Computer Literacy
CSC 1100

Introduction to Ms Excel 2007

3/29/21

What is Microsoft Excel?

- Is a full-featured spreadsheet program that allows you to:
  - organize data,
  - complete calculations,
  - make decisions,
  - graph data, and
  - develop professional looking reports.
- Microsoft Office's **Excel** is to **numbers** while **Word** is to **text.**
- All Excel 2007 files end in the **.xlsx** filename extension.
- *Excel* is a spreadsheet program from Microsoft, a component of its Office product group for business applications.

Ms Excel

- How to start up the application? (launching Excel).

a) Click Start Button , All programs, Microsoft office, ms excel.

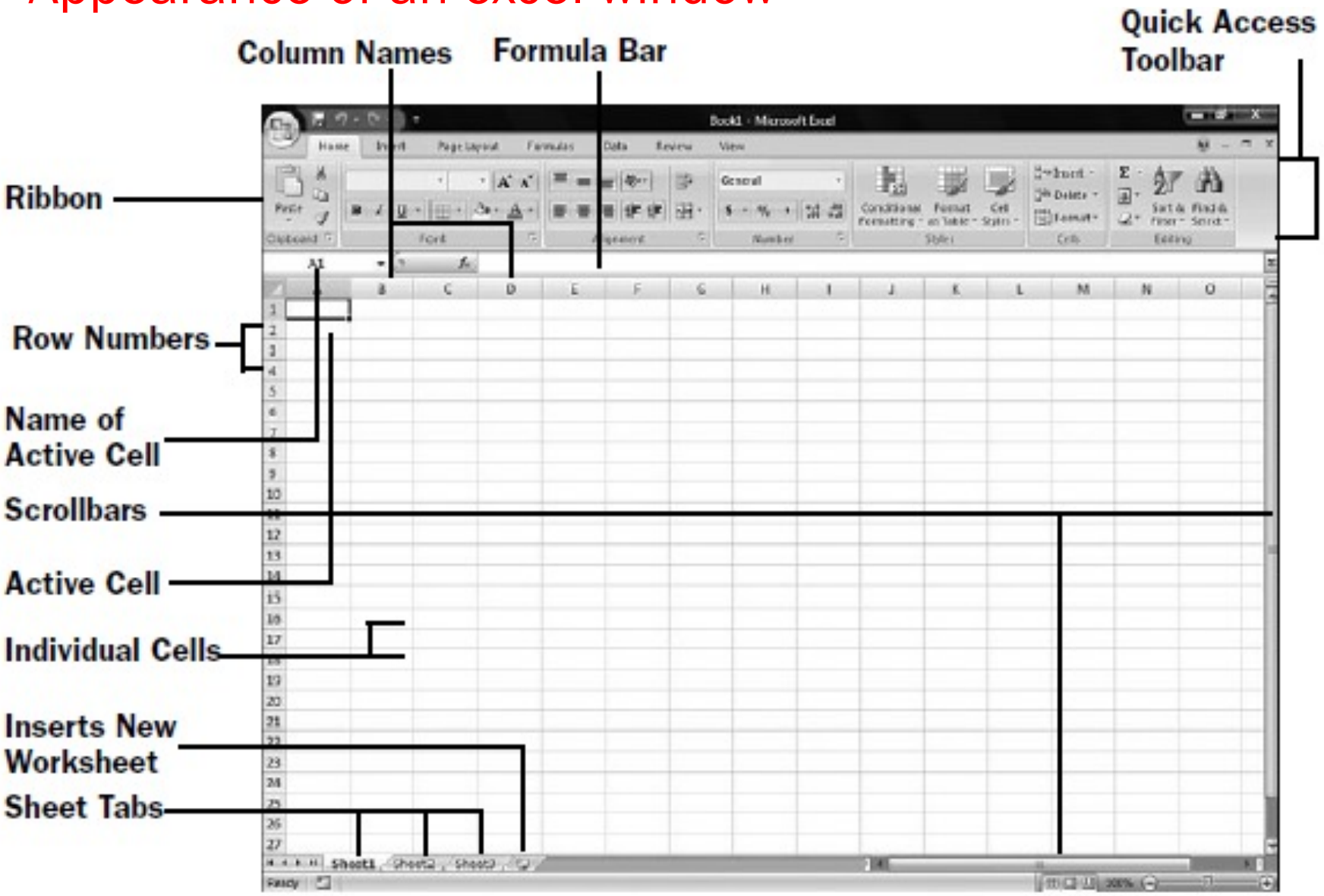
b) Click Start, programs, ms excel.

c) Click Start, ms excel.

d) Click on Ms excel icon (using a short cut on the desktop).

e) Click Start, run, type excel, ok.

Appearance of an excel window



Common words used in Excel

- A Microsoft Office Excel file is a **workbook.**
- A workbook consists of one or more **worksheets**
- **A worksheet** is the primary work area in an excel workbook and consists of a grid of rows and columns.
- **A row-** is the horizontal arrangement of cells from the left to the right of the worksheet.
- **A column** –is the vertical arrangement of cells from top to bottom

Common words used in Excel

- The intersection of a row and a column forms a box known as a **cell,** into which data is entered. Cells can contain text, numbers or formulas.

- When you click a cell, it becomes an **active cell –** the location where data will display when you type.

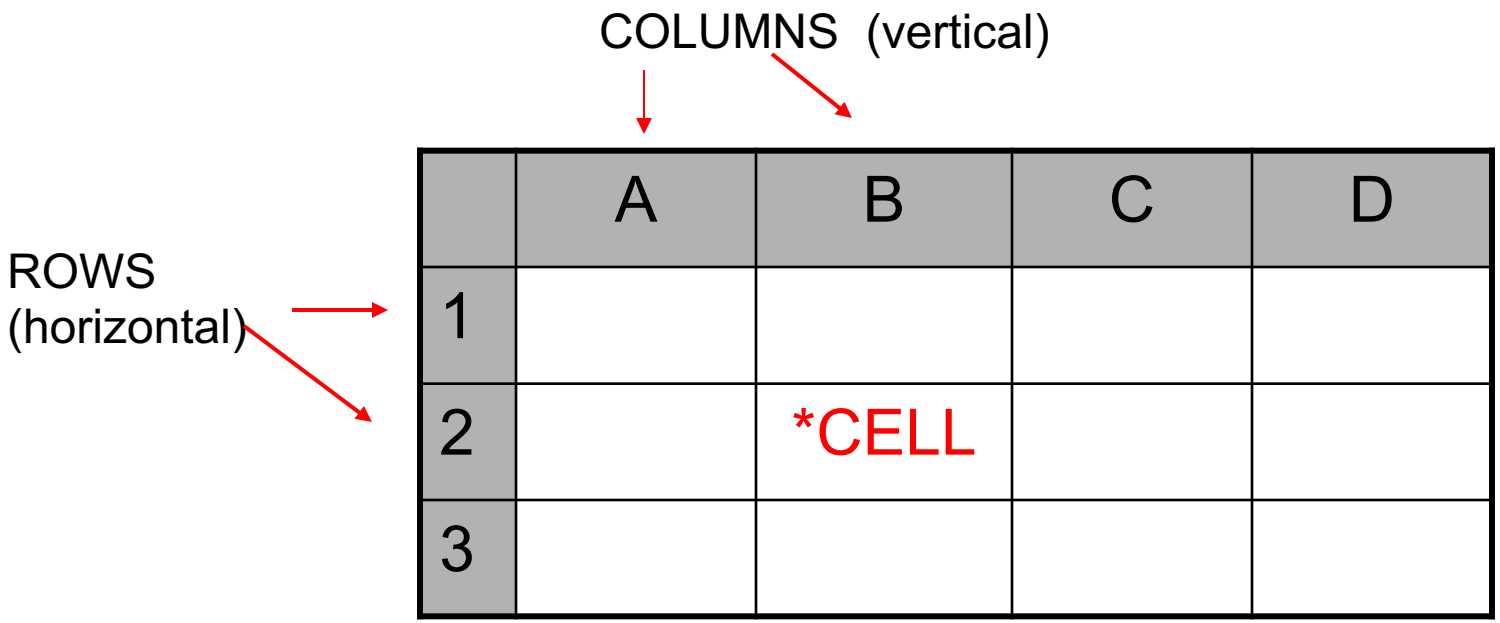
- The active cell is identified by a dark border around the boarder of te cell.

- Cells are named using a combination of the **column letter and row number** known as **cell address.**

- The address of the active cell is displayed in a **Name box –** the area in the excel window that displays the cell address name.

features

x


COLUMNS (vertical)
ROWS
(horizontal)
A
B
C
D
1
2
*CELL
3
* CELL ADDRESS = B2

Relative, Absolute, and Mixed Referencing

- Calling cells by just their column and row labels (such as "A1") is called **relative referencing**.

- When a formula contains relative referencing and it is copied from one cell to another, Excel does not create an exact copy of the formula. It will change cell addresses relative to the row and column they are moved to.

  - For example, if a simple addition formula in cell C1 "=(A1+B1)" is copied to cell C2, the formula would change to "=(A2+B2)" to reflect the new row.

- To prevent this change, cells must be called by **absolute referencing** and this is accomplished by placing dollar signs "$" within the cell addresses in the formula. Continuing the previous example, the formula in cell C1 would read "=(A1+B1)" if the value of cell C2 should be the sum of cells A1 and B1.

Relative, Absolute, and Mixed Referencing

- **Absolute reference** - A cell reference that does not change if you copy the formula elsewhere.

- If you want to sum two columns of data (A1 with B1, A2 with B2, and so on) and then multiply each sum by some constant number, for example, the constant number can be a cell referred to as an **absolute reference.** ***That*** formula might resemble this:

  =(A1 + B1) * J1

- $A1 is a partial **absolute cell reference**. If you copy a formula with **$A1** inside the computation, the $A keeps the A column intact, but the first row updates to the row location of the target cell.

Major parts of Excel

- **Worksheets-** allow you to enter , calculate, manipulate and analyze data such as numbers and text.

- **Charts**- pictorial representation of data.
  - Excel can draw two- dimensional and three dimensional column charts, pie charts, and other types of charts.

- **Databases**- manage data.
  - Once you have entered data on the spread sheet excel can sort the data, search for specific data and select data that meets certain criteria.

Creating a New Workbook

- When you first start Microsoft Excel, Excel displays a blank workbook with three empty worksheets named Sheet1, Sheet2, and Sheet3.
- Click your **Office button** and **Select New.**
- Excel displays the **New Workbook** dialog box.
- Select either **Blank Workbook** if you want to start working on your worksheet from scratch or Select From the available **templates** to save yourself from lots of Formatting.
- After creating your workbook, click the **Quick Access toolbar's Save button** and type the name of your workbook and finally Click **Save** to save your workbook.

Adding Worksheets, Rows and Columns

- **Worksheets** – Adding a new worksheet to a workbook, go to the **worksheet tab** click on **Insert worksheet.** Or (shift + F11)
- To add a row to a worksheet, place the cursor in the row below where you want the new row, or in the column to the left of where you want the new column. Click the **Insert** button on the cells group of the **Home tab.** Click the appropriate choice: **cell, row or column**
- **OR** Right click on a **row** or **column** and choose **insert** from the drop down list to add a row above the selected row or a column to the Left of the highlighted column.

Deleting Worksheets, Rows and Columns

- To delete a worksheet, right click on the worksheet name and choose **delete** from the menu.
- To delete a row, right-click the row number and select **Delete** from the menu.
- To delete multiple rows, select all the row numbers you want to delete and right-click over the selection. Choose **Delete**, and Excel will delete those rows.
- To delete a column, right-click the column name and select **Delete** from the menu.
- To delete multiple columns, select all the column names you want to delete and right-click over the selection. Choose **Delete**, and Excel will delete those columns.

Resizing Rows & Columns

- There are two ways to resize rows and columns**.**
  - **Resize a row** by dragging the line below the label of the row you would like to resize. **Resize a column** in a similar manner by dragging the line to the right of the label corresponding to the column you want to resize. **- OR** –
  - Click the row or column label and select **home tab | Format | Row | Height** or **Format | Column | Width** from the menu bar to enter a numerical value for the height of the row or width of the column.

Entering Data in a Worksheet

- Excel works with the following kinds of data:
  - **Labels -** text values such as names and addresses, as well as date and time values.
  - **Numbers -** Numeric values such as 34, –291, 545.67874, and 0.
  - **Dates and times-**Excel accepts date and time values that you type in virtually any format.
  - **Formulas** - Expressions that compute numeric results. (Some formulas work with text values as well.)

Entering Data in a Worksheet

- In a blank worksheet, click on a cell to make it active. The cell's dark outline indicates that the cell is selected.
- To enter the text, simply type the text, and it appears both in the selected cell and in the **Formula box** toward the top of the screen.
- Press **Enter**, to the move to the next cell downwards.
- **OR** Use the **arrow keys** respectively to move from one cell to another in all directions.
- By default, text always appears left-justified in a cell, although you can click one of the justification buttons to center or right-justify text in a cell.
- To correct a mistake, press Backspace and type the correct text.

Filling cells with Auto fill data

- Excel uses **Auto Fill** to copy and extend data from one cell to several additional cells.
- **Auto Fill** - The automatic placement of values in sheet cells based on a pattern in other cells.
- Excel not only fills in numbers in sequences but also can determine sequential years, days of the week and month names etc.
- Type your **first label**, such as **Year**. This will be the value you will fill succeeding cells with.
- Click and drag the cell's fill handle to the rest of the cells in which you want the label to appear.
- When you release your mouse button, Excel fills the remaining cells in the range with your label.

Keyboard Short cuts

Short cut	Action	Menu command
Ctrl+O	Open an existing file	Office button/open
Ctrl+N	Open a new file	Office button/new
Ctrl+S	Saves the current file	Office button/save
Ctrl+C	Copies selected item	Home/copy
Ctrl+X	Cuts the selection	Home/cut
Ctrl+V	Pastes the copied item	Home/paste
Ctrl+Y	Repeats the previous task (Re-do)	
Ctrl+F	Search/find	Home/find
Ctrl + Z	Undo	

Selecting Cells, Columns and Rows

- shift + left arrow: select the current cell and the cell to the left
- shift + right arrow: select the current cell and the cell to the right
- shift + down arrow: select the current cell and the cell below
- shift + up arrow: select the current cell and the cell above
- shift + space: select the whole row
- ctrl + space: select the whole column

TABLE 6.1 Using the Keyboard to Navigate Excel

Press This Key. . .	To Move
Arrow keys	The direction of the arrow, one cell at a time
Ctrl+up arrow, Ctrl+down arrow	The topmost or bottommost cell that contains data or, if at the end of the range already, the next cell that contains data or the final cell possible in the current column
Ctrl+left arrow, Ctrl+right arrow	The leftmost or rightmost cell that contains data or, if at the end of the range already, the final cell possible on the current row
Page Up, Page Down	The previous or next screen of the worksheet
Ctrl+Home	The upper-left corner of the worksheet (cell A1)
Ctrl+Page Up, Ctrl+Page Down	The next or previous worksheet within the current workbook

Selecting Cells

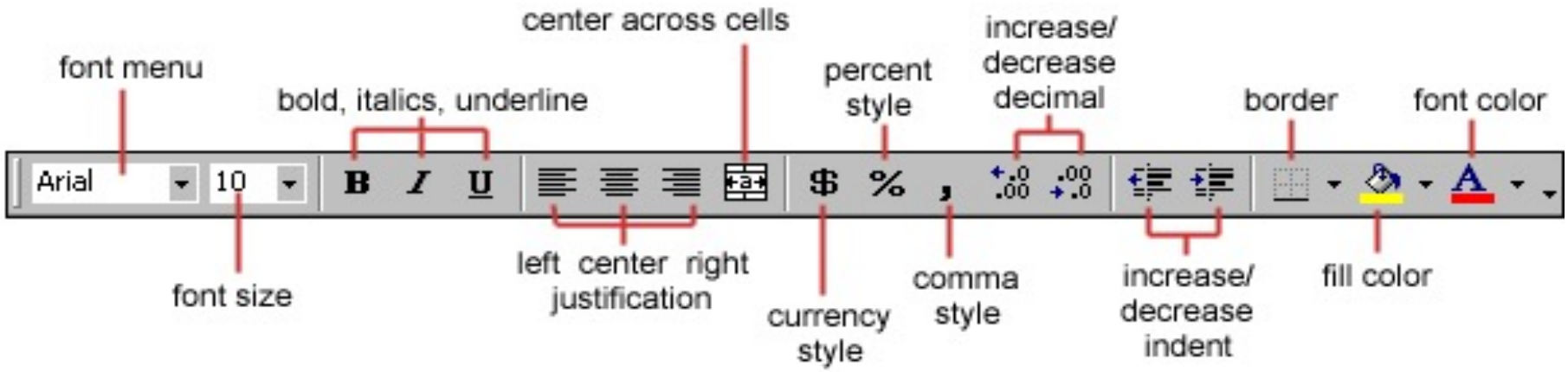
- Before a cell can be modified or formatted, it must first be selected (highlighted). Refer to the table below for selecting groups of cells.

Cells to select	**Mouse action**
One cell	Click once in the cell
Entire row	Click the row label
Entire column	Click the column label
Entire worksheet	Click the whole sheet button
Cluster of cells	Drag mouse over the cells or hold down the **SHIFT** key while using the arrow keys

- To activate the contents of a cell, double-click on the cell.

Formatting Cells

- The contents of a **highlighted cell** can be formatted in many ways. Font and cell attributes can be added from shortcut buttons on the formatting bar. If this toolbar is not already visible on the screen, select **Home** from the Ribbon.



Format Cells Dialog Box

For a complete list of formatting options, right-click on the highlighted cells and choose **Format Cells** from the shortcut menu or select **home tab|Format|Format Cells** from the ribbon

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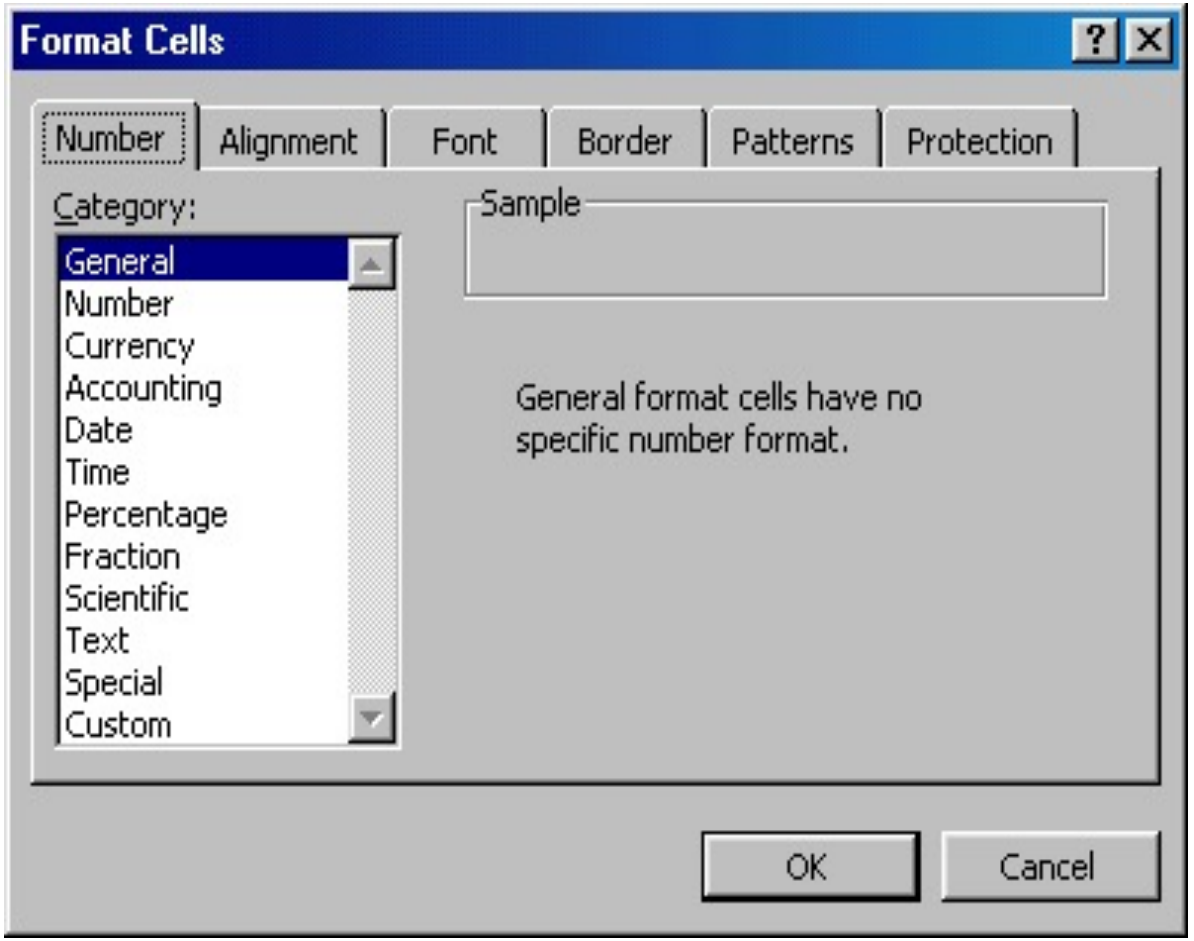
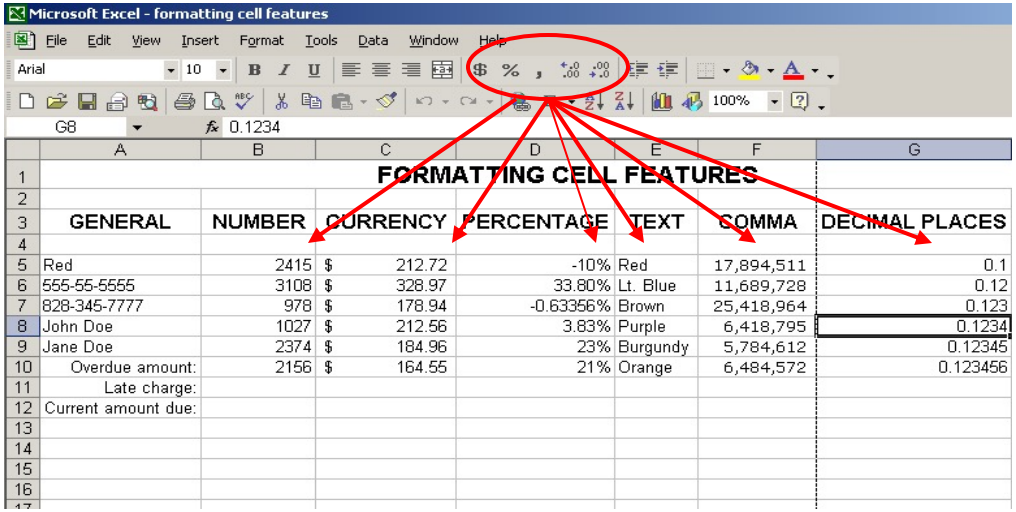


Format Cells Dialog Box

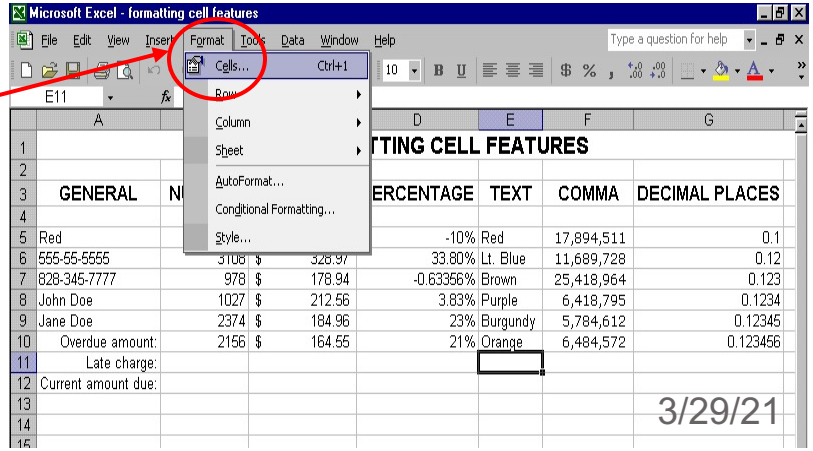
- **Number tab** - The data type can be selected from the options on this tab. Select **General** if the cell contains text and number, or another numerical category if the cell is a number that will be included in functions or formulas.
- **Alignment tab** - These options allow you to change the position and alignment of the data with the cell.
- **Font tab** - All of the font attributes are displayed in this tab including font face, size, style, and effects.
- **Border and Pattern tabs** - These tabs allow you to add borders, shading, and background colors to a cell.

Formatting Cell Features

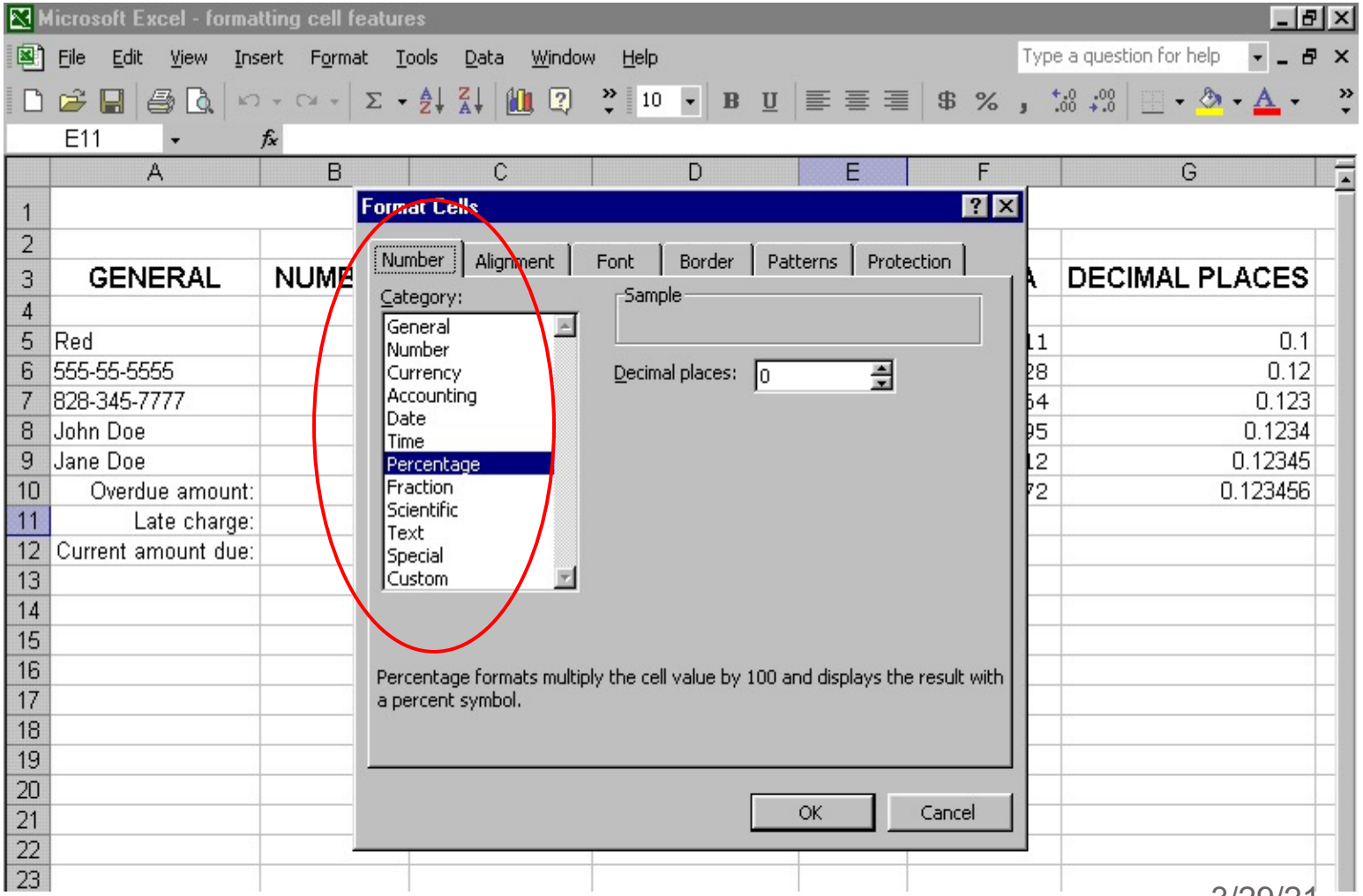


Format from the formatting toolbar. OR …

Format from the Format Menu



Formatting Cell Features



Moving and Copying Cells

Moving Cells 

To cut cell contents that will be moved to another cell select **Edit|Cut** from the menu bar or click the **Cut** button on the standard toolbar.

Copying Cells 

To copy the cell contents, select **Edit|Copy** from the menu bar or click the **Copy** button on the standard toolbar.

Pasting Cut and Copied Cells 

Highlight the cell you want to paste the cut or copied content into and select **Edit|Paste** from the menu bar or click the **Paste** button on the standard toolbar.

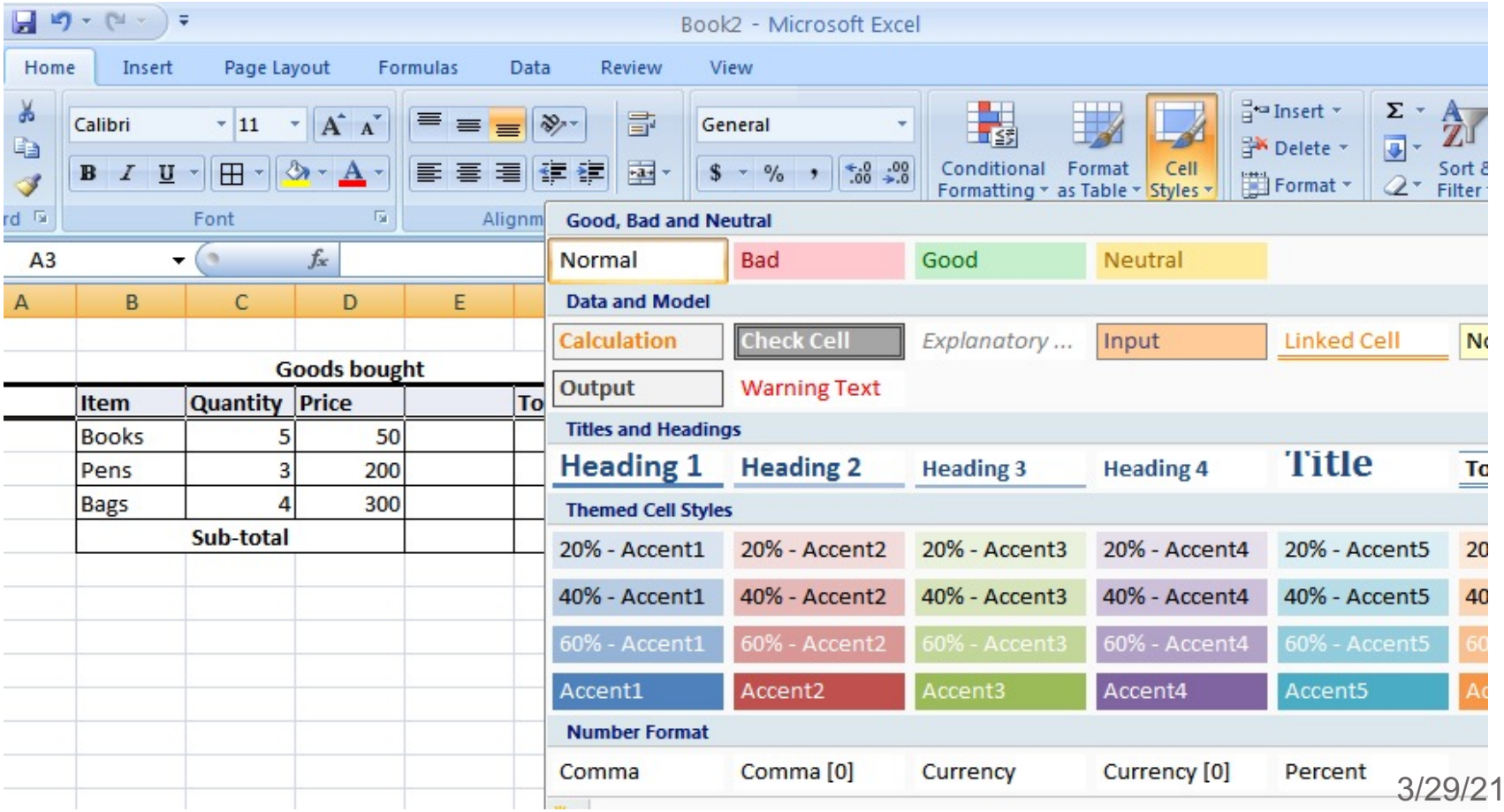
Format Painter

A handy feature on the **home tab** for formatting text is the **Format Painter**. If you have formatted a cell with a certain font style, date format, border, and other formatting options, and you want to format another cell or group of cells the same way, place the cursor within the cell containing the formatting you want to copy.

Click the **Format Painter** button in the **home tab**(notice that your pointer now has a paintbrush beside it). Highlight the cells you want to add the same formatting to. To copy the formatting to many groups of cells, double-click the **Format Painter** button. The format painter remains active until you press the **ESC** key to turn it off.

Styles

The use of styles in Excel allows you to quickly format your worksheet, provide consistency, and create a professional look. Select the Styles drop-down box from the **cells styles** under the **home tab.** Excel provides several preset styles:



Number Format Styles

- **Comma** - Adds commas to the number and two digits beyond a decimal point.
- **Comma [0]** - Comma style that rounds to a whole number.
- **Currency** - Formats the number as currency with a dollar sign, commas, and two digits beyond the decimal point.
- **Currency [0]** - Currency style that rounds to a whole number.
- **Normal** - Reverts any changes to general number format.
- **Percent** - Changes the number to a percent and adds a percent sign.

Printing a Worksheet

- Before you print, look at the **Page Setup dialog box** by displaying your **Page Layout ribbon** and clicking on the group name Page Setup. Click the Sheet tab. From the **Sheet** page, you can specify whether you want to print using any of the following options:

- **Print Area -** Enables you to specify a range of cells to print.

- **Titles -** Enables you to select rows and columns to be used for titles across the top and down the left side of your printed worksheet.

- **Workbook Elements -** Enables you to request the printing of any or all of the following: gridlines, draft quality, row and column headings, black and white, comments etc

Printing a Worksheet

- **Page Order**—Determines how your worksheet prints over multiple pages. A worksheet rarely fits on a single piece of paper.
- After setting up the appearance of your worksheet:
- Click your **Office button** and select **Print.** On the menu that appears, select **Page Preview**. Excel shows you how your current worksheet will look printed on paper each worksheet individually.
- Close the Preview.
- Select the **Print** option from the **Office menu.** The **Print dialog box** appears.
- After you've determined how many pages and copies to print, click the **OK** button to print your worksheet and close the **Print dialog box.**

Personal Practice

- Create and exit an excel document.
- Enter:
  - Numbers
  - Text
  - Align (left, right, center and at an angle).
- Save document
- Open an existing file.
- Wrap text.
- Search .
- Protect document.
- Track changes.
- Insert :
  - A row
  - A column
  - Date
  - Time
  - Currency symbol
- Delete the above.

Formulas in Excel

- The distinguishing feature of a spreadsheet program such as Excel is that it allows you to create mathematical formulas and execute functions.
- Even the best calculator in the world cannot beat Excel at the versatility it has with calculations.
- These are entered in a cell and they always start with an '=' sign

For instance

=B2+C4

- After entering a formula, press enter to view results of the formula

Formulas and Functions

- Functions can be a more efficient way of performing mathematical operations than formulas. For example, if you wanted to add the values of cells D1 through D10, you would type the formula **"=D1+D2+D3+D4+D5+D6+D7+D8+D9+D10".**
- After the formula is typed into the cell, press **ENTER &** the calculation executes immediately and the formula itself is visible in the formula bar.
- A shorter way would be to use the SUM function and simply type **"=SUM(D1:D10)"**.

Creating an Excel Range

- **Range -** One or more cells, selected adjacent to each other in a rectangular manner, that you can name and treat as a single entity or group of cells in formulas.
- A selected group of cells composes a **range**. A range is always rectangular, and it might be a single cell, a row, a column, or several adjacent rows and columns.
- Cell references and range names appear throughout the formulas:

  = (SalesTotals)/NumOfSales

  =C4 * 2 - (Rate * .08)
- When you enter formulas that contain range references, you can either type the full reference or point to the cell reference.

Creating an Excel Range

- **Highlight the cells** you want to include in the Range.
- Right-click the range(Highlighted cells) and select **Name a Range** from the menu. The New **Name dialog box** appears**.** This is where you name ranges and manage them.
- Type a name for your selected range in the **Name text box.** Do not include spaces in the range name.
- Click **OK** to add the name to your worksheet.

- Where you would otherwise use the **cell addresses**, such as in a Sum() function or inside any calculation, use **range names** instead. The **Formula bar** always displays the range name inside formulas.

Formulas and Functions

- A function accepts zero or more **arguments**, and those arguments go inside the parentheses.
- When using multiple arguments in a function, separate the arguments with commas.
- Every formula starts with an equal sign.
- **Arguments** - Values appearing inside a function's parentheses that the function uses in some way to produce its result.
- Therefore, all the following compute an average from the argument list:

  =Average(18, 65, 299, R5, 10, -2, 102)

  =Average(SalesTotals)

  =Average(D4:D14)

TABLE 7.1 Common Excel Functions

Function Name	Description
`Abs()`	Computes the absolute value of its cell argument. (Good for distance- and age-difference calculations.)
`Average()`	Computes the average of its arguments.
`Count()`	Returns the number of numerical arguments in the argument list. (Useful if you use a range name for the argument list.)
`Max()`	Returns the highest (maximum) value in the argument list. (Useful if you use a range name for the argument list and you need to pick out the highest value.)
`Min()`	Returns the lowest (minimum) value in the argument list. (Useful if you use a range name for the argument list and you need to pick out the lowest value.)
`Pi()`	Computes the value of mathematical pi (requires no arguments) for use in math calculations.
`Product()`	Computes the product (multiplicative result) of the argument range.
`Roman()`	Converts its cell value to a Roman numeral.
`Sqrt()`	Computes the square root of the cell argument.
`Stdev()`	Computes the argument list's standard deviation.
`Sum()`	Computes the sum of its arguments.
`Today()`	Returns today's date (requires no arguments).
`Var()`	Computes a list's sample variance.

Formulas and Functions

- Steps involved in using Excel functions:

1) Click to select the cell you want to contain the result of the function.
2) Type an equal sign (=) followed by the name of the function.
3) Type an open parenthesis and then type or select the values you want to include in the function, followed by a closing parenthesis. A border appears around any cell or range to be included in the equation.
4) After the range or set of arguments is correct, press Enter to accept the function.
5) The result of the function then appears in your cell.

Formulas and Functions

- You can drag the formula's fill handle whose cell contains a function, such as Average() or Count(), to another cell to extend that formula.

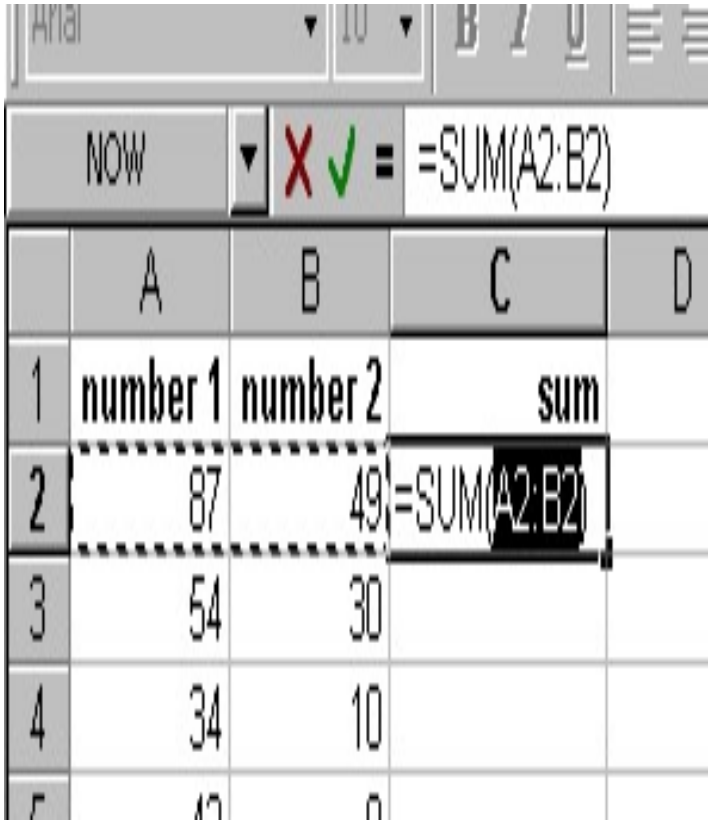
- You can select multiple ranges before typing the final parenthesis to finish your function. When typing an argument, move your mouse pointer or use your arrow keys to select a range and press comma (,) to separate the different ranges.
- Press the closing parenthesis to finish the function and view the result.

Formulas and Functions

- Using Excel's Function wizard:
  1) Click the cell you want to hold a function and then click the **Function Wizard button**.
  2) Select the category from which you want to write a function.
  3) When you see the function you want to use in the **Select a Function list,** double-click to select that function name. Excel displays a list of fields to match every argument that function needs in the **Function Arguments dialog** box.
  4) Click the argument you want to enter and then either type or select the argument as a range of cells.
  5) After building your function and specifying its arguments, click **OK** to see the result.

Autosum Σ

Use the Autosum function to add the contents of a cluster of adjacent cells.



1.Select the cluster of cells whose sum you want to find .

2.From the **formula tab** Click the **Autosum** button (Greek letter sigma) and the sum will appear immediately after the selected cells

Alternatively, Under the **home tab|editing** follow similar steps.

Adding Charts to a Worksheet

- The actual raw data supplied by a worksheet is accurate and vital information for analysis, but for trends and overall patterns, charts demonstrate the data's nature quickly and effectively.
- How to represent data on a chart:
  - select the **data** to use in the chart. When Selecting include labels if available at the top or to the left of the data.
  - Display your **Insert ribbon** to see your chart types in the **Charts ribbon** group.
  - Select a chart you want to produce by clicking on a **chart type** and determining which type of chart you want to plot.
  - Excel analyzes your data and labels and makes assumptions about your chart's labels.
  - Finally you have your chart drawn in your worksheet.

Adding Charts to a Worksheet

TABLE 9.1 Excel's More Common Chart Types

Chart Type	Description
Area	Emphasizes the magnitude of changes over time.
Bar	Compares data items. A bar chart is a column chart with horizontal lines.
Column	Shows changes over time and compares values. A column chart is a bar chart with vertical bars.
Line	Shows trends and projections.
Pie	Compares the proportional size of items against the parts of the whole.
Stock	Illustrates a stock's (or other investment's) high, low, and closing prices.
XY (Scatter)	Shows the relationships of several values in a series.

Inserting Graphics into a Worksheet

- To insert a graphics image from a file, click the cell where the image is to go and display your **Insert ribbon.** Select **Picture.**
- Excel displays the **Insert Picture dialog box.**
- Select the image you want to insert into your worksheet and click **Insert.** Excel places the image in the cell.
- To resize your image, click to display the **sizing handles** and drag them in or out to decrease or increase the picture size.
- To move the image to a different location, click and drag the picture to where you want it.
- Click the **Crop button** to reduce your picture by removing parts of the image.

Protecting data in a Worksheet

- When working in Excel, you may want to protect certain cells from being changed.
- This protection helps ensure that formulas do not get changed and that fixed data remains fixed.
- In addition to protecting individual cells and ranges, you can add security by password-protecting entire workbooks to keep them secure and to limit access to them.
  - Select the **cell** or the **range of cells** you want to protect.
  - On your **Home ribbon,** click to display the **Format drop-down list** and select **Lock Cell.**
  - Excel locks the selected cells so that they cannot be changed after the worksheet is locked.

Protecting data in a Worksheet

Note:

- Cells inside a worksheet that you designate as protected are protected only if you also protect the worksheet.
  - To Protect the Sheet, click to display the **Format drop-down list** and **select Protect.** Excel displays the **Protect Sheet dialog box.**
  - Enter an **optional password** and select each item you want protected from change. In other words, you might want to not only protect individual cells you declared as protected but also keep users from deleting columns and rows or changing the format of cells.
- To remove the protection, you can display the **Review ribbon** and click **Unprotect Sheet.**
- To protect the entire workbook and all sheets within it that have cell protection indicated, click the **Structure check box.**

Ensuring Valid Data Entry in a Worksheet

- **Data validity** - A check to determine whether data entered into a cell is valid, defined by a set of criteria that you set up.
- Without data validity checks, anybody can enter any value into any cell (assuming that the cell is not protected).
  1) Select the cell or range that you want to create a data validity check for.
  2) To add the data validity check, click to display your **Data ribbon** and then click the **Data Validation button** to display the **Data Validation dialog box.**
  - The data validation rules that you set up on the **Settings page** are determined by the data type you allow in the selected cells.

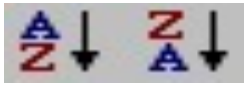
Ensuring Valid Data Entry in a Worksheet

3) Click the **Input Message tab** to display the dialog box's **Input Message page** in the **Data Validation dialog box.** The purpose of the **Input Message field is to let your users know the** kind of data you allow in the cell.

4) Click the **Error Alert tab** to include text that will appear when you type invalid data in a cell.

5) Test your data validity check by typing data in the cell. If you enter a value that violates the criteria, Excel responds with a warning or a pop-up dialog box, depending on how you set up the error alert.

Sorting Data in Excel

Basic Sorts 

To execute a basic descending or ascending sort based on one column, highlight the cells that will be sorted and click the **Sort Ascending** (A-Z) button or **Sort Descending** (Z-A) button on the standard toolbar.

Go through the **Data tab** then chose the sorting procedure.

OR Click on the **Home tab** then choose **Sort and Filter** from the Editing section.

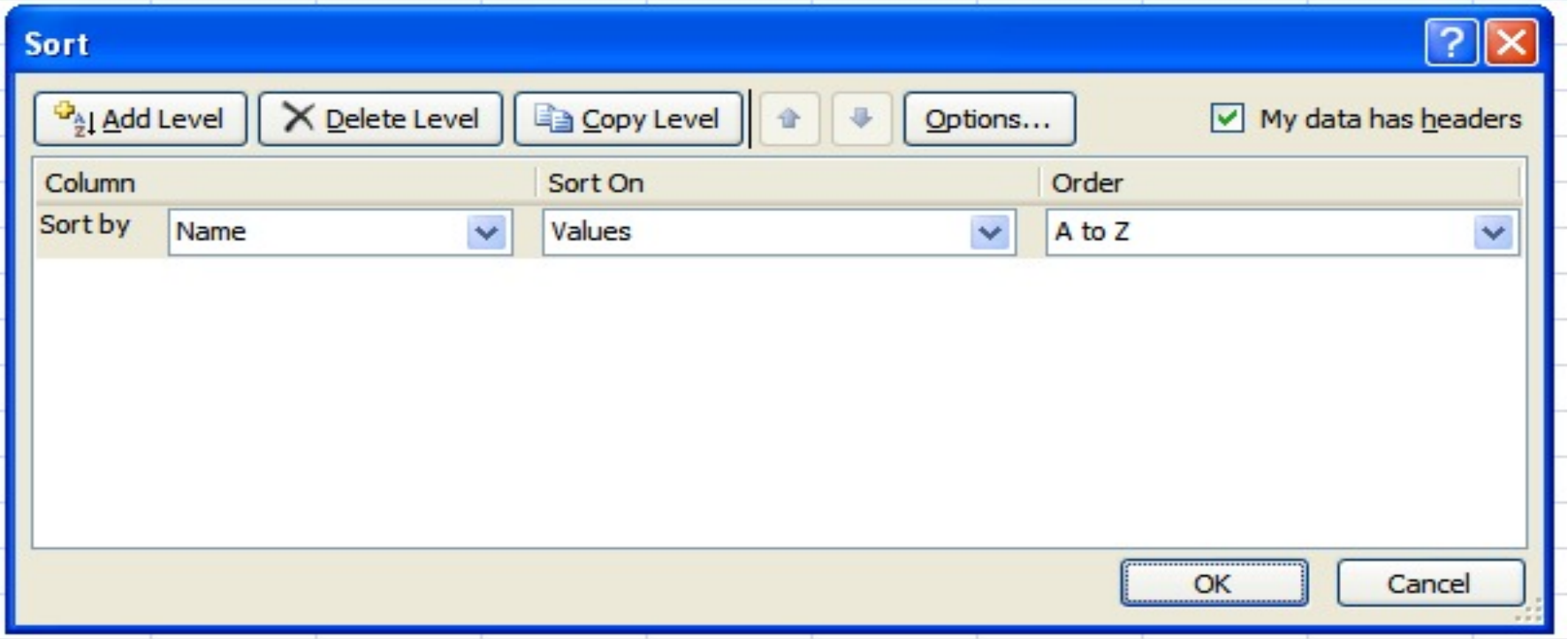
Complex sorts

To sort by multiple columns, follow these steps:

- Highlight the cells, rows, or columns that will be sorted.
- Select **Data|Sort** from the ribbon.
- From the **Sort** dialog box, select the first column for sorting from the **Sort By** drop-down menu and choose either ascending or descending.
- Select the second column and, if necessary, the third sort column from the **Then By** drop-down menus.

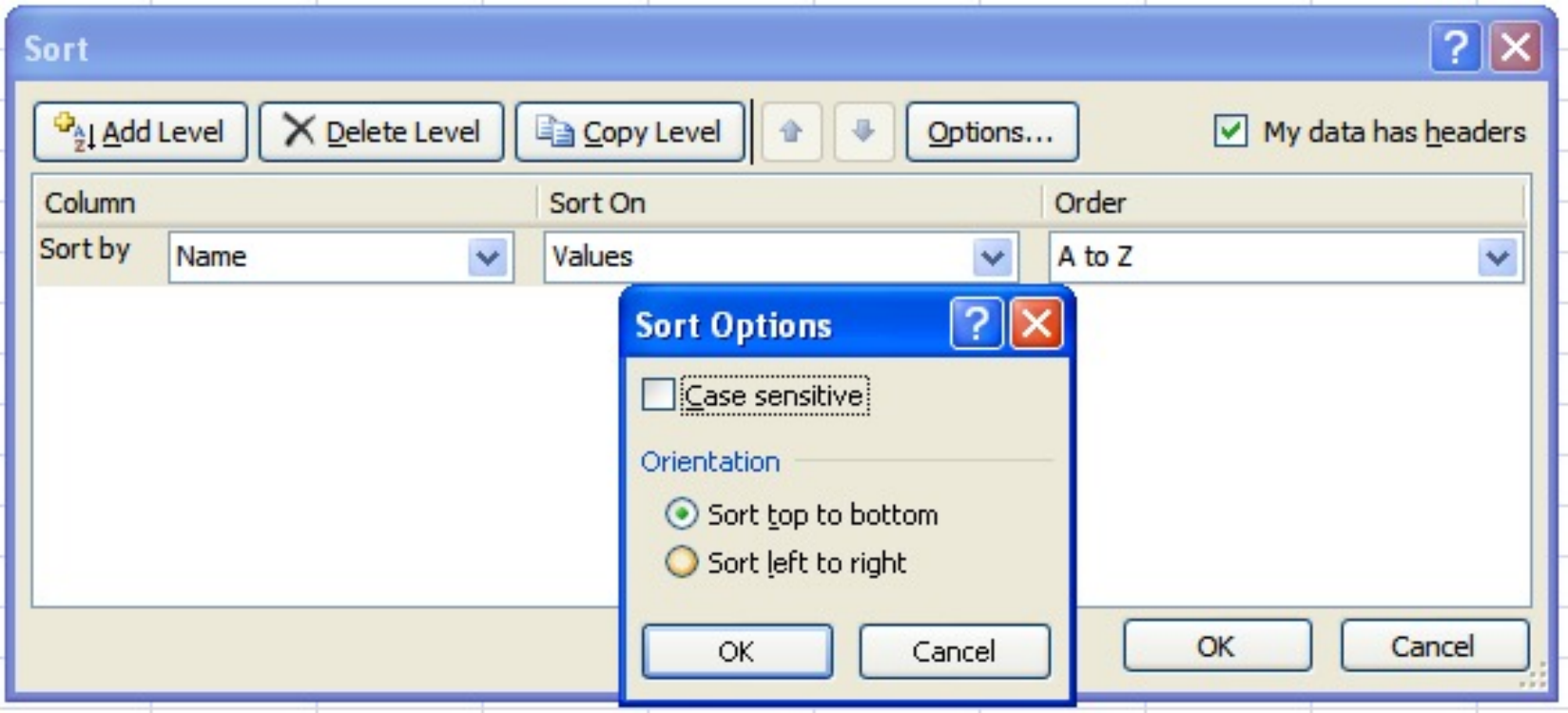
Complex sorts

- If the cells you highlighted included the text headings in the first row, mark **My data has Headers** and the first row will remain at the top of the worksheet.



Complex sorts

- Click the **Options** button to sort top to bottom or left to right



- Click **OK** to execute the sort.

Filter data in Excel

- Option 1: **Apply the AutoFilters**
  - Click the **Filter button** on your **Data ribbon**. Excel adds arrows to the right of each of your column headings.
  - Click one of the column's down arrows to open the filter list. Excel analyzes the data in that column and displays one of each item in the filter list with a check box to the left of each item.
  - Deselect all data values you don't want to see.
  - Click the **OK** button to display the filtered data. The data you filtered out isn't gone from your table permanently but only for the present.
  - Click the ribbon's **Filter button** again to restore your database to its full set of values.

Filter data in Excel

- Option 2: **Filtering by Selection.**
  - Right-click over the value you want to filter by.
  - From the menu that appears, select **Filter** and then **Filter by Selected Cell's Value.**
  - **Excel** filters away all data that does not match your selected value in that field.
  - Finally, your preferred subset of data now appears in your worksheet.
  - Click the ribbon's **Filter button** again to restore your database to its full set of values and to remove the subset from your screen.

Freeze row and Column Headers

- If you have a large worksheet with column and row headings, those headings will disappear as the worksheet is scrolled. By using the **Freeze Panes** feature, the headings can be visible at all times.
- Click the label of the row below the row that should remain frozen at the top of the worksheet.
  - Display your **View ribbon** and click **Freeze Panes** to freeze all rows selected row.
  - To freeze the Top Row, select **Freeze Top Row** from the Freeze Panes drop-down list, also select **Freeze First Column** to freeze the left most column.
  - To remove the frozen panes, select **view | Unfreeze Panes**.

Merge Cells

- **Merge** - Combines two or more cells so that the contents of the cells can be centered or otherwise aligned across the width or length of all the cells.
  - Type the title that you want to center over the columns.
  - Select the title and the columns to the right within which you want to center the title.
  - Click the **Merge and Center** button on the **home ribbon** to combine your cells.
  - **UnMerge Cells** splits the cells you have selected into individual cells.

Review Questions

1. Differentiate between a workbook and a worksheet