



# Intermediate Excel 2007

## Relative & Absolute Referencing

### Relative Referencing

When you copy a formula to another cell, Excel automatically adjusts the cell reference to refer to different cells relative to the position of the formula.

**Example:** If you have a formula B1+C1 and you copy the formula down one cell, it will adjust to B2+C2.

### Absolute Referencing

Sometimes you do not want the formula to adjust. You want to copy the exact formula. An **absolute cell reference** in a formula, such as \$A\$1, always refer to a cell in a specific location. By default, new formulas use relative references, and you need to switch them to absolute references.

### To Apply Absolute Referencing in a Formula:

- 1) Position your cursor at the location in the formula bar where the formula exists
- 2) Reposition the cursor if necessary
- 3) Press the **F4 key** on the keyboard

## Functions

As we have previously seen, the power of Excel lies in its ability to perform calculations. The real strength of this is shown in **Functions**. Functions are more complex formulas that are executed by using the name of a function and stating whatever parameters the function requires.

### Function Defined

**=SUM(range of cells)** returns the sum of the selected cells

**=AVERAGE (range of cells)** returns the average of the selected cells

**=MAX(range of cells)** returns the highest value of the selected cells

**=MIN(range of cells)** returns the lowest value of the selected cells

**=COUNT(range of cells)** returns the number of values of the selected cells

**=COUNTA(range of cells)** returns the number of cells that have text/numbers of the selected cells

**=IF(Logical Test,Value if True,Value if False)** tests the expression then returns True statement or actions or False statement or action based on test.

**Example** =IF(A2>B2,1,2)

**Translation:** If cell A2 is greater than B2, display 1 otherwise display 2

**To Enter the SUM Function:**

- 4) Click in a cell
- 5) Type **=SUM(**
- 6) Highlight the range of cells that are to be added (The colon means “through”)
- 7) Type a **closed parentheses**
- 8) Press **ENTER**

**Or**

- 1) Navigate to the cell where you would like the total
- 2) Click the **Autosum icon**  $\Sigma$
- 3) If needed, highlight the cell(s) to identify the range to sum
- 4) Press **Enter**

**To Insert the Average Function into the Worksheet:**

- 1) Click in a cell
- 2) Type **=average(**
- 3) Highlight the range of cells to be calculated
- 4) Type a **closed parentheses**
- 5) Press **ENTER**

**To Insert the MAX Function into the Worksheet:**

- 1) Click on a cell
- 2) Type **=max(**
- 3) Highlight the range of cells to be calculated
- 4) Type a **closed parentheses**
- 5) Press **ENTER**

**To Insert the MIN Function into the Worksheet:**

- 1) Click on a cell
- 2) Type **=min(**
- 3) Highlight the range of cells to be calculated
- 4) Type a **closed parentheses**
- 5) Press **ENTER**

**To Insert the COUNT Function into the Worksheet:**

- 6) Click on a cell
- 7) Type **=count(**
- 8) Highlight the range of cells to be calculated
- 9) Type a **closed parentheses**
- 10) Press **ENTER**

**To Insert the COUNTA function into the Worksheet:**

- 1) Click on a cell
- 2) Type **=counta(**
- 3) Highlight the range of cells to be calculated
- 4) Type a **closed parentheses**
- 5) Press **ENTER**

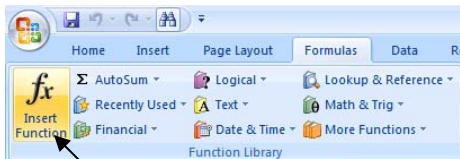
### To Insert the IF function into the Worksheet:

- 1) Click on a cell
- 2) Type **=IF(**
- 3) Enter the logical test
- 4) Type a **comma**
- 5) Enter the value if true
- 6) Type a **comma**
- 7) Enter the value if false
- 8) Type a **closed parentheses**
- 9) Press **ENTER**

You are also able to insert functions using the menu.

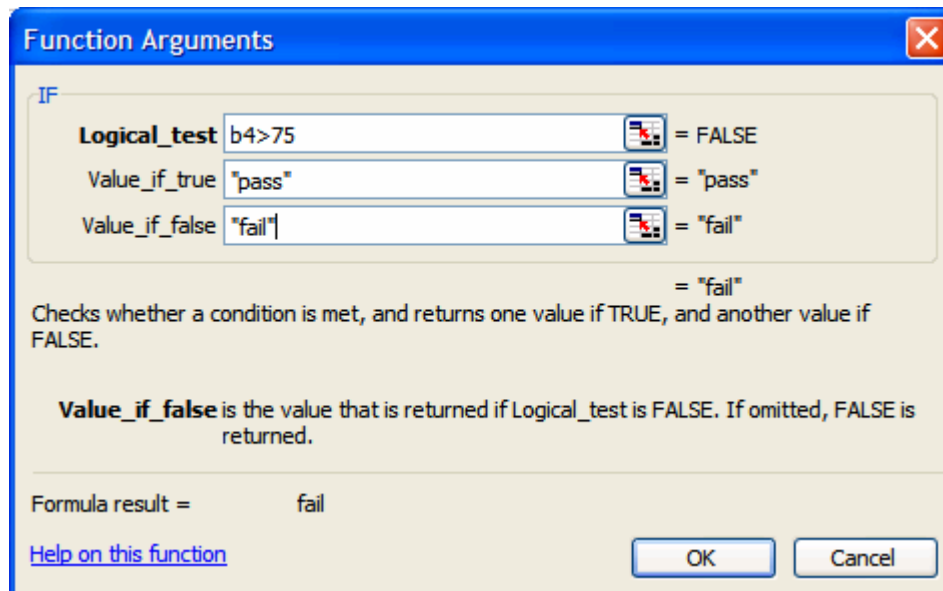
### To Insert a Function:

- 1) Select the **Formula** tab
- 2) Click the **Insert Function** icon on the ribbon



- 3) Select a function
- 4) Fill in the necessary arguments.

Below is an example of an **IF** statement. This function contains 3 arguments that are filled in below.



# Order of Operation

Excel uses **Order of Operation** when calculating formulas.

The Order of Operation is:

- Parentheses
- Exponents
- Multiplication
- Division
- Addition
- Subtraction

## How the Order of Operation Works

Any operation(s) in parentheses will be calculated first, followed by any exponents. After that, Excel calculates multiplication and/or division operations (both equally) in the order they occur left to right in the equation. Then Excel looks for addition and/or subtraction and processes the one that comes first as well.

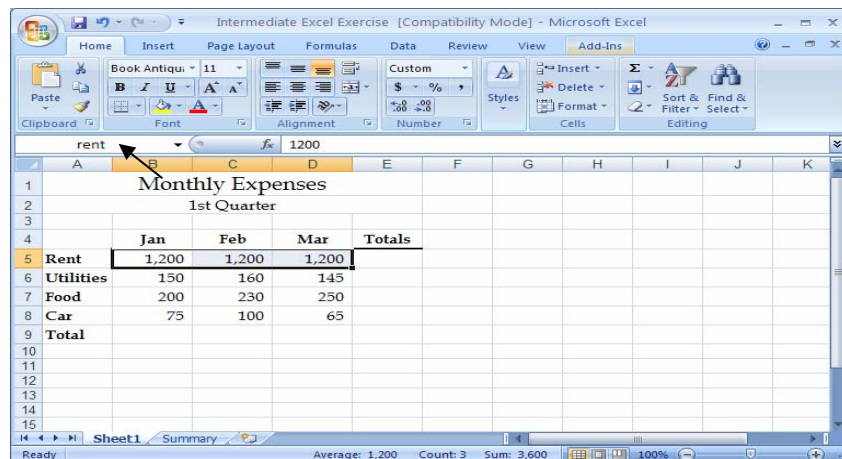
## Range Names

**Named Ranges** are a powerful tool in Excel that allows you to assign a meaningful name to a single cell or a range of cells. For example, you can assign the name "HourlyRate" to cell B5 and then use the name "HourlyRate" anytime you would normally use the cell B5, such as =A5\*HourlyRate.

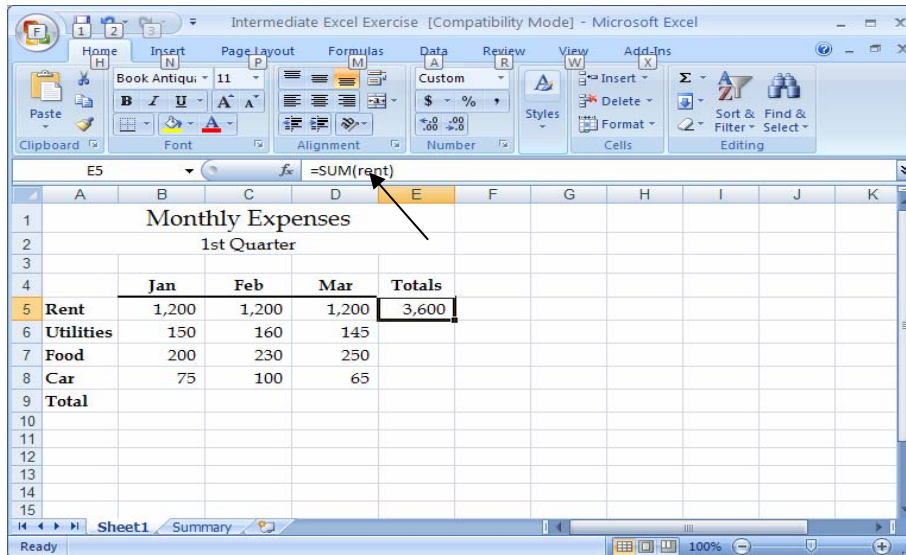
There are advantages to using Named Ranges: formulas are clear and easily understood and are absolute referenced.

## To Create a Range Name:

- 1) Select the area
- 2) Click in the **Range Name** box
- 3) Enter a range name (no spaces, punctuations and should be short)
- 4) Press **Enter**



Below is an example of using a range name in a formula:  
=sum(rent)

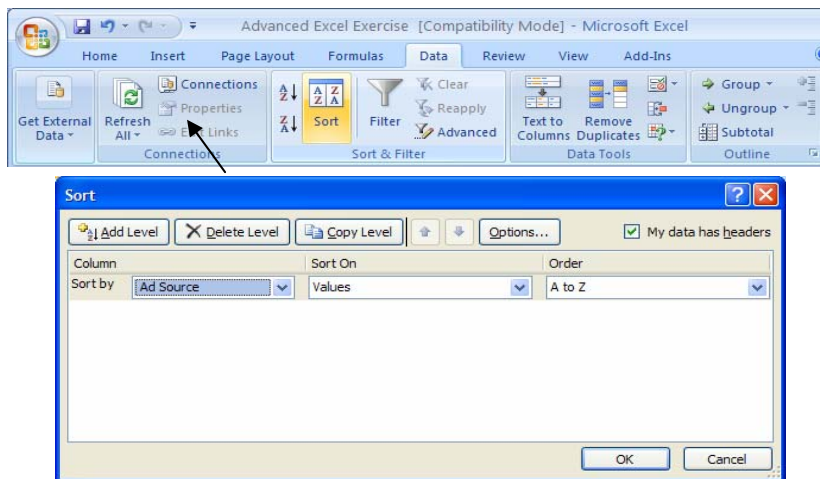


## Sorting Data/Filtering Data/Using Forms

When working with large spreadsheets with many rows of data it can be helpful to sort and filter the information to find what you are looking for.

### To Sort Data:


- 1) Select the data to be sorted
- 2) Select the **Data** tab
- 3) Choose the **Sort** icon




**Note:** You are able to sort by more than one field. To add additional sort keys, click the **Add Level** button and define your sort.

- 4) First identify if your data has a **Header Row** (first row in data is Field Names, not data to be sorted)
- 5) Select the **Primary Sort** field and select either Ascending (A-Z) or Descending (Z-A)
- 6) Select the criteria to sort on
- 7) Select the order to sort by
- 8) Click **OK**

### To Create a Simple Sort:

- 1) Select the Data tab
- 2) Highlight the data to be sorted
- 3) Click either the **Ascending sort icon** (A-Z, 1-10) 

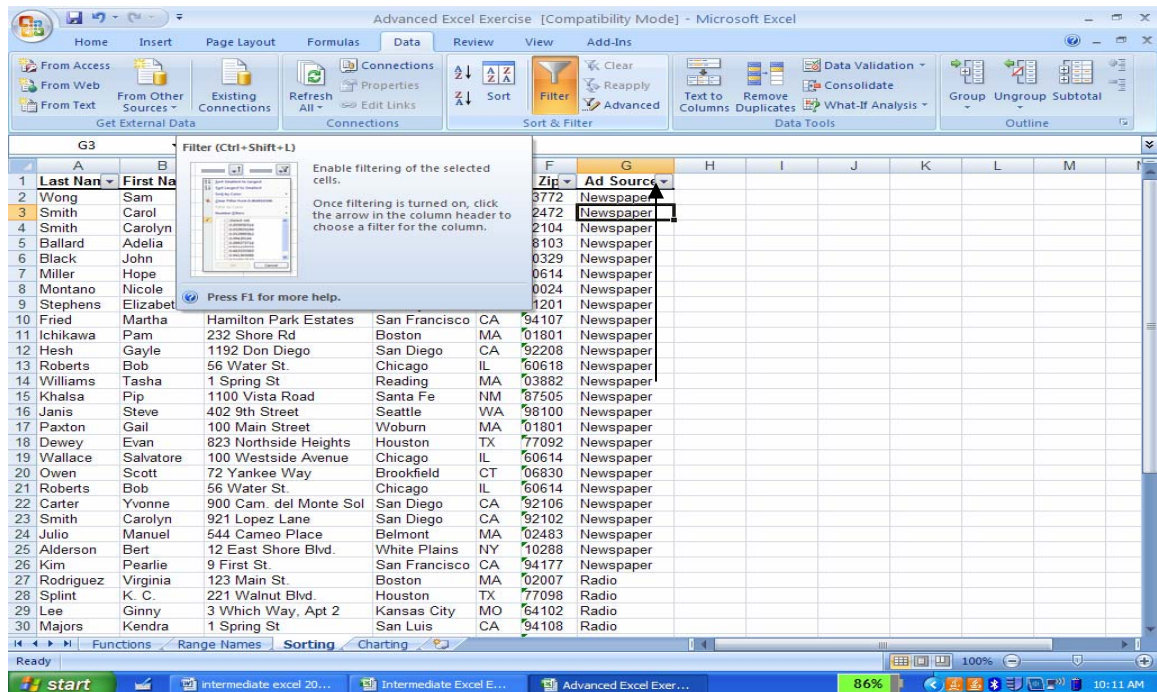
Or

- 4) Descending sort icon (Z-A, 10-1) 

## Filtering Data

### To Filter Data:

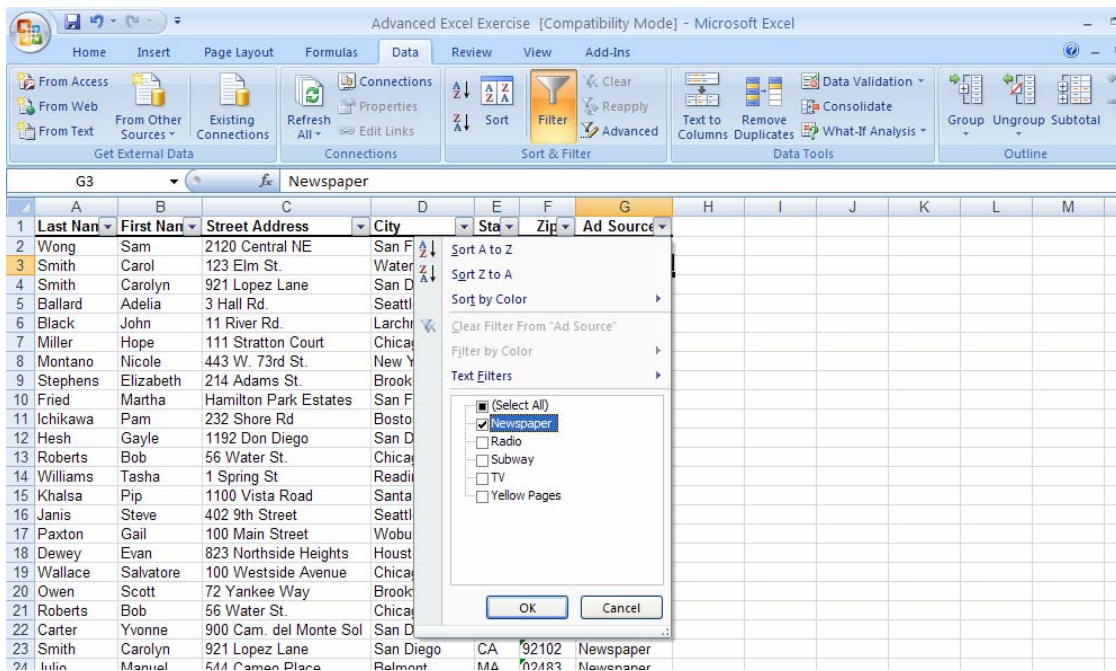
- 1) Position your cursor in the **Data**
- 2) Select the **Data** tab
- 3) Choose **Filter**



The first row of the spreadsheet becomes the filtering row.

## To Filter for Specific Data:

- 1) Click on the **down arrow** next to the heading of the column you want to filter by
- 2) Select the criteria you want to filter for
- 3) You may filter by multiple columns at once

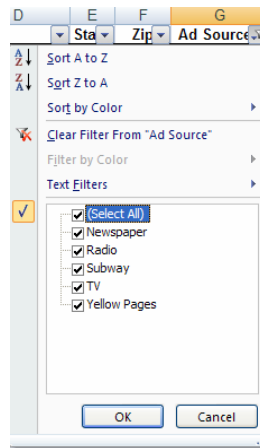


The data base below is filtered by Ad Source (Newspaper).

	A	B	C	D	E	F	G	H	I	J	K
1	Last Name	First Name	Street Address	City	State	Zip	Ad Source				
2	Wong	Sam	2120 Central NE	San Francisco	CA	93772	Newspaper				
3	Smith	Carol	123 Elm St.	Watertown	MA	02472	Newspaper				
4	Smith	Carolyn	921 Lopez Lane	San Diego	CA	92104	Newspaper				
5	Ballard	Adelia	3 Hall Rd.	Seattle	WA	98103	Newspaper				
6	Black	John	11 River Rd.	Larchmont	NY	10329	Newspaper				
7	Miller	Hope	111 Stratton Court	Chicago	IL	60614	Newspaper				
8	Montano	Nicole	443 W. 73rd St.	New York	NY	10024	Newspaper				
9	Stephens	Elizabeth	214 Adams St.	Brooklyn	NY	11201	Newspaper				
10	Fried	Martha	Hamilton Park Estates	San Francisco	CA	94107	Newspaper				
11	Ichikawa	Pam	232 Shore Rd	Boston	MA	01801	Newspaper				
12	Hesh	Gayle	1192 Don Diego	San Diego	CA	92208	Newspaper				
13	Roberts	Bob	56 Water St.	Chicago	IL	60618	Newspaper				
14	Williams	Tasha	1 Spring St	Reading	MA	03882	Newspaper				
15	Khalsa	Pip	1100 Vista Road	Santa Fe	NM	87505	Newspaper				
16	Janis	Steve	402 9th Street	Seattle	WA	98100	Newspaper				
17	Paxton	Gail	100 Main Street	Woburn	MA	01801	Newspaper				
18	Dewey	Evan	823 Northside Heights	Houston	TX	77092	Newspaper				
19	Wallace	Salvatore	100 Westside Avenue	Chicago	IL	60614	Newspaper				
20	Owen	Scott	72 Yankee Way	Brookfield	CT	06830	Newspaper				
21	Roberts	Bob	56 Water St.	Chicago	IL	60614	Newspaper				
22	Carter	Yvonne	900 Cam. del Monte Sol	San Diego	CA	92106	Newspaper				
23	Smith	Carolyn	921 Lopez Lane	San Diego	CA	92102	Newspaper				
24	Julio	Manuel	544 Cameo Place	Belmont	MA	02483	Newspaper				
25	Alderson	Bert	12 East Shore Blvd	White Plains	NY	10788	Newspaper				

### To Display all Records:

- 1) Click on the **arrow** for the field you filtered by
- 2) Select **All**
- 3) Click **OK**



### To Turn the Filter Off:

Click the **Filter** icon once more

## Advanced Filter

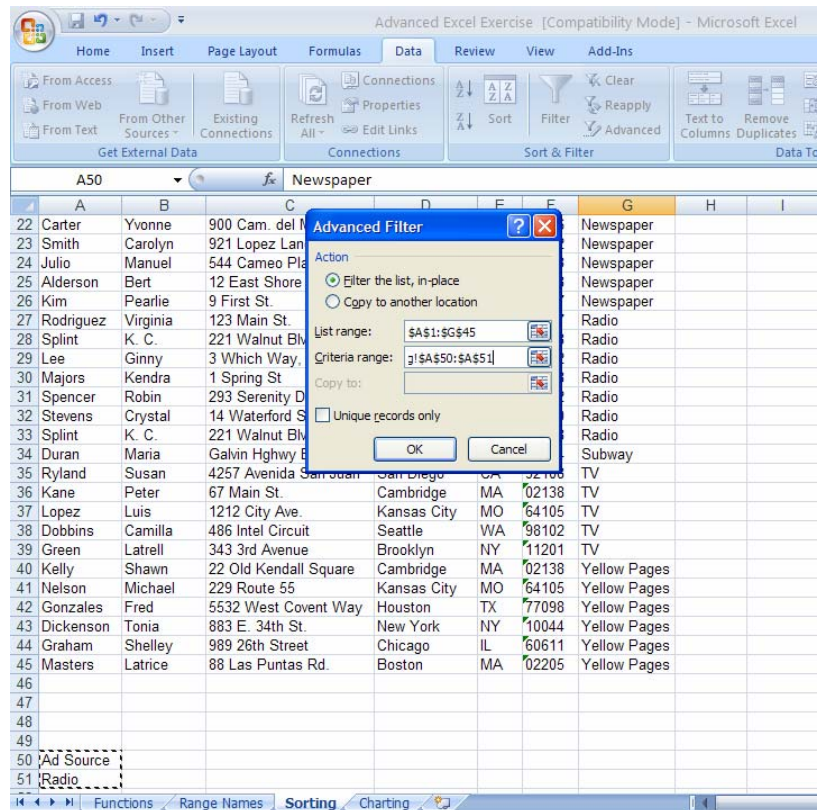
**Advanced Filter** filters the data and allows for an “output” of that data to a location in your worksheet

You must first make sure of the following:

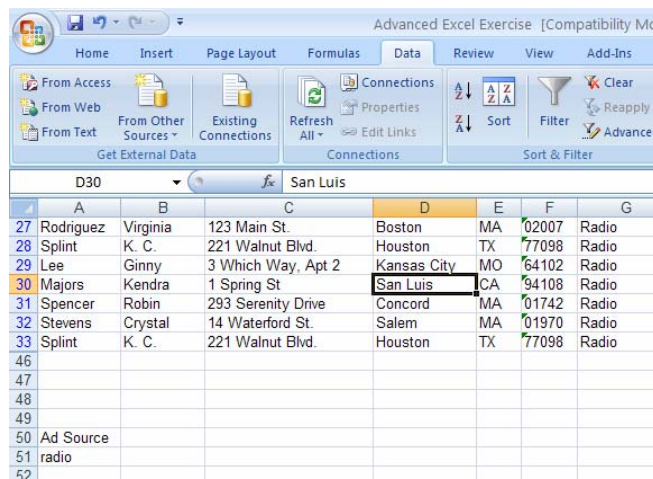
- The first row in the data are your headings
- There are no blank rows within your data (missing records)
- A blank row exists at the end of the data and a blank column to the right of the data

### Setting up the Criteria Range (optional)

In the criteria range, you can set the rules for the data that should remain visible after the filter is applied. You can use one criterion, or several.



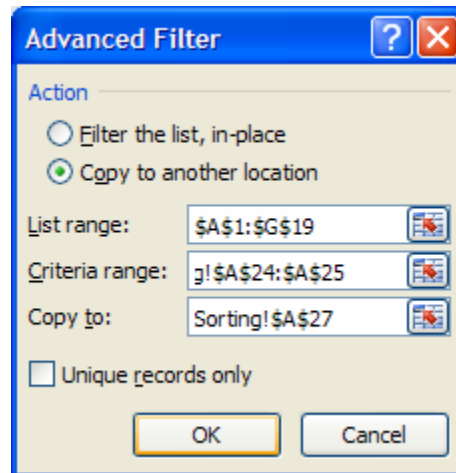
In this example, cells A50:A51 is the criteria range.  
 The heading in G1 exactly matches a heading (A50) in the database.  
 Cell A51 contains the criterion. In this example I would like to filter for Radio so  
 in cell A51, I typed ="radio" as the criteria.



Other operators include:  
**<** less than  
**>** greater than  
**=** equal to  
**<=** less than or equal to  
**>=** greater than or equal to  
**<>** not equal to

## To Copy the Records to Another Location in the Worksheet:

- 1) Select **Copy to another location**
- 2) Identify your criteria range
- 3) Identify your copy to range (click on a cell where you would like the data to be copied)
- 4) Click **OK**



Advanced Excel Exercise [Compatibility Mode] - Microsoft Excel

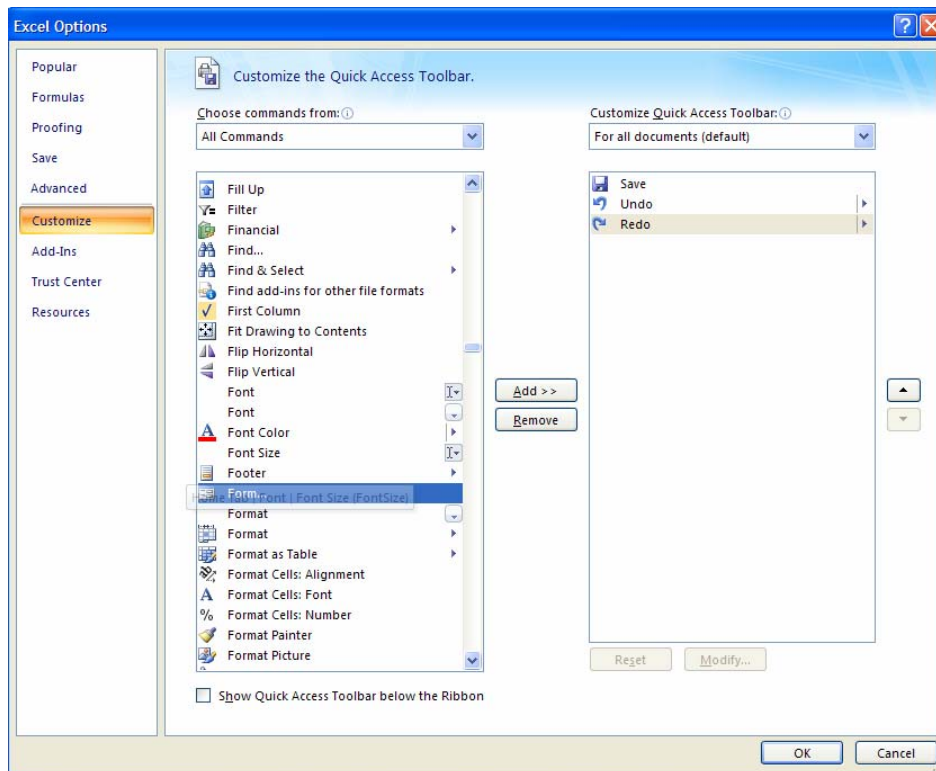
1	Last Name	First Name	Street Address	City	State	Zip	Ad Source
2	Wong	Sam	2120 Central NE	San Francisco	CA	93772	Newspaper
3	Smith	Carol	123 Elm St.	Waterton	MA	02472	Newspaper
4	Smith	Carolyn	921 Lopez Lane	San Diego	CA	92102	Newspaper
5	Julio	Manuel	544 Cameo Place	Belmont	MA	02483	Newspaper
6	Alderson	Bert	12 East Shore Blvd.	White Plains	NY	10288	Newspaper
7	Kim	Pearlie	9 First St.	San Francisco	CA	94177	Newspaper
8	Rodriguez	Virginia	123 Main St.	Boston	MA	02007	Radio
9	Splint	K. C.	221 Walnut Blvd.	Houston	TX	77098	Radio
10	Lee	Ginny	3 Which Way, Apt 2	Kansas City	MO	64102	Radio
11	Majors	Kendra	1 Spring St	San Luis	CA	94108	Radio
12	Spencer	Robin	293 Serenity Drive	Concord	MA	01742	Radio
13	Stevens	Crystal	14 Waterford St.	Salem	MA	01970	Radio
14	Splint	K. C.	221 Walnut Blvd.	Houston	TX	77098	Radio
15	Duran	Maria	Galvin Hghwy East	Chicago	IL	60614	Subway
16							
17							
18							
19							
20	Ad Source						
21	radio						
22							
23	Last Name	First Name	Street Address	City	State	Zip	Ad Source
24	Rodriguez	Virginia	123 Main St.	Boston	MA	02007	Radio
25	Splint	K. C.	221 Walnut Blvd.	Houston	TX	77098	Radio
26	Lee	Ginny	3 Which Way, Apt 2	Kansas City	MO	64102	Radio
27	Majors	Kendra	1 Spring St	San Luis	CA	94108	Radio
28	Spencer	Robin	293 Serenity Drive	Concord	MA	01742	Radio
29	Stevens	Crystal	14 Waterford St.	Salem	MA	01970	Radio
30	Splint	K. C.	221 Walnut Blvd.	Houston	TX	77098	Radio

## Using a Data Form to Enter Data

Use Excel's built-in Data Form to make it easier to enter data in a list. It will display a maximum of 32 fields.

By default, you must add the Form command to your Quick Access toolbar. To do this, follow the instructions below:

- 1) Click the **Office** button
- 2) Click **Excel Option** button at bottom of Dialog Box
- 3) Select **Customize**
- 4) Select **All Commands** from the Choose Command window
- 5) Scroll down and select **Form**
- 6) Click the **Add** button
- 7) Click **OK**



### To Enter Data in Excel using a Form:

- 1) Select a cell in the list
- 2) Select the **Form** icon from your Quick Access Toolbar
- 3) Click the **New** button, and enter the new record

**Note: Fields which contain a formula will not have a text box. The formula will be entered and calculated automatically.**

## To Search for Data Using a Form:

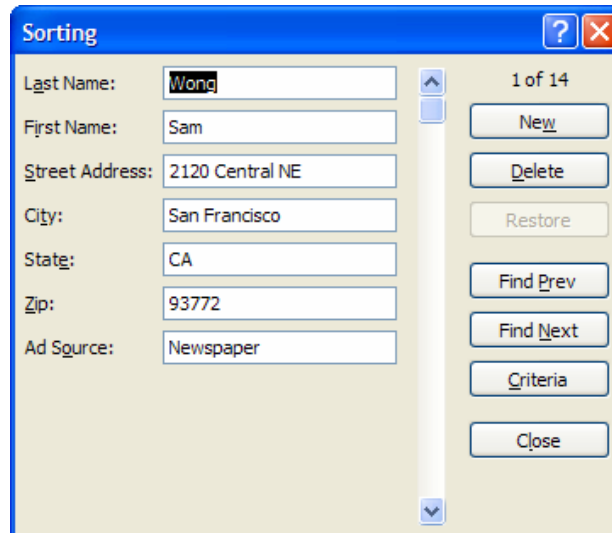
Click **Find Next**

Or

Choose **Find Previous**

## To Delete Using a Form:

Click the **Delete** button on the record you wish to delete

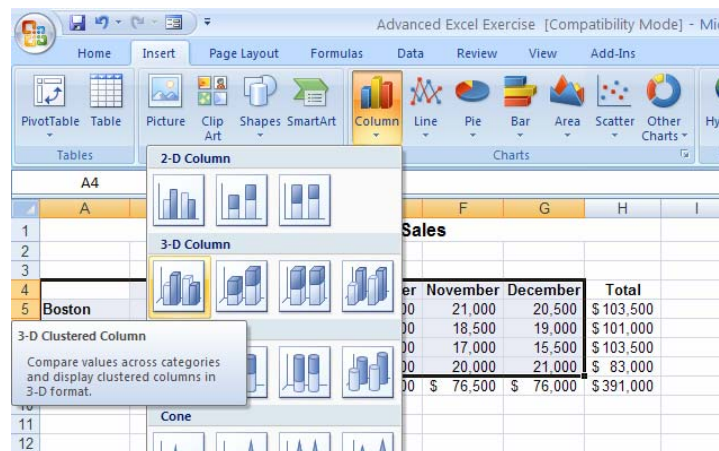


## Charting

Creating a chart in Excel allows you to further analyze your data and look at it another way.

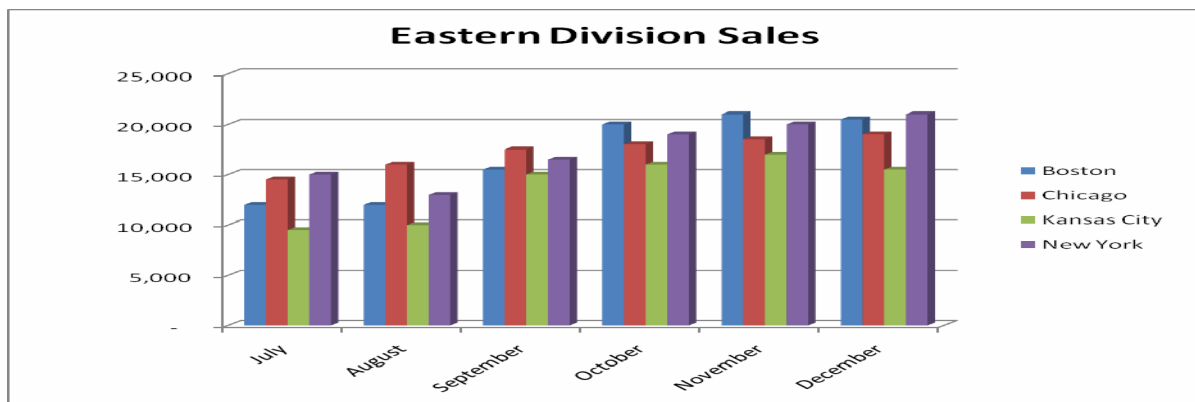
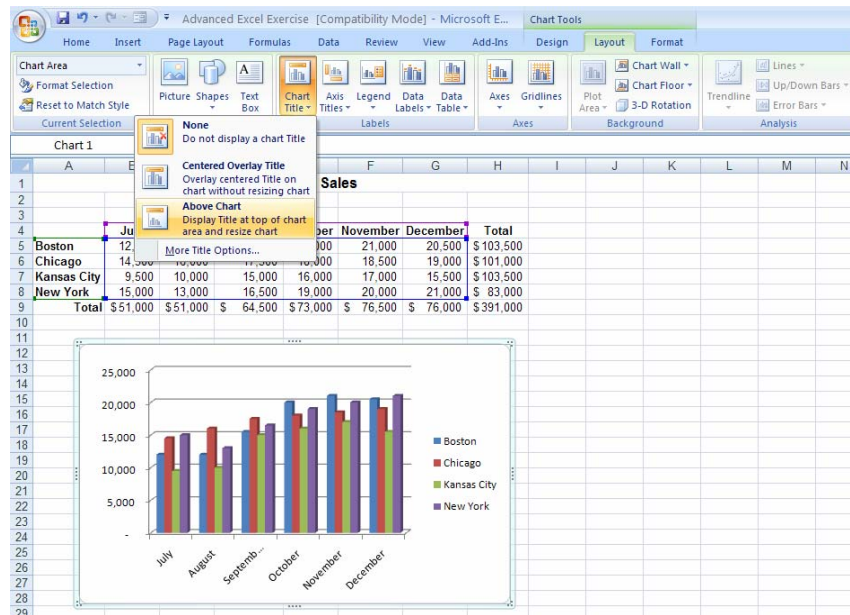
### To Create a Chart:

- 1) Select the **data to be charted** (include the column(s) and row(s) labels)
- 2) Select the **Insert** tab
- 3) Select **Chart**
- 4) Select the **chart type** you would like
- 5) Select the **chart style**



## To Enter a Chart Title:

- 1) Make sure the chart is selected
- 2) Click the **Layout** tab
- 3) Click the **Chart Title** icon
- 4) Select **Above Chart**
- 5) Click in the text box
- 6) Type a title



## To Move the Chart to a New Location on the Page:

- 1) Position your mouse is on one of the corners of the chart
- 2) Make sure your mouse has the appearance of a four-headed arrow
- 3) Click and drag the chart to a new location

## To Size the Chart:

- 1) Click once on the chart to select it
- 2) Position your mouse on one of the corners of the chart
- 3) Notice the mouse shape changes into a two-headed arrow
- 4) Click and drag to size the chart