Microsoft Office Excel 2007

Data Processing in Spreadsheets

Use Excel's functions!

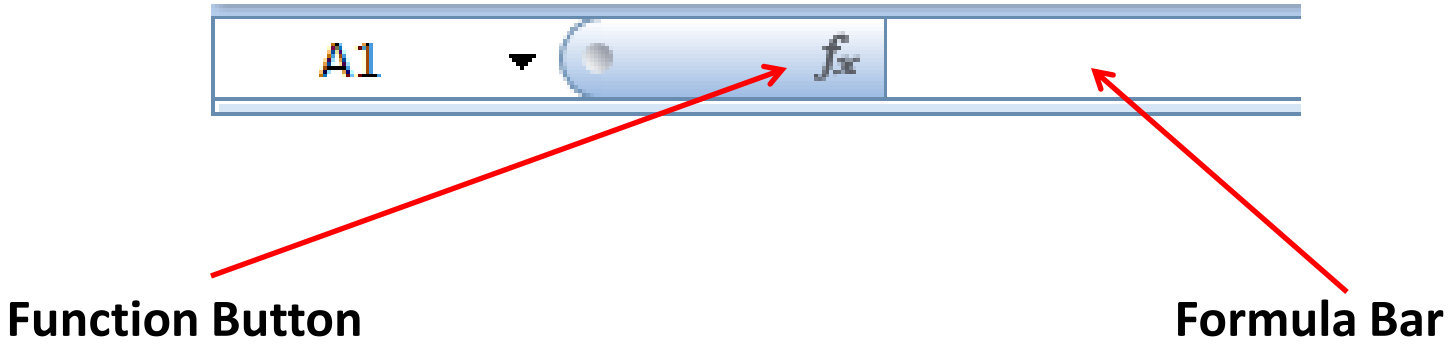
- A function is a predefined (built-in) formula for commonly used calculations.
- Each Excel function has a name and syntax.
  - The syntax specifies the order in which you must enter the different parts of the function and the location in which you must insert commas, parentheses, and other punctuation
  - Arguments are numbers, text, or cell references used by the function to calculate a value
  - Some arguments are optional

Functions

- Excel supplies more than 350 functions organized into 10 categories:
  - Database, Date and Time, Engineering, Financial, Information, Logical, Lookup, Math, Text and Data, and Statistical functions
- You can use the Insert Function button on the Formula bar to select from a list of functions.
- A series of dialog boxes will assist you in filling in the arguments of the function and this process also enforces the use of proper syntax.

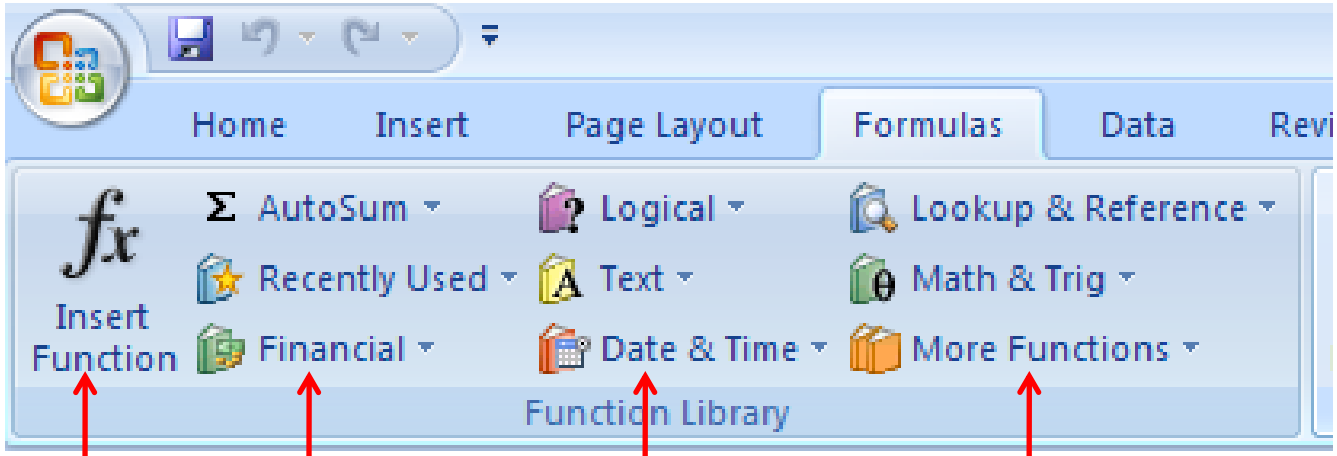
f_x marks the spot!

- Office Excel 2007 offers two methods to insert predefined functions into your spreadsheet ….
  - The first method is the use of the Function Button next to the Formula Bar:



f_x marks the spot! (cont)

– The second method is the use of the Formulas tab and the Function Library:



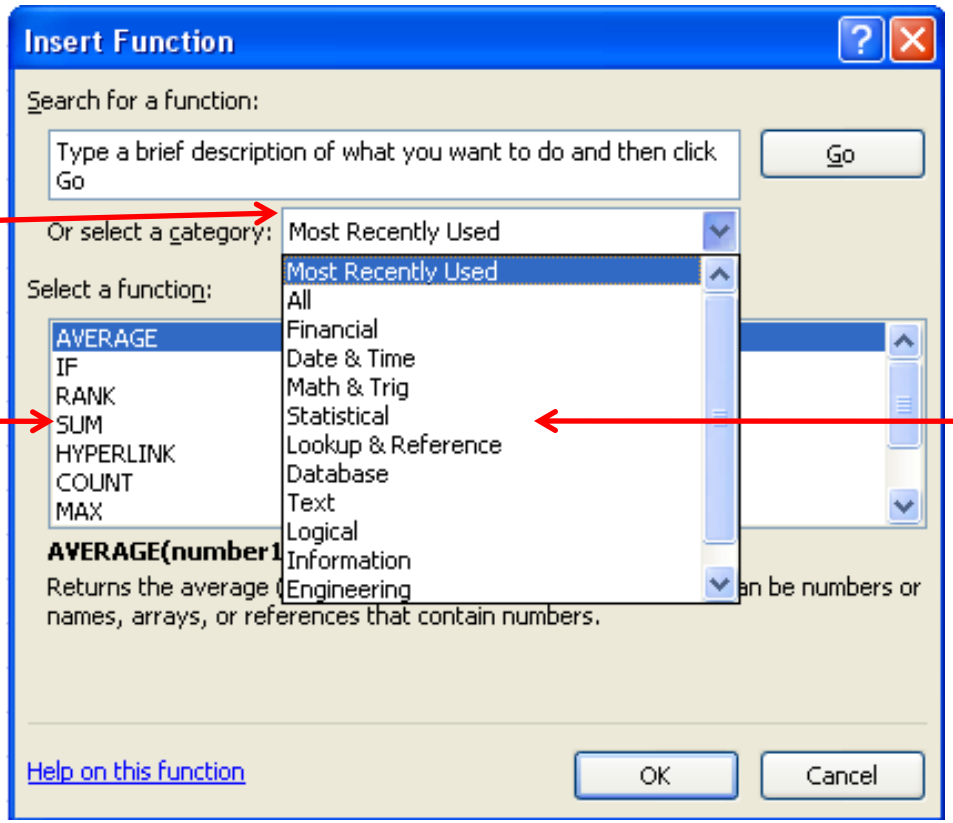
Insert "Function Window" (like the Function Button)

Specific Group Types of Functions

Inserting a Function

Categories

Available Functions within Category



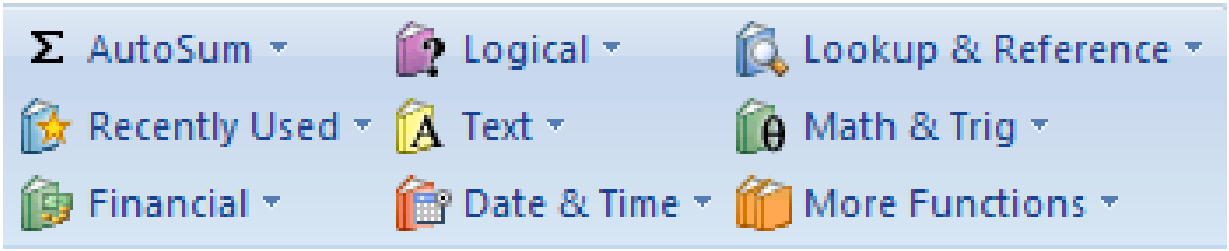
Available Function Categories

The Insert Function Window is identical to that of previous versions of Excel. If you aren't familiar with this window, the functions are grouped into categories and listed accordingly.

Tips on Functions

- The *Search for a Function* (from the Insert Function Window) will attempt to locate the function based upon a description of what you would like to do.
- You may also select a category from the drop-down box, or choose All (lists every function in Excel alphabetically).
- Things to remember about functions:
  - The arguments shown in boldfaced type are required
  - When the cursor is in an argument's text box, you can either enter a value, a cell reference, or click on a cell (cell pointing)

Functions from the Formulas tab



The ribbon list (Functions Library) from within the Formulas tab are categorized the same as the groupings from the Insert Function Window (previous example). The key to using the categories is to DERIVE what the commonality of the groupings is.

Red Hot Tip -> practice using the functions as if you were practicing with a musical instrument! That way your thought process is automatic and not "search and pray."

Functions YOU should know

Statistical Functions

- MAX - find the greatest value in a range
- MIN – find the lowest value in a range
- AVERAGE – determine the average within a range (sum divided by number of values)
- COUNT – determines the number of cells in a range containing a numeric value (counts them)
- COUNTA – counts the cells with text as well as numeric values (non blank cells)

Functions YOU should know (cont)

Arithmetic Functions

- SUM – adds (sums) all values in a range

  {the *Sigma* button, AutoSum, is also this function}
- ROUND – rounds a decimal number to a specified set of digits

Functions YOU should know (cont)

Logical Functions

- IF – a decision making function used to determine the truth value for a condition
- AND – determines the truth value for a group of arguments as a whole (all must be true to be true)
- OR – determines the truth value for a group of arguments separately (only one must be true)

Functions YOU should know (cont)

Financial Functions

- PMT – calculates the payment for a loan based on constant payments and constant interest rate
- FV – determines the future value of an investment based on periodic, constant payments and a constant interest rate

Functions YOU should know (cont)

Lookup Function

- VLOOKUP – searches for a value in the first column of a table array (cell range) and returns a value in the same row from another column in the table array.
- The V in VLOOKUP stands for vertical; meaning that the value to "lookup" is searched for in a vertical manner!

Commonly used functions syntax

Function	Description
AVERAGE(*number1*, [*number2*, *number3*, ...])	Calculates the average of a collection of numbers, where *number1*, *number2*, and so forth are numeric values or cell references
COUNT(*value1*, [*value2*, *value3*, ...])	Calculates the total number of values, where *value1*, *value2*, and so forth are numeric values, text entries, or cell references
MAX(*number1*, [*number2*, *number3*, ...])	Calculates the maximum of a collection of numbers, where *number1*, *number2*, and so forth are either numeric values or cell references
MEDIAN(*number1*, [*number2*, *number3*, ...])	Calculates the median, or the number in the middle, of a collection of numbers, where *number1*, *number2*, and so forth are either numeric values or cell references
MIN(*number1*, [*number2*, *number3*, ...])	Calculates the minimum of a collection of numbers, where *number1*, *number2*, and so forth are either numeric values or cell references
ROUND(*number*, *num_digits*)	Rounds a number to a specified number of digits, where *number* is the number you want to round and *num_digits* specifies the number of digits to which you want to round the number
SUM(*number1*, [*number2*, *number3*, ...])	Calculates the sum of a collection of numbers, where *number1*, *number2*, and so forth are either numeric values or cell references

In-class Example – common functions

Sample spreadsheet with common functions (Stocks.xlsx).

(you will find this file on my lecture notes page)

In-class Example – VLOOKUP function

Sample spreadsheet with VLOOKUP function (Baseball_Shutouts.xlsx).

(you will find this file on my lecture notes page)

Sorting data in a worksheet

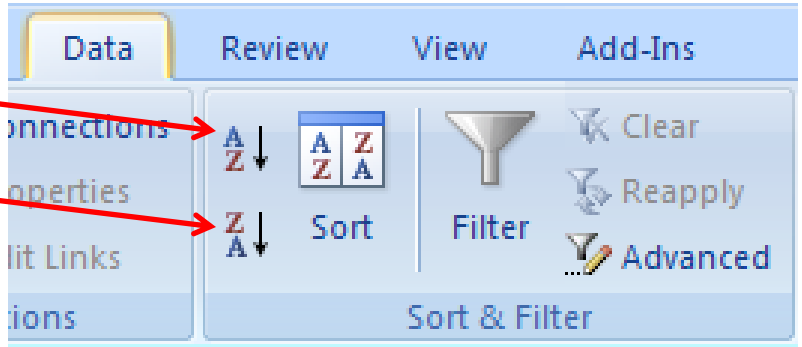
- Why Sort?
  - Easier to read a data list that has been sorted
  - Can aid in proof reading for data entry errors
  - Things like “people” lists are easier to maintain
- Excel makes it easy to sort a list in ascending or descending order based on any field(s) in the list.
- The field(s) selected to sort on are called the sort fields or the sort keys.

Sorting a worksheet

Do the Two Step:

- Step 1 – select data in worksheet to be sorted
- Step 2 – From the Data tab, select either:
  ascending
  or descending

LU	LUCENT TECHNOLOGIES
AV	AVAYA INC.
MOT	MOTOROLA
MYL	MYLAN LABORATORIES
CSCO	CISCO CORP. (NAS)
CMCSA	COMCAST CORPORATION
INTC	INTEL CORPORATION

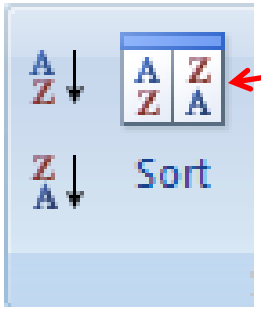


Sorting using a single sort key

Symbol	Company	Initial Cost	Present Cost	Number of Shares	Present Market Value	Initial Market Value
ABT	ABBOTT LABS	43.2	45.3	500	22,650.00	21,600.00
AEP	AMER ELECTRIC POWER	34.4	34.4	400	13,760.00	13,760.00
AMU	APRILIA USA	67.11	58.96	1700	100,232.00	114,087.00
AV	AVAYA INC.	15.9	16.02	500	8,010.00	7,950.00
BNI	BURLINGTON N. S.F.	40.1	44.1	1800	79,380.00	72,180.00
BR	BURLINGTON RESOURCES	41.53	40.47	2200	89,034.00	91,366.00
CLX	CLOROX CORP	55	55.85	1250	69,812.50	68,750.00
CMCSA	COMCAST CORPORATION	19.61	29.61	700	20,727.00	13,727.00
CSCO	CISCO CORP. (NAS)	18.5	18.74	4800	89,952.00	88,800.00
DD	DUPONT	43.44	43.44	2100	91,224.00	91,224.00
DIS	WALT DISNEY	26.4	26.59	600	15,954.00	15,840.00
G	GILLETTE	43.01	43.99	7800	343,122.00	335,478.00
GE	GENERAL ELECTRIC	35.79	35.8	2100	75,180.00	75,159.00
HNZ	HEINZ, H. J.	38.4	38.41	3200	122,912.00	122,880.00

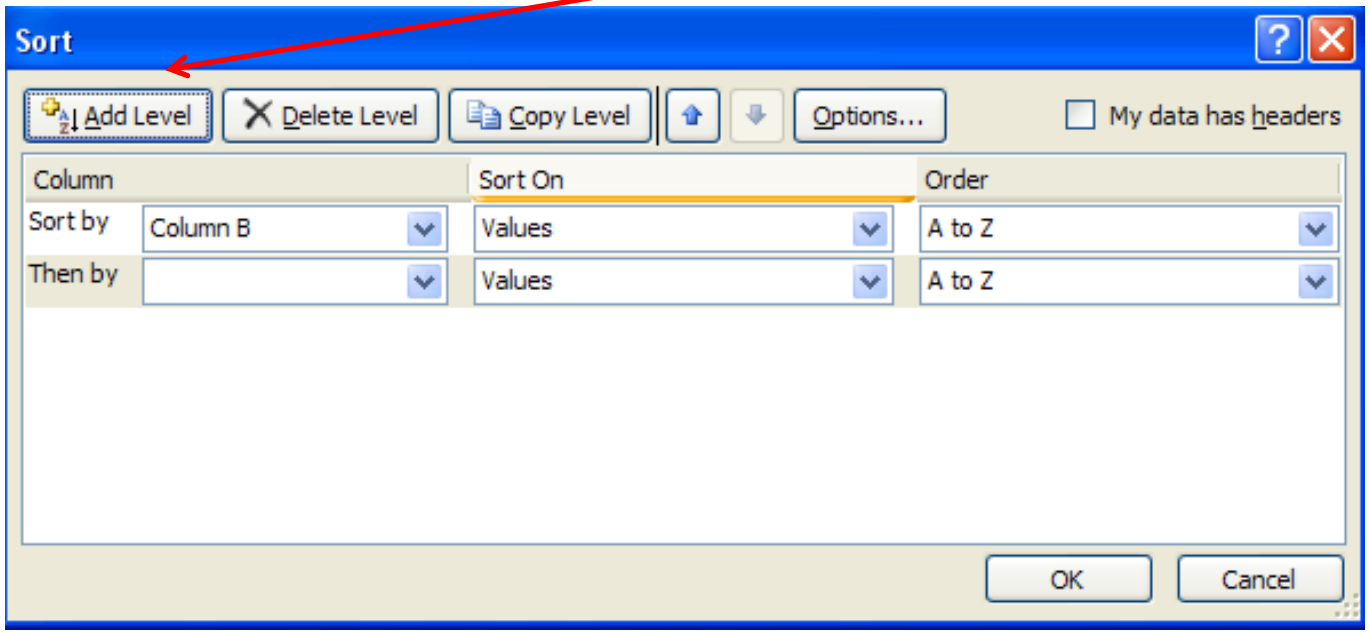
Data sorted alphabetically by Symbol.

Multiple key sorting



Pressing this button ….

will give you this dialog window for setting-up multiple levels of sorting.



A word of caution ….

- When sorting a data table in a worksheet …. be sure to select all data in the worksheet before sorting.

Do you know why?

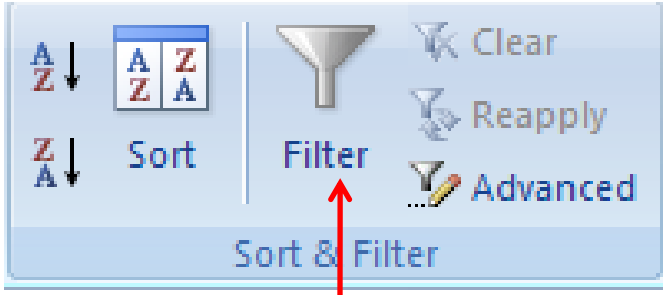
In-class Example

Sample sorting worksheet (Stocks_to_Sort.xlsx)

(you will find this file on my lecture notes page)

AutoFilter feature

- Filtering is a quick and easy way to find and work with a subset of data in a range.
- A filtered range displays only the rows that meet the criteria you specify for a column.
- Unlike sorting, filtering does not rearrange a range - filtering temporarily hides rows you do not want displayed.



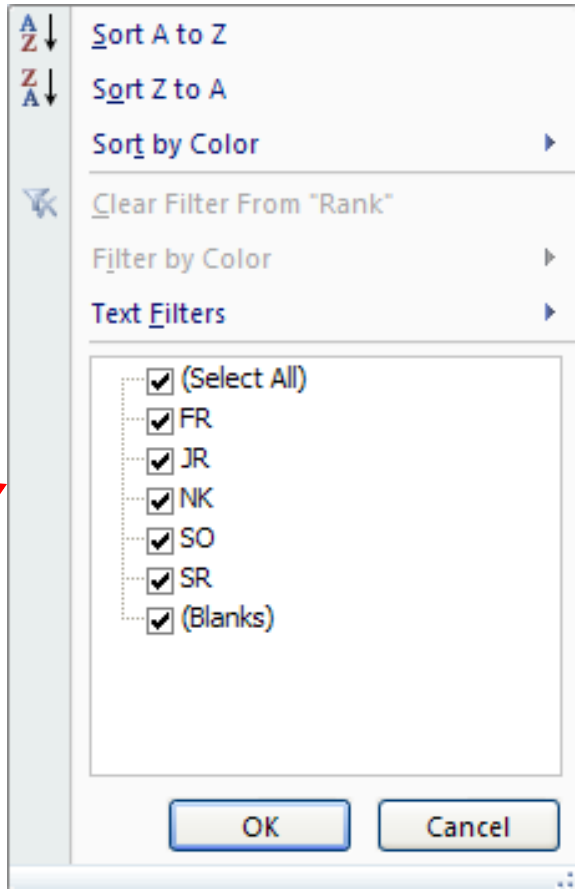
- Select the Filter option, from the Sort & Filter ribbon in the Data tab.

Autofiltering

	A	B	C	D
1	Last Name	First Nam	Status	Rank
2	Holmes	Sarah	SW	FR
3	Littleton	Rachel	EL	JR
4	Rada	Alexander	NR	SR
5	Howell	Donna	EL	SO
6	Haines	Heidi	EL	FR
7	Drawbaugh	Mark	NR	NK
8	See	Amy	EL	SO
9	Fincham	Tiffany	UK	SR
10	Salzmann	Ashley	EL	JR

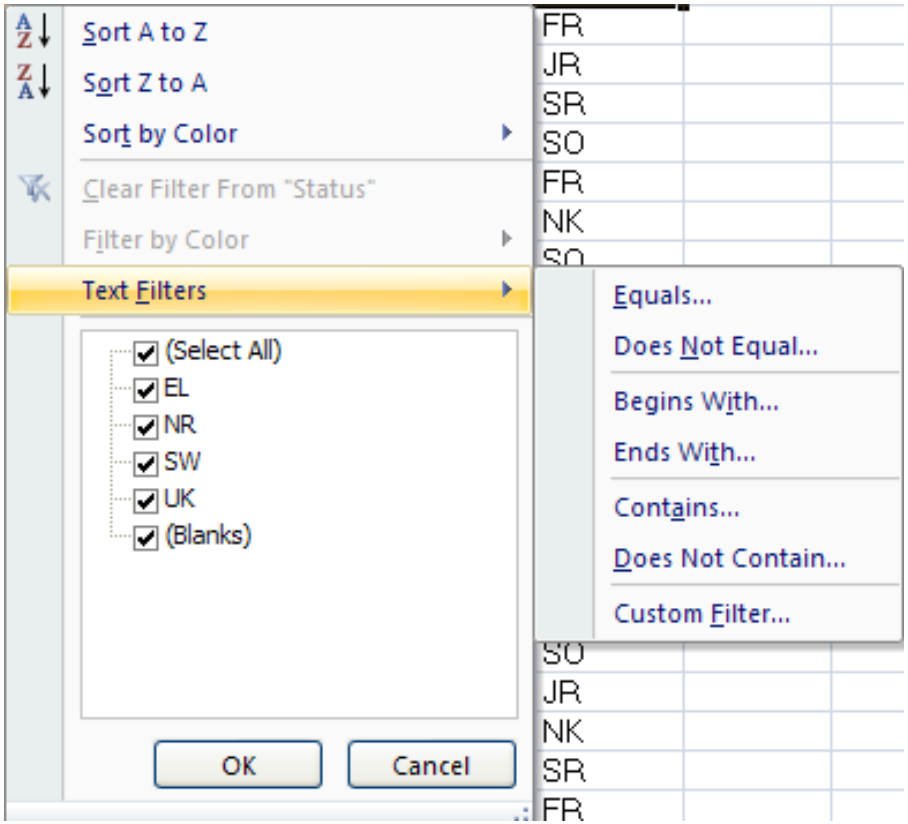
Clicking on the "drop-down arrow" for a column ….

will display the filtering options window.



Autofiltering (cont)

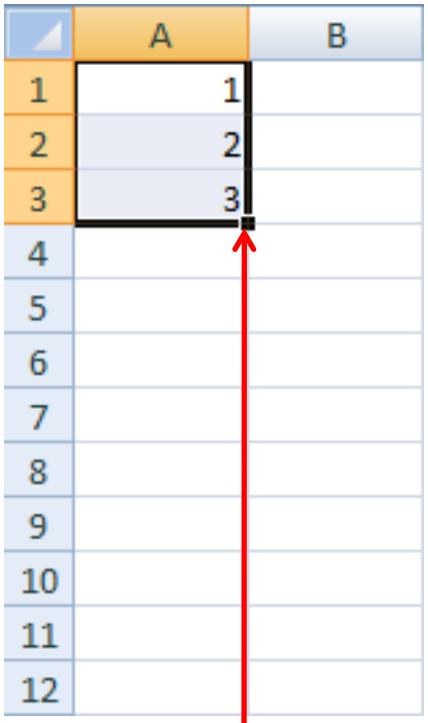
- By using Text Filters, you can specify a condition [to filter data by] that would normally take a great deal of time when you use the simple sort/remove method!



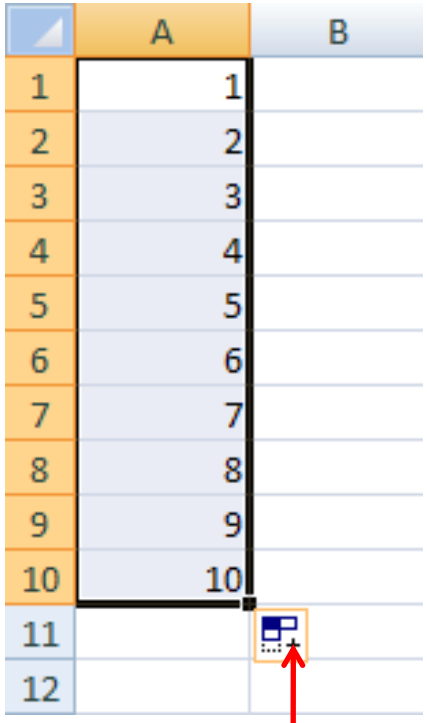
Using Auto Fill

- To use the Auto Fill feature, select the cell [range] that contains the values and/or formulas you want to copy.
- Click and drag the fill handle in the direction you want to copy and then release the mouse button.
- If needed, click the Auto Fill Options button, and then select the Auto Fill option you want to apply to the selected range.

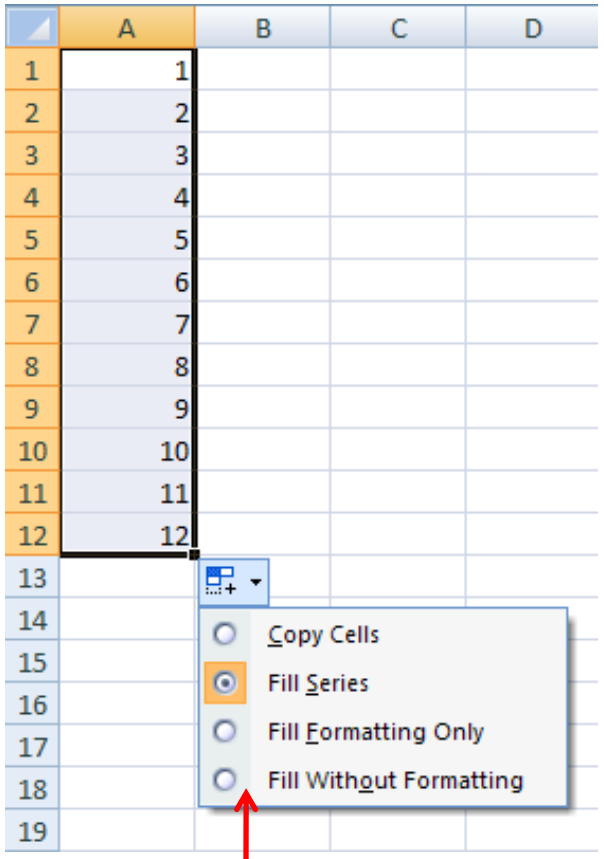
An example of Auto Fill



Fill Handle Pointer



Auto Fill Options Button



Options!

Auto Fill Options button menu options

- Copy Cells will copy all values and formulas into the selected range as well as the formats used to display those values and formulas.
- Fill Series does just that! What are the rules?
- Fill Formatting Only copies only the formats used to display values or formulas without copying the values and formulas themselves.
- Fill Without Formatting copies only the values and formulas without any of the formats used in the source range.

Questions?