weight to the 2009 ratio and a 25% weight to the 2008 ratio.

    d) The Variable Expense Budget ratio is one percentage point less than the summation of the two ratios calculated in Step c, and is applied to the total budgets (except fixed expenses), rounded to the nearest thousand. (*Note: Many of these calculations can be done outside of the PivotTable.*)

    e) Make sure your PivotTable ties with Figure 18.8.

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3		Column Labels 🔽									
4	Row Labels 🔽	Mattress Revenue	Pillow Revenue	Other Revenue	Discounts	Variable Expenses	Ratios w/ Weighting	Sum Ratios -1%	Rev Budgets	Annual Var Exp Bgt	Monthly Bgt
5	1001 - Nitey-Nite Miami							-32.4%	845,000	-274,000	-22,833
6	2009 Amt	720,453	61,761	84,187	-31,176	-276,487	-24.8%				
7	2008 Amt	719,782	57,374	76,611	-32,766	-280,874	-8.6%				
8	1002 - Nitey-Nite Sariel							-33.3%	1,120,000	-373,000	-31,083
9	2009 Amt	886,472	64,838	105,008	-39,507	-347,289	-25.6%				
10	2008 Amt	739,221	50,287	80,279	-28,278	-291,632	-8.7%				
11	1005 - Nitey-Nite Glynn							-31.2%	1,393,000	-435,000	-36,250
12	2009 Amt	1,136,841	46,217	126,170	-48,759	-403,548	-24.0%				
13	2008 Amt	949,117	33,914	104,271	-33,894	-347,041	-8.2%				
14	1009 - Nitey-Nite Isidor							-31.0%	691,000	-214,000	-17,833
15	2009 Amt	610,925	42,473	71,049	-23,190	-221,790	-23.7%				
16	2008 Amt	393,116	25,420	46,123	-19,712	-147,292	-8.3%				
17	1011 - Nitey-Nite McKinny							-33.2%	1,347,000	-447,000	-37,250
18	2009 Amt	1,097,900	57,302	127,465	-45,983	-419,826	-25.5%				
19	2008 Amt	1,293,215	67,535	137,377	-53,973	-503,396	-8.7%				
20	1012 - Nitey-Nite Redmon							-32.0%	1,262,000	-404,000	-33,667
21	2009 Amt	1,101,520	60,978	124,408	-43,103	-412,617	-24.9%				
22	2008 Amt	1,122,229	56,704	122,489	-45,996	-409,510	-8.2%				
23	1018 - Nitey-Nite Hialeah							-32.9%	1,612,000	-531,000	-44,250
24	2009 Amt	1,328,743	88,011	149,154	-54,990	-511,885	-25.4%				
25	2008 Amt	1,024,134	67,230	113,616	-43,550	-395,677	-8.5%				
26	1019 - Nitey-Nite Alameda							-31.9%	1,383,000	-441,000	-36,750

Figure 18.8

For budgeting purposes, management wants to assign the monthly budget amounts for each category (mattress, pillow, other, discounts, fixed and variable expenses) to ONE account within each category, as illustrated in the table in Step 15.

15. In the **myFinl_Data** *tab, populate the monthly calculated* <u>budget</u> *numbers for each store in each month to the following accounts under the* **Bgt_2010** *column as follows:*

Budget Category	Account
Mattress Revenue	101-1
Pillow Revenue	111-1
Other Revenue	120-1
Discounts	190-4
Fixed Expenses	308-0
Variable Expenses	201-1

Hint: You will have to use a nested IF( ) statement to make this work correctly. If done correctly, most accounts will show a zero. Only the accounts above will be populated with budget numbers.

Month	Region	City	Store_ID	Store	Acct_ID	Lvl2_ID	Lvl2_Acct	Lvl3_ID	Lvl3_Acct	Account	Amt_2010	Amt_2009	Amt_2008	Bgt_2010
08	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1021	1002	Revenue	1004	Mattress Revenue	103-4: Double Fair	4,631	10,004	2,809	0
10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1098	1003	Expenses	1009	Fixed Expenses	330-0: Utilities Expense	-612	-674	-641	0
05	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1039	1002	Revenue	1006	Other Revenue	130-1: Warranty Sales	3,996	4,427	3,318	0
09	Northern Region	Philadelphia	7	1032 - Nitey-Nite Pease	1084	1003	Expenses	1009	Fixed Expenses	308-0: Rent Expense	-1,556	-1,451	-1,217	-16,083
07	Northern Region	Philadelphia	3	1063 - Nitey-Nite Alan	1020	1002	Revenue	1004	Mattress Revenue	103-3: Double Good	6,378	2,948	5,191	0
01	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1063	1003	Expenses	1008	Variable Expenses	205-1: COM-Twin	-816	-540	-971	0
10	Northern Region	Jersey City	16	1002 - Nitey-Nite Sariel	1019	1002	Revenue	1004	Mattress Revenue	103-2: Double Excellent	3,688	5,070	4,190	0
03	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1055	1003	Expenses	1008	Variable Expenses	203-1: COM-Double	-4,740	-5,715	-2,662	0
05	Northern Region	New York	19	1001 - Nitey-Nite Miami	1013	1002	Revenue	1004	Mattress Revenue	101-4: King Fair	2,119	10,195	8,399	0
10	Northern Region	New York	22	1055 - Nitey-Nite Dallas	1028	1002	Revenue	1004	Mattress Revenue	105-3: Twin Good	417	2,426	3,672	0
10	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1018	1002	Revenue	1004	Mattress Revenue	103-1: Double Best	6,026	10,208	8,844	0
09	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1027	1002	Revenue	1004	Mattress Revenue	105-2: Twin Excellent	4,864	1,604	4,768	0
12	Southern Region	Washington	27	1026 - Nitey-Nite Reagans	1015	1002	Revenue	1004	Mattress Revenue	102-2: Queen Excellent	9,333	9,323	7,359	0
03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1096	1003	Expenses	1009	Fixed Expenses	326-0: Office Supplies	-22	-3	-61	0
05	Southern Region	Baltimore	30	1060 - Nitey-Nite Elamin	1032	1002	Revenue	1005	Pillow Revenue	112-1: Pillow Queen Excellent	289	179	76	0
02	Southern Region	Washington	32	1027 - Nitey-Nite Johnson	1026	1002	Revenue	1004	Mattress Revenue	105-1: Twin Best	4,549	883	1,561	0
08	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1014	1002	Revenue	1004	Mattress Revenue	102-1: Queen Best	18,645	5,311	3,197	0
09	Southern Region	Baltimore	6	1050 - Nitey-Nite Reid	1019	1002	Revenue	1004	Mattress Revenue	103-2: Double Excellent	12,320	5,692	2,550	0
03	Southern Region	Washington	26	1021 - Nitey-Nite Lincoln	1084	1003	Expenses	1009	Fixed Expenses	308-0: Rent Expense	-2,292	-2,164	-2,105	-7,500
08	Northern Region	Philadelphia	8	1009 - Nitey-Nite Isidor	1033	1002	Revenue	1005	Pillow Revenue	112-2: Pillow Queen Good	827	255	0	0
01	Northern Region	Philadelphia	18	1012 - Nitey-Nite Redmon	1023	1002	Revenue	1004	Mattress Revenue	104-2: Full Excellent	0	1,156	0	0
06	Southern Region	Raleigh	25	1047 - Nitey-Nite Karlin	1012	1002	Revenue	1004	Mattress Revenue	101-3: King Good	4,647	16,999	5,338	0
02	Southern Region	Washington	23	1062 - Nitey-Nite Jefferson	1040	1002	Revenue	1006	Other Revenue	140-1: Delivery Sales	1,515	1,906	2,129	0
12	Southern Region	Raleigh	28	1045 - Nitey-Nite Williams	1036	1002	Revenue	1005	Pillow Revenue	114-1: Pillow Twin Excellent	968	395	794	0
01	Southern Region	Wilmington	14	1057 - Nitey-Nite Braman	1010	1002	Revenue	1004	Mattress Revenue	101-1: King Best	1,708	714	0	58,667
09	Southern Region	Baltimore	5	1029 - Nitey-Nite Marakas	1087	1003	Expenses	1009	Fixed Expenses	312-0: Auto Expense	-102	-112	-101	0
10	Southern Region	Washington	20	1042 - Nitey-Nite Carter	1027	1002	Revenue	1004	Mattress Revenue	105-2: Twin Excellent	7,850	3,333	2,797	0
04	Northern Region	Philadelphia	8	1009 - Nitey-Nite Isidor	1031	1002	Revenue	1005	Pillow Revenue	111-2: Pillow King Good	684	772	249	0
05	Northern Region	Jersey City	4	1034 - Nitey-Nite Capri	1047	1003	Expenses	1008	Variable Expenses	201-1: COM-King	-13,413	-14,014	-9,873	-43,083

Figure 18.9

Make sure to keep the VLOOKUP() formulas intact, as you will be changing some of the assumptions in the Budget Rules when you are taking the exam. You will need to refresh the various PivotTables to get the correct answers flowing through.

16. *Create a* **PivotTable** *based on the* **myFinl_Data** *tab that summarizes the* **Lvl2_Desc** *column and the* **Amt_2010** *and* **Bgt_2010** *columns. Make the* **Revenue** *numbers appear first in the* **PivotTable***. Create a formula in the* **PivotTable** *that calculates the percent of budget and call it* **act_pct_bgt***. Format the numbers appropriately. Your numbers should match* **Figure 18.10***. Name the new tab* **Actual_Budget***.*

	A	B	C	D
1				
2				
3	Row Labels ▼	2010 Actual	2010 Budget	Pct of Budget
4	Revenue	34,000,506	32,286,000	105.3%
5	Expenses	-22,688,266	-20,211,000	112.3%
6	Grand Total	11,312,240	12,075,000	93.7%
7				

Figure 18.10

I anticipate you will spend quite a bit of time getting the project to this point. If you get stuck, search the ClineSys on-line FAQ page for help.

> 17. *Remove the* **Lvl2_Desc** *field from the* **PivotTable** *and bring in* **City** *and* **Store** *as* **Row Labels**. *(This essentially brings in* **Net Income**). *Hide the detail for the* **Store** *field.*

	A	B	C	D
1				
2				
3	Row Labels ▼	2010 Actual	2010 Budget	Pct of Budget
4	⊞Baltimore	2,849,674	3,052,000	93.4%
5	⊞Jersey City	-3,548,267	-2,804,000	126.5%
6	⊞New York	2,038,094	1,908,000	106.8%
7	⊞Philadelphia	4,993,260	5,115,000	97.6%
8	⊞Raleigh	1,544,345	1,378,000	112.1%
9	⊞Washington	2,902,266	2,981,000	97.4%
10	⊞Wilmington	532,868	445,000	119.7%
11	Grand Total	11,312,240	12,075,000	93.7%
12				

Figure 18.11

Why does Jersey City have negative net numbers?

> 18. *Expand* **Jersey City** *to see all locations under it.*

	A	B	C	D
1				
2				
3	Row Labels ▼	2010 Actual	2010 Budget	Pct of Budget
4	⊞Baltimore	2,849,674	3,052,000	93.4%
5	⊟Jersey City	-3,548,267	-2,804,000	126.5%
6	1002 - Nitey-Nite Sariel	588,405	594,000	99.1%
7	1034 - Nitey-Nite Capri	870,528	884,000	98.5%
8	1040 - Nitey-Nite Chachy	889,237	889,000	100.0%
9	HO - Home Office	-3,131,490	-2,742,000	114.2%
10	R01 - Northern Region	-1,537,835	-1,370,000	112.3%
11	R02 - Southern Region	-1,227,112	-1,059,000	115.9%
12	⊞New York	2,038,094	1,908,000	106.8%
13	⊞Philadelphia	4,993,260	5,115,000	97.6%
14	⊞Raleigh	1,544,345	1,378,000	112.1%
15	⊞Washington	2,902,266	2,981,000	97.4%
16	⊞Wilmington	532,868	445,000	119.7%
17	Grand Total	11,312,240	12,075,000	93.7%
18				

Figure 18.12

It looked strange because the Home Office and Northern and Southern Regional office numbers were included in Jersey City. When you analyze the performance of the entire company, it is probably necessary to include those "overhead" type numbers, but in this analysis we want to look at only the operating stores, so let's take out the overhead numbers.

> 19. Deselect the **Home Office**, **Northern Region** and **Southern Region** from
>   the **Stores** field and hide the **Store** detail again.

	A	B	C	D
1				
2				
3	Row Labels ⊤	2010 Actual	2010 Budget	Pct of Budget
4	⊞Baltimore	2,849,674	3,052,000	93.4%
5	⊟Jersey City	2,348,170	2,367,000	99.2%
6	1002 - Nitey-Nite Sariel	588,405	594,000	99.1%
7	1034 - Nitey-Nite Capri	870,528	884,000	98.5%
8	1040 - Nitey-Nite Chachy	889,237	889,000	100.0%
9	⊞New York	2,038,094	1,908,000	106.8%
10	⊞Philadelphia	4,993,260	5,115,000	97.6%
11	⊞Raleigh	1,544,345	1,378,000	112.1%
12	⊞Washington	2,902,266	2,981,000	97.4%
13	⊞Wilmington	532,868	445,000	119.7%
14	Grand Total	17,208,677	17,246,000	99.8%
15				

Figure 18.13

> 20. Modify the **PivotTable** to remove the **City**, **2010 Budget** and **Pct of**
>   **Budget** fields.

21. *Bring in* **Month** *as a* **Column label***.*
22. *Check to make sure your numbers match with* **Figure 18.13***.*

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
3	2010 Actual	Column Labels												
4	Row Labels	01	02	03	04	05	06	07	08	09	10	11	12	Grand Total
5	1001 - Nitey-Nite Miami	2,687	25,623	20,033	22,786	24,204	32,819	22,160	55,650	53,924	23,756	44,505	44,715	372,862
6	1002 - Nitey-Nite Sariel	-65	27,708	70,932	48,382	55,452	52,101	22,499	79,324	51,847	50,204	48,948	81,073	588,405
7	1005 - Nitey-Nite Glynn	14,747	56,788	76,007	65,488	53,644	61,510	40,381	86,330	91,758	58,598	83,618	103,371	792,240
8	1009 - Nitey-Nite Isidor	10,048	34,821	37,556	42,705	36,501	40,147	37,274	66,554	-1,556	0	0	0	304,050
9	1011 - Nitey-Nite McKinny	2,364	23,460	43,590	19,961	55,423	25,443	33,028	72,720	48,863	31,087	65,117	79,495	500,551
10	1012 - Nitey-Nite Redmon	14,286	20,479	58,472	43,948	37,423	41,724	30,616	80,339	53,116	29,791	56,861	86,145	553,200
11	1018 - Nitey-Nite Hialeah	8,990	46,998	102,422	52,575	72,153	77,614	55,055	125,187	92,319	60,494	80,603	132,979	907,389
12	1019 - Nitey-Nite Alameda	25,754	24,009	62,738	52,472	60,215	62,642	24,005	99,995	75,123	64,823	61,179	116,850	729,805
13	1021 - Nitey-Nite Lincoln	12,417	10,372	15,717	12,029	18,124	11,166	11,744	27,171	10,236	15,597	10,041	21,798	176,412
14	1024 - Nitey-Nite Neal	17,654	32,788	62,490	59,826	78,763	52,590	35,189	119,995	79,399	63,278	84,205	120,028	806,205
15	1026 - Nitey-Nite Reagans	19,294	41,296	69,814	43,904	69,302	54,191	42,630	89,653	76,867	50,999	51,333	111,015	720,298
16	1027 - Nitey-Nite Johnson	2,378	41,344	89,078	68,154	90,822	67,026	35,109	120,289	109,009	64,843	81,453	141,927	911,432
17	1029 - Nitey-Nite Marakas	23,630	11,920	19,530	17,422	19,873	15,189	12,843	22,512	24,927	26,267	11,094	33,867	239,074
18	1032 - Nitey-Nite Pease	29,781	44,146	92,728	69,216	64,734	75,407	53,715	111,727	93,150	57,335	100,584	110,539	903,062
19	1034 - Nitey-Nite Capri	12,564	40,207	73,009	58,349	61,369	68,564	48,193	124,748	79,373	74,327	96,060	133,765	870,528
20	1036 - Nitey-Nite Garcia	6,698	1,674	10,943	9,170	10,200	8,027	7,457	7,814	4,810	1,983	6,629	27,550	102,955
21	1040 - Nitey-Nite Chachy	16,154	47,251	77,100	76,647	74,029	75,533	43,626	82,626	115,212	70,597	83,856	126,606	889,237
22	1042 - Nitey-Nite Carter	5,899	28,947	78,167	22,306	50,851	36,156	32,137	66,324	62,628	33,232	46,933	73,773	537,353
23	1044 - Nitey-Nite Riasca	5,791	29,925	66,606	28,002	62,819	38,869	38,485	100,965	55,782	51,350	43,363	87,324	609,281
24	1045 - Nitey-Nite Williams	12,600	34,370	40,264	33,414	38,141	35,023	30,983	66,905	48,696	41,981	50,679	87,030	520,086
25	1047 - Nitey-Nite Karlin	18,178	14,777	30,202	41,380	34,204	30,809	10,430	62,909	37,679	42,749	36,678	54,983	414,978
26	1050 - Nitey-Nite Reid	6,219	12,196	21,221	22,741	27,148	21,652	9,192	27,137	31,981	24,989	23,214	36,852	264,542
27	1051 - Nitey-Nite Eitan	25,477	32,473	70,749	68,285	67,077	84,287	49,805	100,445	109,650	68,449	88,936	117,683	883,316
28	1055 - Nitey-Nite Dallas	30,371	39,688	78,006	53,469	69,070	52,284	44,538	99,080	69,020	59,798	63,307	99,212	757,843
29	1057 - Nitey-Nite Braman	11,401	35,625	43,070	43,243	31,440	41,248	40,627	69,061	56,902	32,402	53,837	74,012	532,868
30	1059 - Nitey-Nite LaMontage	9,835	10,919	46,645	25,905	32,237	34,465	14,606	59,965	43,482	33,607	25,801	47,784	385,251
31	1060 - Nitey-Nite Elamin	14,381	41,357	76,131	52,909	65,150	60,161	51,331	99,071	56,851	46,521	65,174	101,414	730,451
32	1062 - Nitey-Nite Jefferson	980	28,930	48,429	47,400	46,215	54,785	27,668	57,928	51,560	62,789	54,850	75,237	556,771
33	1063 - Nitey-Nite Alan	14,682	36,872	56,041	49,258	57,369	47,418	28,323	61,556	74,824	53,535	80,842	87,512	648,232
34	Grand Total	375,195	876,963	1,637,690	1,251,346	1,463,952	1,358,850	933,649	2,243,980	1,757,432	1,295,381	1,599,700	2,414,539	17,208,677

Figure 18.14

23. *Save and close the file.*

You need to make absolutely sure that the numbers in your file match with the numbers throughout the Comprehensive Project. You will be using this Comprehensive Project file to answer <u>all</u> the questions in the final exam, so it's essential you start off with the right file. Again, if the numbers are not matching and you don't know why, rework it following each instruction exactly.

One more piece of advice: When you are taking the last exam, note that the questions are <u>not</u> cumulative, meaning you have to reset the file to its original state each time you answer a question.

Conclusion

In this chapter, you completed the Comprehensive Project. The primary objective of the Comprehensive Project was to test your ability and understanding of PivotTables, using VLOOKUP() functions and writing formulas using nested functions.

In this course, I have taught you the tools that are most helpful in business situations. All of the tools require you to use a certain degree of logic, and I've attempted to teach you those thought patterns as well. However, I cannot anticipate all of the situations that you will encounter. You will have to depend on your own creativity and ingenuity to solve those issues.

Remember that your education does not stop here. There are many different areas of Excel you can explore, like VBA (Visual Basic for Programming, the programming language Excel uses) and discovering other functions. Continue to learn. Buy other books, search the Internet, do everything you can to expand your Excel knowledge (especially buying the new releases of the ClineSys courses) and you will quickly be regarded as the Excel Expert of your office.

By going through this course, you've learned the basics and advanced basics. From here on out, you can use a reference book to research most of your questions. Another good source for researching Excel issues is the Internet. I have found answers to many of my questions by going to the Internet and researching what others have done. Whenever I think that someone must have had my same problem, usually they have.

Chapter Exam

To take the examination for this chapter, you must have successfully completed the examination for the previous chapter. You can now go to www.ExcelCEO.com, click on Sign In, log in and take the exam. Make sure that you take the exam on the same computer that you completed the Comprehensive Project on, as all of the questions in this exam refer to the completed project.

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