Excel Wizardry

PUGET SOUND Finance Officers Association

Presented By:
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City of Bellevue

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Goal of the Presentation

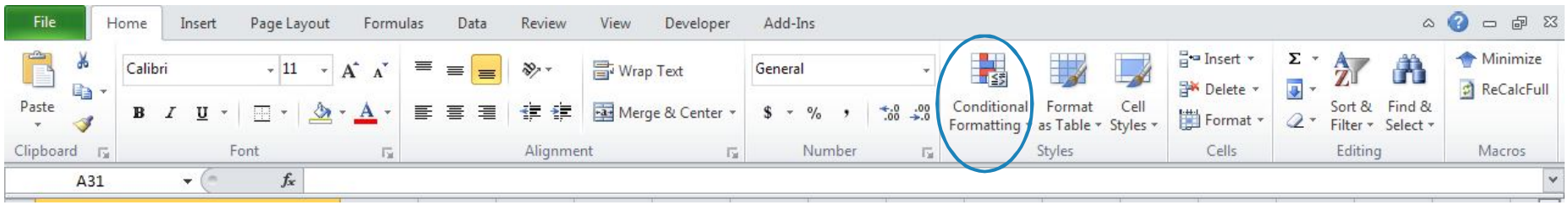
* The goal of this presentation is to inform participants of functions in Excel that will help streamline day to day work
* This presentation will cover:
  1. **Conditional Formatting**
  2. **Complex Formulas**
  3. **Using Names or defined ranges**
  4. **Pivot Tables**
  5. **Worksheet Grouping and New Windows**

Goal of the Presentation (Cont'd)

* This presentation is intended to give the attendees a overview of several Excel utilities and how they can be used together to create more robust models
* Due to time constraints we will not be able spend too much time on any particular topic. If time allows we can go into more detail at the end of the presentation.

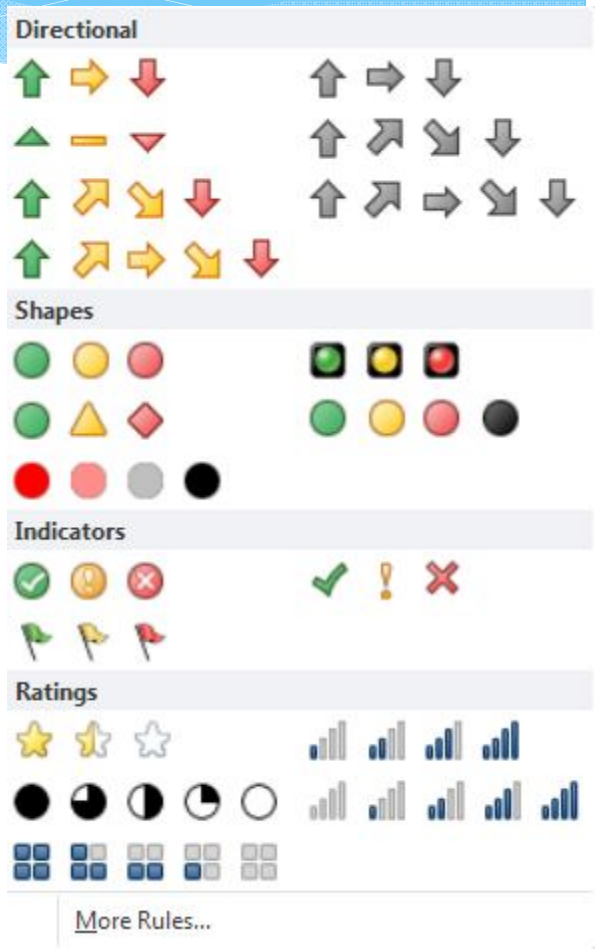
Conditional Formatting allows users to create a more visual indication of a cells value. Conditional formatting can be used to identify errors or categorize results.

Conditional Formatting



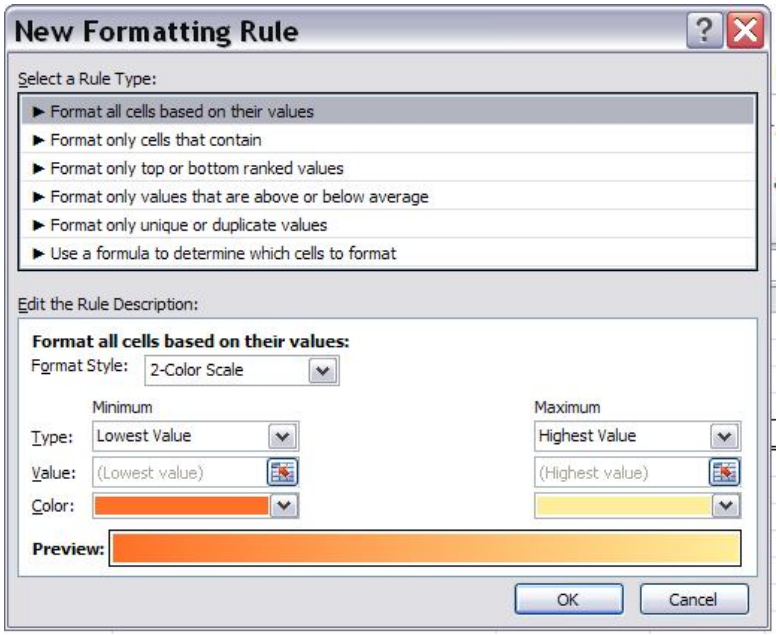
Conditional Formatting Cont. Options

* Conditional Formatting can be for simple font color, cell color or, with excel 2007 and newer Icons and gradients that represent the value.



Conditional Formatting Cont. Conditions

* Conditional formatting is very flexible on what the conditions can be that the cell is formatted.
  * Between two values
  * Outside the range of two values
  * Equal to
  * Not Equal to



Little Known or Used Excel Tools

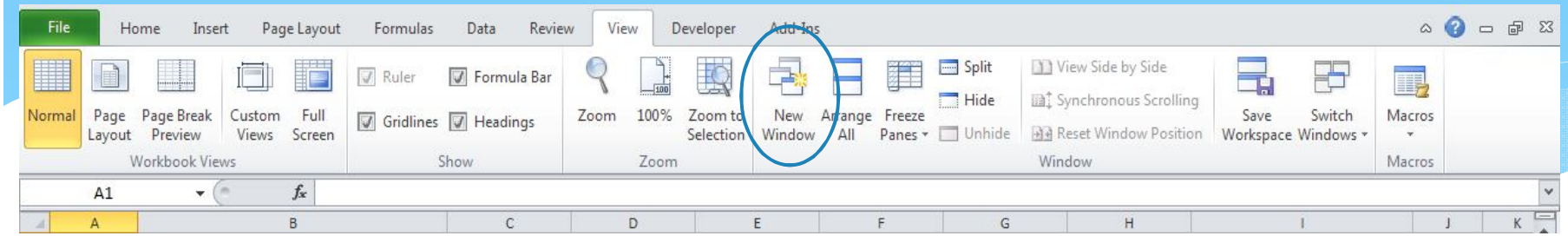
Excel has many features that will help the user work efficiently some of these features are:

- “New Window”
- “Text to columns”
- “remove duplicate”
- Grouping Worksheets

New Window

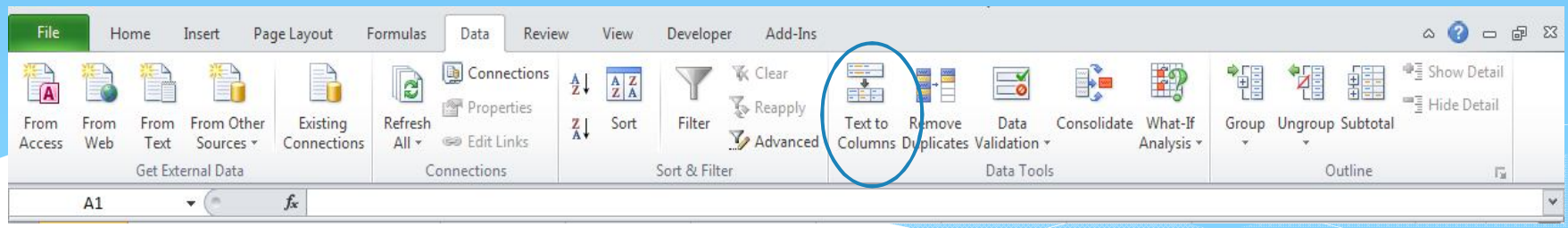
A new window is a duplicate Excel file that allows the user to view or change two or more parts of a workbook within the same screen.

This is very helpful when linking one tab to another within the same workbook or you want to watch how a variable will affect the results of a calculation



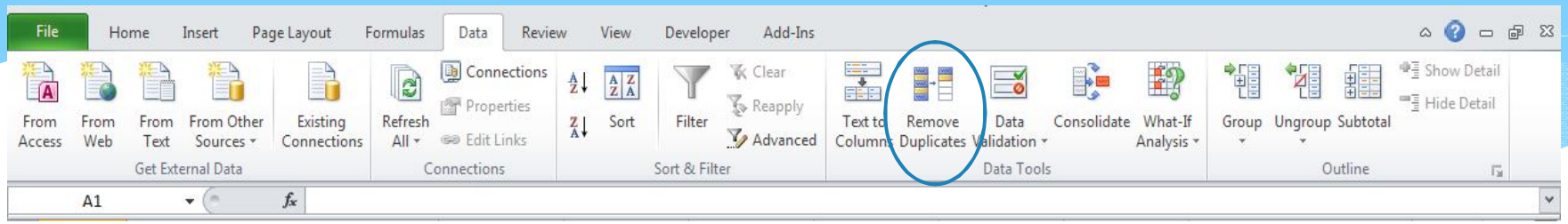
Text to Columns

Text to columns is a new feature for Excel 2007. This feature allows a user to copy data that is separated by comma or spaces into columns within a worksheet. I commonly use this feature when I get data from a website in in a PDF file



Remove Duplicates

This feature allows the user to remove duplicate values in either one or multiple columns. This is helpful if you are trying to find unique values in a list.



Grouping Worksheets

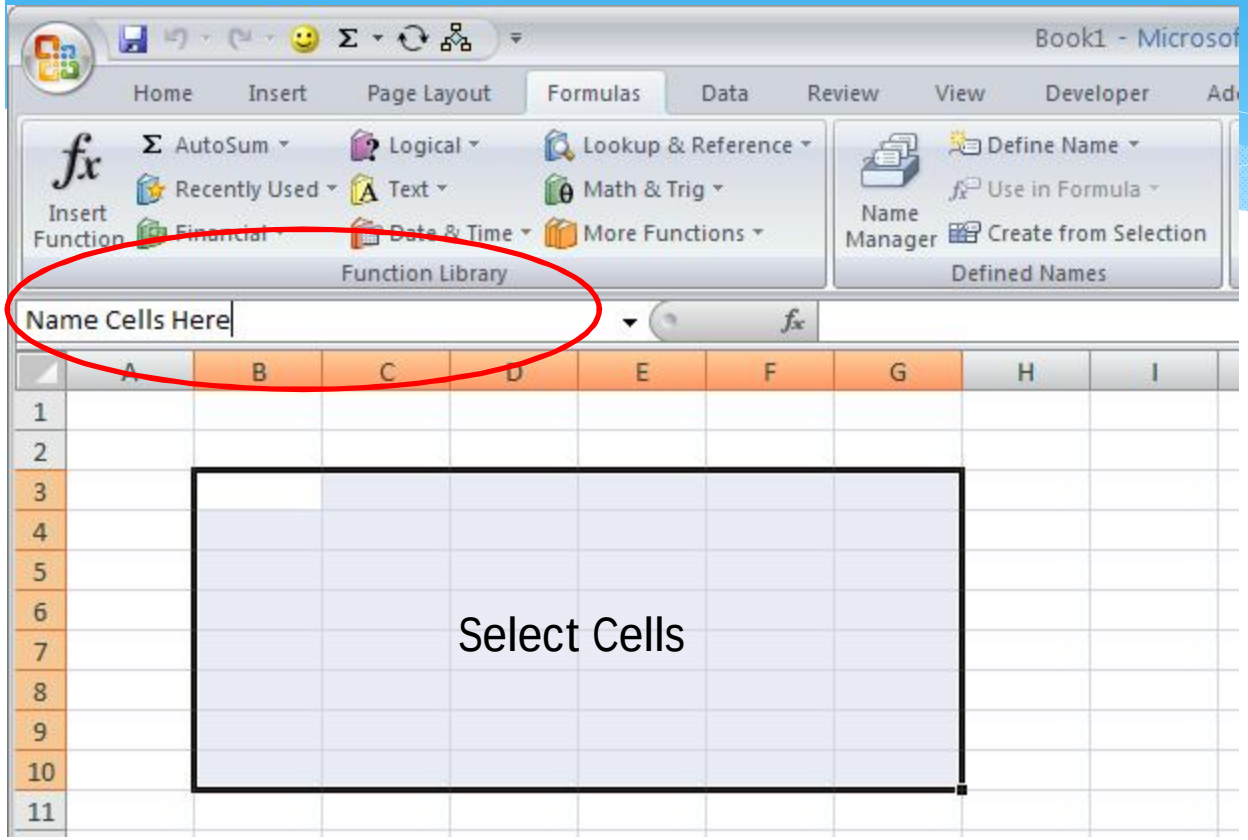
Grouping Worksheets allows the user to make changes to several worksheets at the same time. Worksheets (tabs) can be grouped By holding down the Control button and clicking on worksheets. It is important to understand that this feature will cause problems if the worksheets are not laid out identically.

To ungroup Worksheets simply click a worksheet that is not one that is grouped or by right clicking the worksheet tab and clicking “Ungroup Sheets”

Using Names, Ranges of cells can be defined to use in functions, as constants or tables. Naming a range or value can make formulas easier to create as well as make formulas' easier to understand.

Names or Defined Ranges

Defining a Range of Cells

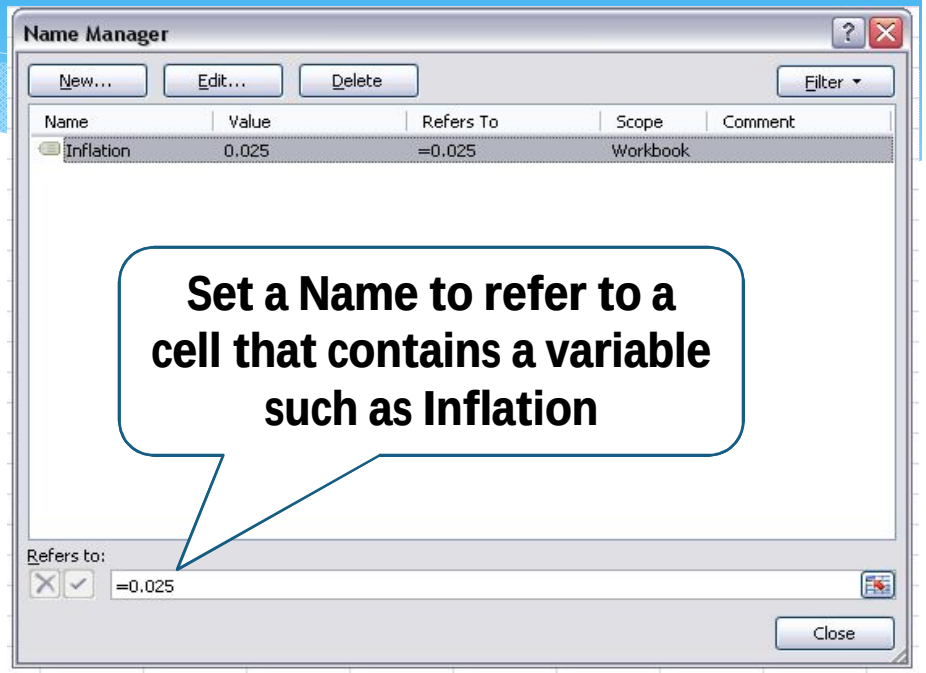


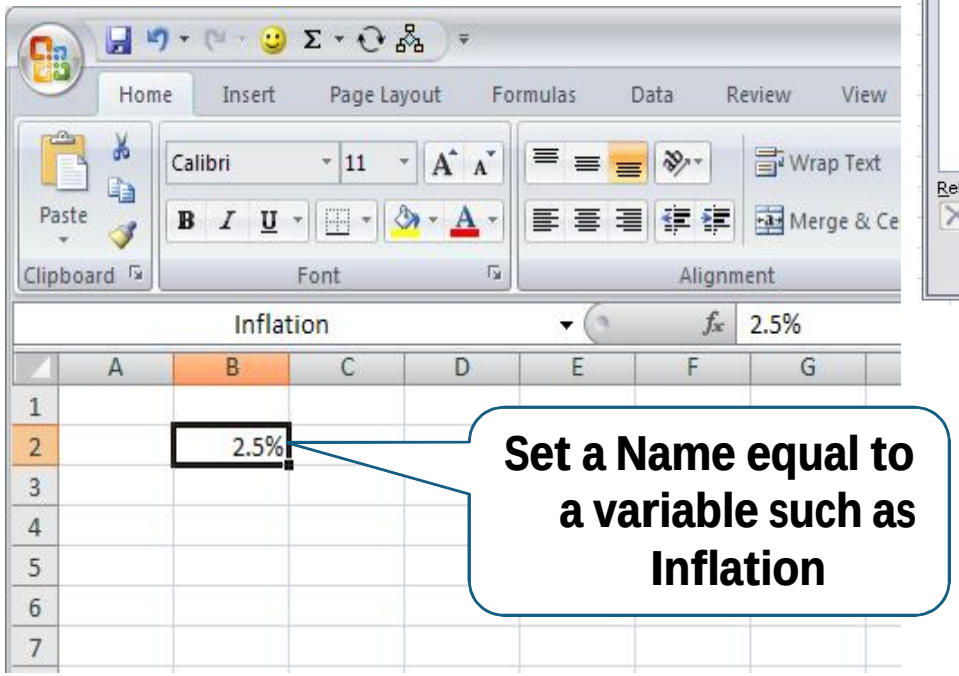
* Select a range of cells
* Type a name into the range address box

Note: The name of a Range should be with no special characters such as /?#@ etc, or spaces and cannot be the same as an actual address of a cell like A1 or B2.

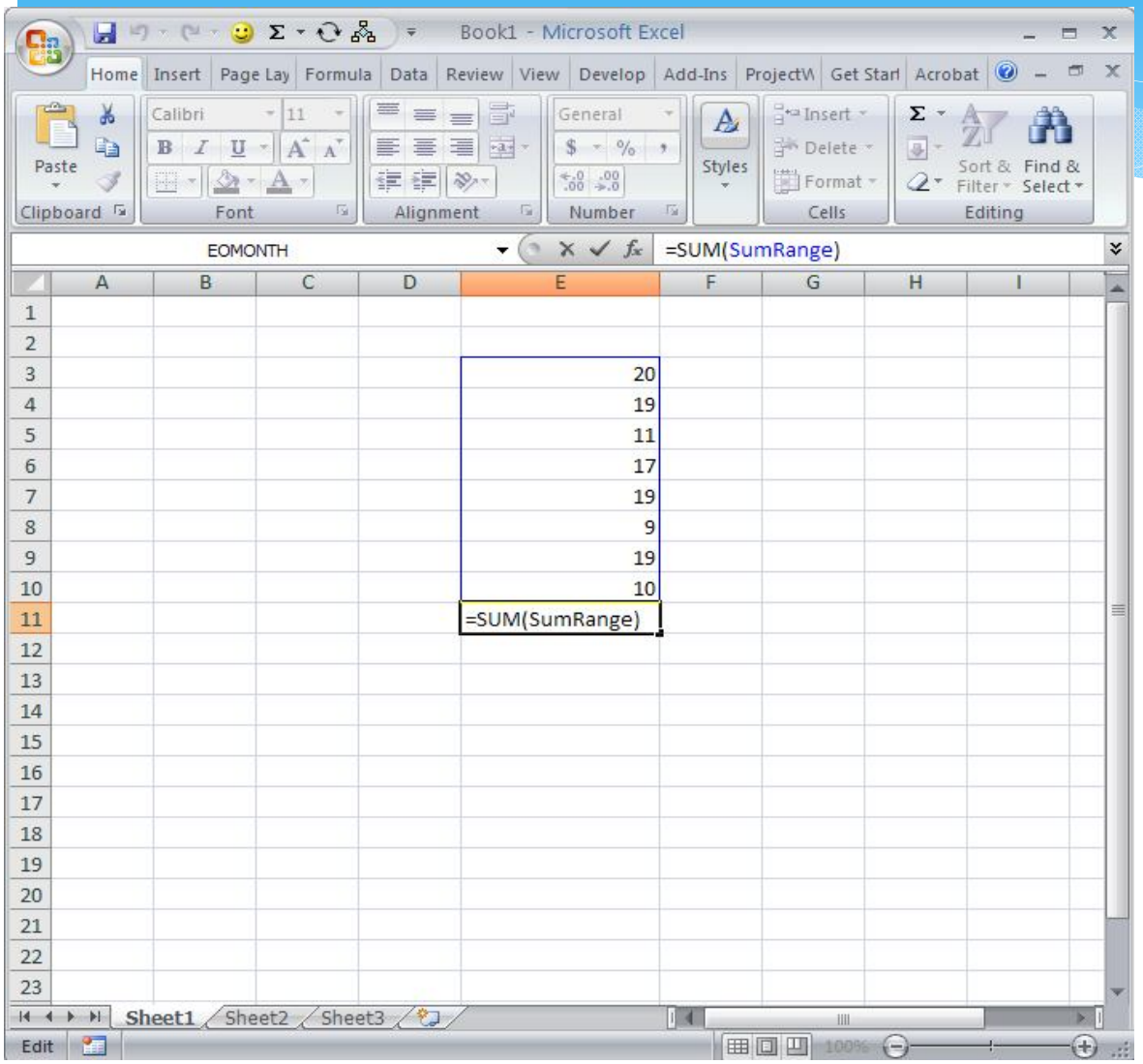
Using a Name as a Defined Variable

Names can be used as a variable in two ways





Using a Defined Range in a Formula



* After defining a range you can use that defined range in any formula such as:
  * SUM()
  * VLOOKUP()
  * NPV()
  * And May more

Excel offers a wide variety of formulas that are specific to various disciplines such as finance, engineering, statistics, and data base functions, etc,.

Complex Formulas

Complex Formulas – Look Up Functions

Look-Up Functions

* VLOOKUP, vertical look up function allowing user to look up a value in a list or data base.
* HLOOKUP, Similar to VLOOKUP except it looks a cross a data table as opposed to down a data table.

	A	B	C	D	E	F
1		April	May	June	July	August
2	1	4	10	3	19	4
3	3	8	13	17	2	7
4	6	13	19	18	12	1
5	7	8	15	7	18	9
6	8	1	20	15	20	14
7	11	4	9	7	13	3
8	24	17	14	20	20	8

Data Table

=VLOOKUP(I12,A1:F8,2,FALSE)
=HLOOKUP(I13,A1:F8,3,FALSE)

Look up value

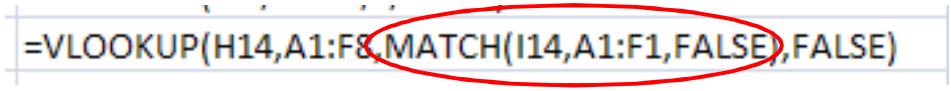
Data Table

Column or Row #

Type of Match

Complex Formulas – Look Up Functions (Cont'd)

- The main draw back to the look up functions is that they only operate one-dimensionally, they can only look vertically or horizontally but not both.
  - You can incorporate the Match() formula to overcome the one-dimensional aspect of the look up formulas to allow vertical and horizontal indexing.



- An additional feature that the look up functions has is the ability to either make an exact match or an approximate match.
  - If an approximate match is desired, the factors being looked up need to be sorted numerically

Complex Formulas – Sum Functions

* SUMIF, Compares a range of values to a constraint and sums the values in the range that meet that constraint
* COUNTIF, operates just like SUMIF except instead of summing the values that are within the constraints it counts the number of occurrences.

Complex Formulas – Sum Functions (Cont'd)

* SUMIFS, similar to SUMIF except it allows multiple constraints
* COUNTIFS, operates just like SUMIFS except instead of summing the values that are within the constraints it counts the number of occurrences.
* SUMPRODUCT, multiplies ranges of the same dimensions then sums the result. The dimensions must be either one column and multiple rows or one row and multiple columns.

Complex Formulas - SUMIF

* The Sum if function can either use a text reference as a constraint or a cell reference.
* The constraint can be an equal to and or greater than or less than.
  * If the constraint is a cell reference it can be complicated to have a greater than or less than constraint.

	A	B	C	D	E	F
1		April	May	June	July	August
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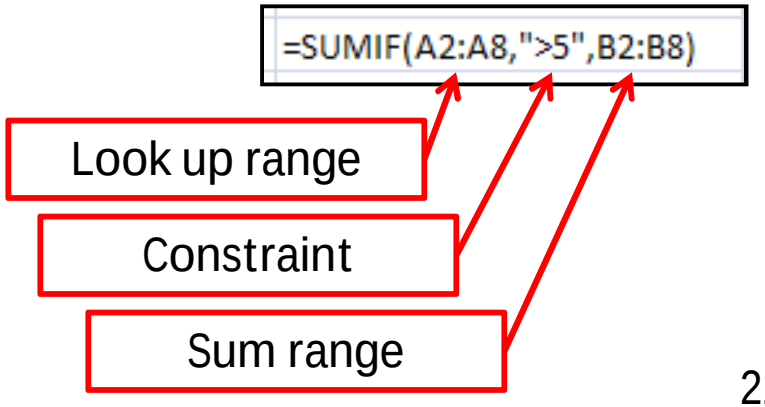

Complex Formulas - SUMIFS

* The multiple Sum if function is similar to the sum if formula except the formula can except multiple constraints.
* The constraint can be an equal to and or greater than or less than.

	A	B	C	D	E	F
1		April	May	June	July	August
2	1	4	10	3	19	4
3	3	8	13	17	2	7
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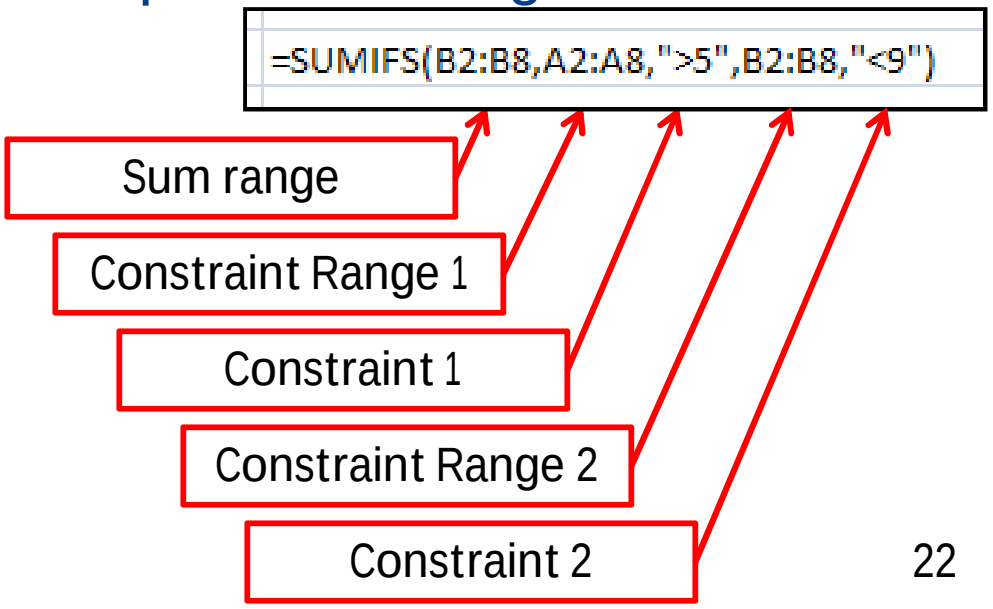

Complex Formulas – COUNTIF & COUNTIFS

* The count if and multiple constraint count if functions operates like the sum if functions except it counts the occurrences rather than summing the occurrences.

	A	B	C	D	E	F
1		April	May	June	July	August
2	1	4	10	3	19	4
3	3	8	13	17	2	7
4	6	13	19	18	12	1
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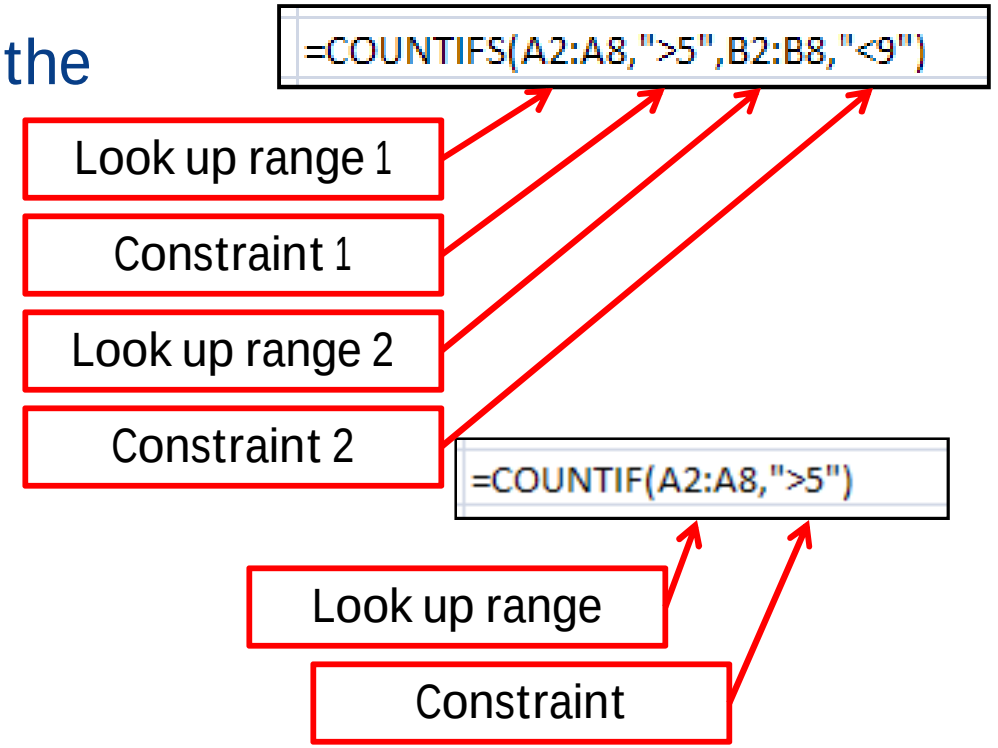

Complex Formulas - SUMPRODUCT

* The Sum Product function allows a user to multiply corresponding values in 2 or more ranges together then summing the product.
* In the example below 4 is multiplied by 10, 8 is multiplied by 13 and so on, then the results are summed together.
* There are ways to make use the sum product like a multiple sum if formula, but this is largely made obsolete since the SUMIFS formula was included in the 2007 version.

	A	B	C	D	E	F
1		April	May	June	July	August
2	1	4	10	3	19	4
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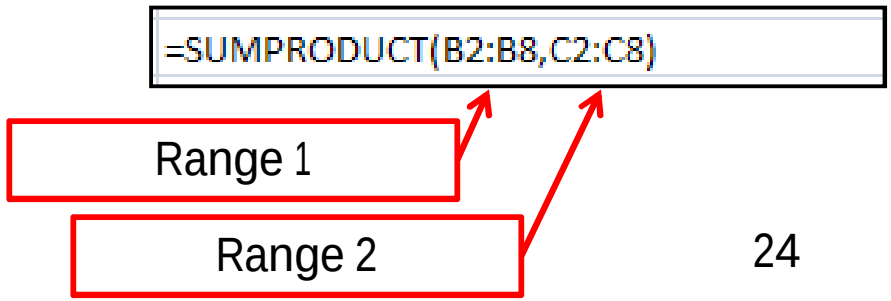
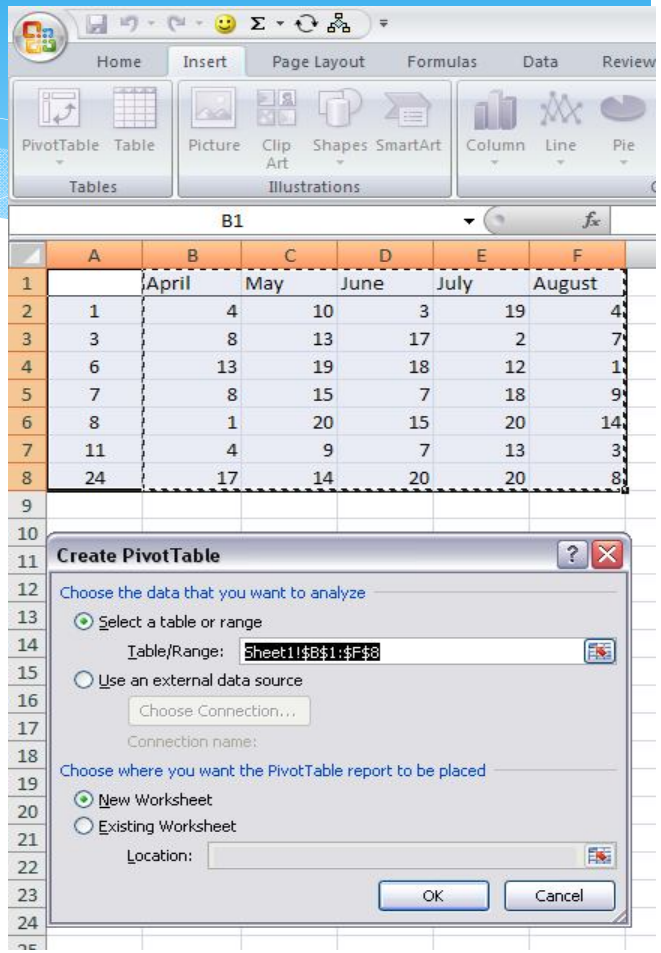


Pivot tables are a way to easily manage large data sets.

Pivot Tables

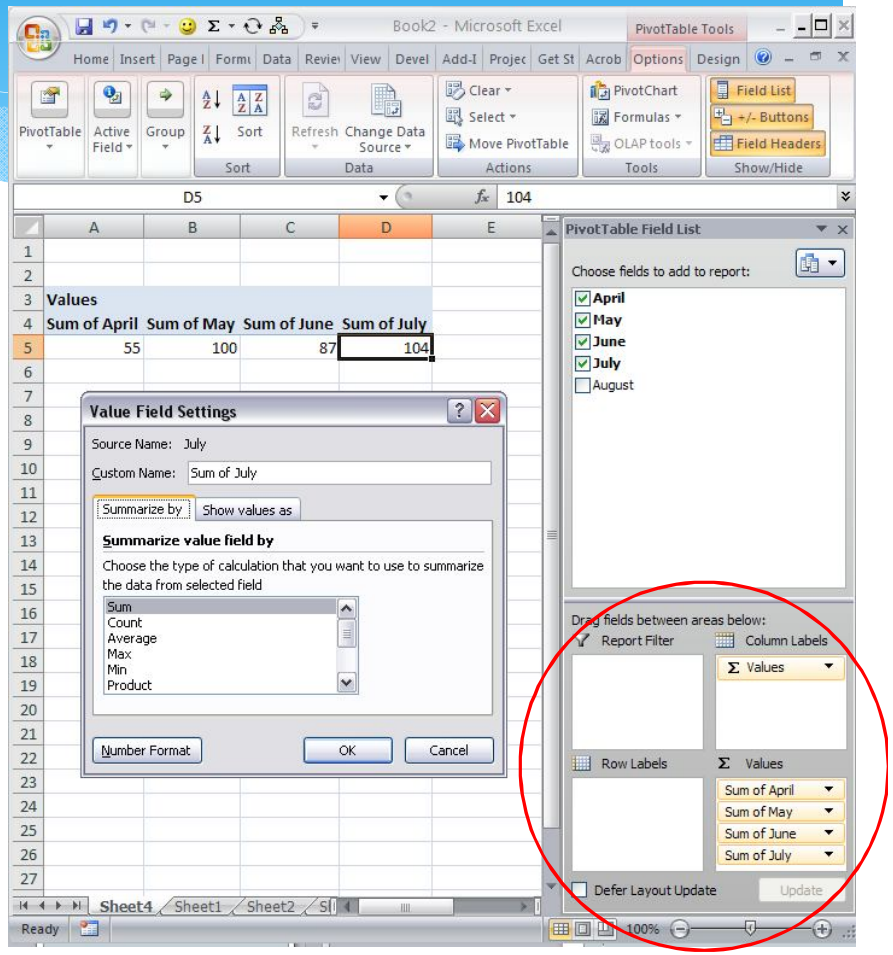
Creating a Pivot Table

* Pivot Tables are easy to create and allow the user to manipulate the data to get the answer you want.
* To create a pivot table simply select the data table and then click on the PivotTable icon.
* External data from either an Access data base or other Excel file.

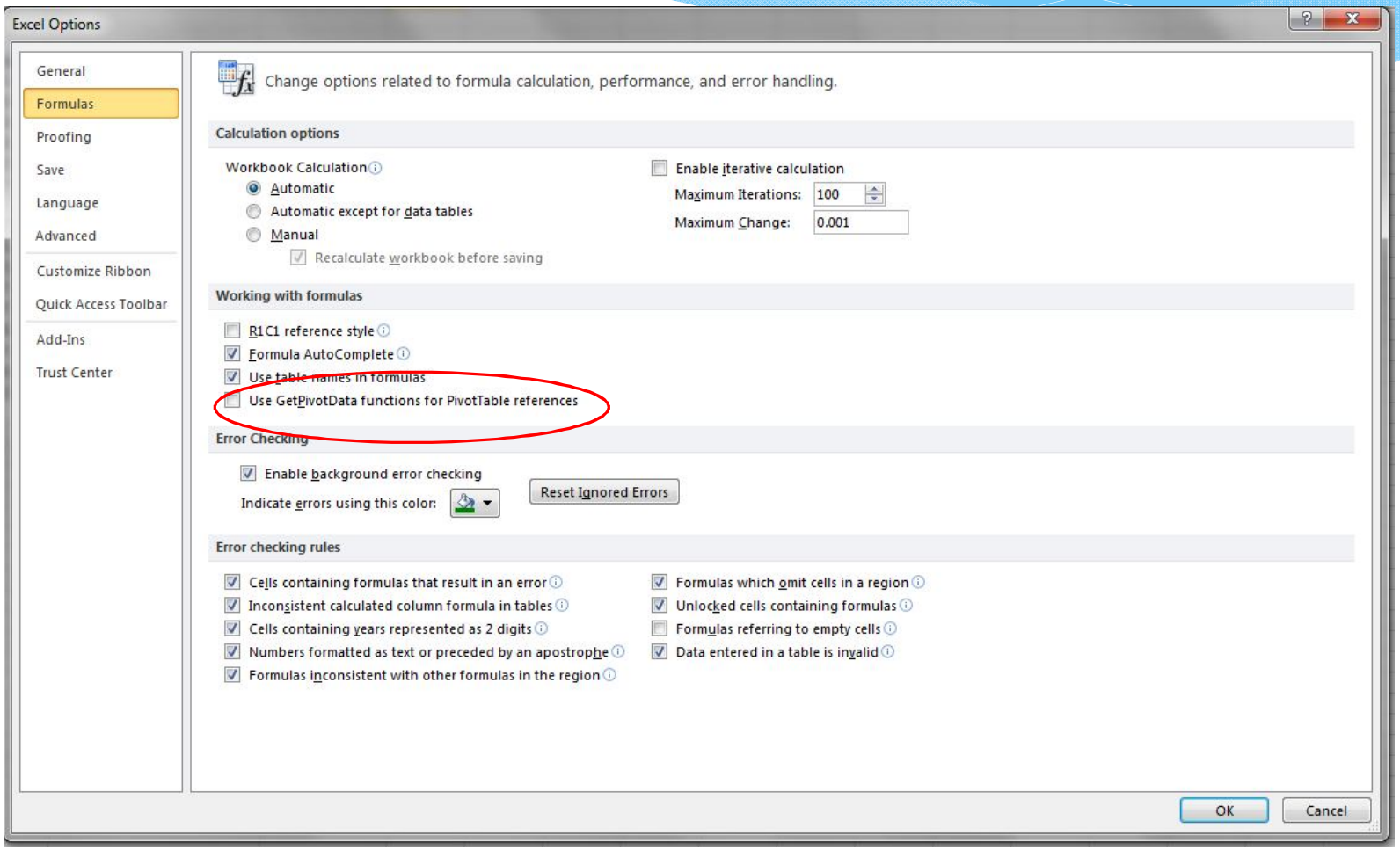


Creating a Pivot Table (Cont'd)

* After clicking the OK button on the Create Pivot table pop up you can adjust and manipulate the table to get the answer you want.
* The pivot table can be created to sum or count the value data
* Different levels of detail can be shown by adjusting the area circled.



Referencing Pivot Data



Easily Updating Pivot Data

* When selecting data for your pivot table select the entire set of columns so that you can simply append or over write the data then refresh your pivot table.

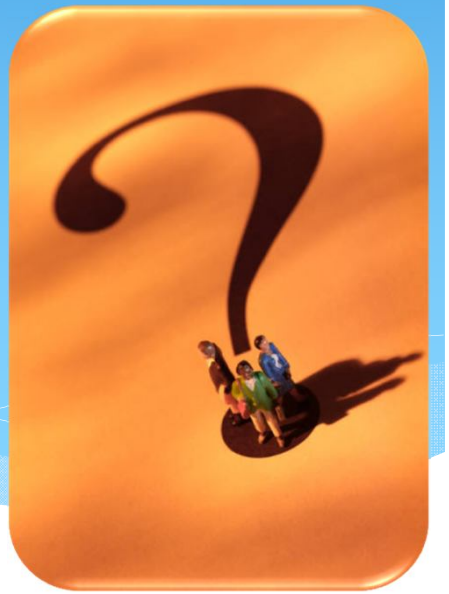
How to Use These Features for Modeling

* Using the all the features and tools within Excel will allow for creating Financial and Rate Models that are easily updated and adjusted for specific scenarios saving time and effort in the long run.

Excel Resources

- **Excel Program help**
  - F1, Search Microsoft help articles
  - Help on this Function on formula input (Usually my starting point)
- **Books**
  - **I have not run across any that are what I would consider good books. Usually the books I have read are either too basic or too advanced. I have books that I use but they are not the best resources.**
- **Websites**
  - Microsoft Answers, “http://answers.microsoft.com/en-us/office/ (Great resource, I usually find the best explanations here)

Questions?



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