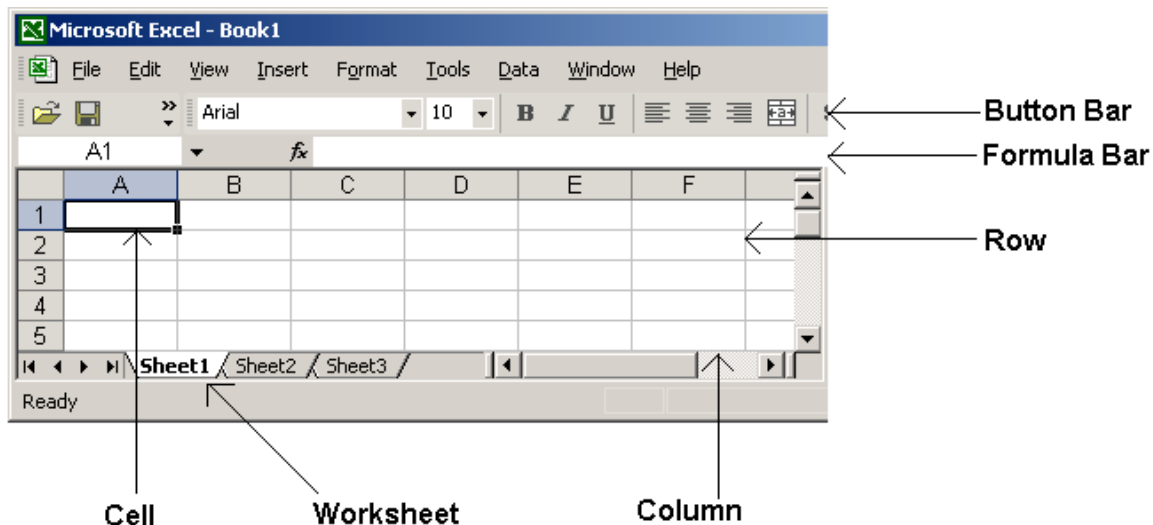# Excel I

## 1. INTRODUCTION

Excel is a software application for creating "spreadsheets." Spreadsheets allow us to collect data, mostly numbers but not always, and represent that data in a variety of ways. Using spreadsheets, for example, we can calculate averages for test scores, or sum up totals for a budget. We can also use a spreadsheet for creating charts and graphs to represent data in visual ways.

Before we begin, let's look at Excel's interface, and cover some of the principal terminologies.

## 2. TERMINOLOGY

> Cells, Rows, and Columns
> Worksheets, Workbooks
> Formula Bar
> Button Bar



## Cell

Any piece of information is kept in a "cell." The cell is what separates one piece of information from another. For example, if we had a shopping list with names and prices of each item, each name and each price would reside in a single cell. *Cells are identified by the column and row where they reside, for example, A1, B12, C239.*

## Column

A column will generally hold information of a similar category. For example, in the shopping list, one column might contain the names of all items, another column might contain prices, while another column might contain quantities. *Columns are identified by letter headings.*

Row
A row will generally hold all information about an item. For example, in the shopping list, the row might contain Milk, $1.99, 2. These would represent the name of the specific item, the price and the quantity. *Rows are identified by number headings*.
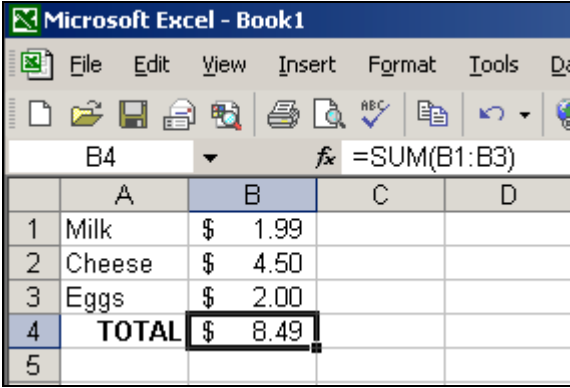
Worksheet
Each screen of rows and columns is one worksheet. You can have multiple worksheets to represent different pieces of data, or even to represent the same data in different ways. In the example of the shopping list, you may have a worksheet for Ralph's, another for Costco, and another for Home Depot.

Workbook
All the worksheets in a single file make up a workbook. Therefore, our workbook (or file) in this example would be the entire shopping list.

Formula Bar
The formula bar will show you whatever is in the cell that is currently selected (or highlighted). Sometimes, in the cell itself, you may only see a portion of what's written because of the cell's small size. However, the Formula Bar will show you the entire contents. In addition, when you are doing a calculation, such as a sum or average of data, the formula for the calculation will be in the Formula Bar, while the numerical result will be in the cell. In the example below, while cell B4 shows $8.49 (the total of the cells above it), the Formula Bar shows the calculation, or the sum of cells B1 through B3. More on formulas later.



Button Bar
The Button Bar is the place to go for a quick operation, such as formatting text to **bold**, *italics*, or to print, save a file, or run a spell check. The button bar represents a rapid way to access items that you could get from the Menus at the top of the screen. Keep in mind that the Button Bar can be modified to meet your own needs. You can add and take away buttons that you use more or less frequently.
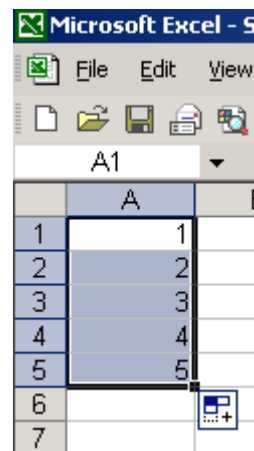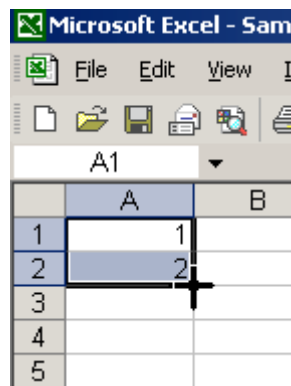
## 3. WORKING WITH DATA

This section of our training will deal with how to manipulate and work with the data we put into our spreadsheet. Processes such as sorting, auto filling and auto-filtering, are covered here.

Selecting Cells: One of the first skills to learn is how to select multiple cells. You will do this often when working with data. You can select multiple cells across rows and columns by starting in the top-left of your desired area, clicking and holding in that cell, and dragging to the bottom-right of the desired area. The selected cells can then be worked on simultaneously for formatting features such as **bold**, *italics*, center justify, etc. You can also choose to move the data to another area on the worksheet, or copy it to Word or another application.

Auto Fill
The Auto Fill feature will automatically insert information into selected cells based upon the first few cells. For example, let's say that you are making a list of students, and need to number them from 1 to 20. However, you don't want to spend the time typing in all the numbers. By filling in the first and second cells, you can Auto Fill the rest. Excel knows from the 1 and the 2 that the next will be 3, and so forth. To do this, you must first select the two original cells and move your cursor to the bottom-corner of the last cell. Your cursor will turn into a black plus sign. At this point, you can click and drag to your desired destination. You will see the numbers auto fill. Please note that this works for numbers, the alphabet, dates, days of the week, and months in the year.

Sorting
The sorting feature (**Data…Sort…**) allows you to sort any information in a list. If you have student first names in Column A, last names in Column B, Assignments in Columns C, D, and E, you can choose to sort by any of these criteria.

You start by selecting the area you wish to sort, then going to the **Data** menu and select **Sort…** A window will appear asking you what column you wish to sort by, and whether you want to sort in ascending or descending order. When you have the first row represent

column heading such as "Item," "Price," and "Quantity, Excel will label your columns accordingly. Otherwise, it will call them Column A, B, C, etc. Hit okay when you are ready to sort.

<u>Auto-filter</u>
The Auto Filter feature works to help you organize your information. Using Auto Filter (**Data…Filter…Auto Filter**) you create automatic column headings that allow you to isolate specific information. In the survey example above, you could use the Auto Filter feature to see only the YES responses, or only the NO responses.

Try this. Make a worksheet with ten names in Column A and ten responses (using YES or NO) in Column B. Place column headings in the first row of cells, using "Name" and "Response" as the titles for these columns. **NOTE:** Keep in mind that you can insert a row whenever you need to. In this example, if you have already typed in all the names and responses, you can create a new Row 1 by clicking on the current Row 1 and going to **Insert**…**Rows**. The current rows will slide down and a new blank Row 1will appear. You can now type information into this row.

With your data ready, click on any cell within your list. Go to the **Data** menu, select **Filter**, then **Auto Filter**. What you will now see is that in the first row, next to each column heading, there is a drop down list. Using, this list, in the response column, you can choose to see only the YES responses, NO responses, all responses, and custom responses.

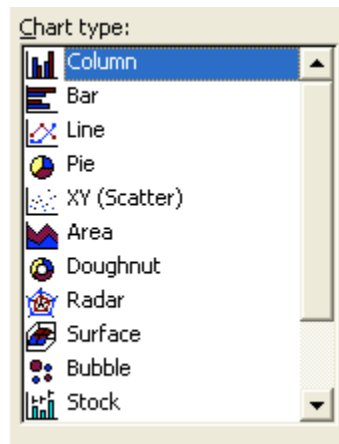| | A | B |
|---|---|---|
| 1 | Name | Response |
| 2 | Frank | YES |
| 3 | James | NO |
| 4 | Gina | YES |
| 5 | Tina | YES |
| 6 | Sheena | YES |
| 7 | Jimmy | NO |
| 8 | Timmy | YES |
| 9 | Kimmy | NO |
| 10 | Slimmy | YES |
| 11 | Shady | NO |
| 12 | | |

Please note that because there is a drop down list in every column, you can choose to isolate your information even further. For example, you may have other columns, for school, grade level, and other information. Using the drop down lists in three different columns, you could for example choose to see all 5th grade teachers that answered NO from Burnett School. Or, you could see all 2nd grade teachers that answered YES from Cabrillo, etc.

## 4. VISUAL REPRESENTATIONS

One of the incredible features within Excel is the ability to create charts/graphs from the data in your spreadsheet. This method for visualizing the data can bring a greater understanding to your audience when presenting information, and can help to strengthen an argument or more clearly make a point.

The Chart Wizard

There are a variety of ways to represent data graphically, from bar charts and pie graphs, to line and scatter graphs. Each one has its particular strengths and advantages.



For our sample, let's try a simple column graph. Create a worksheet that matches the following. For this example, keep the exam scores the same as you see here.



We are going to create a graph that illustrates these results. Start by clicking on any cell within our designated area and then clicking on the Chart Wizard button in the Button Bar.



This Chart Wizard will guide us through the steps to making this graph.

STEP 1: The first window will ask you what type of chart you want to create. Notice that you can select any chart on the left to see examples, and can also press a button to see an example with your data.
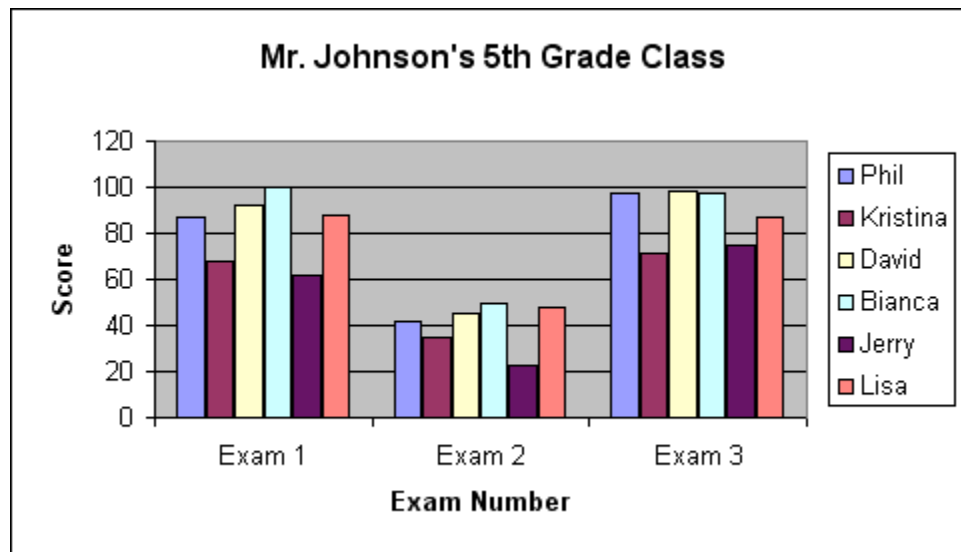
STEP 2: The second window just verifies that it has all the right information and whether you want to see the data as a series by Row or by Column. In our example, both methods are interesting and represent the data in different ways. Let's choose to see the series in Rows.

STEP 3: The third window allows you to type in a title for the chart, as well as labels for the X and Y axes. Let's do the following:

        Title = Mr. Johnson's 5th Grade Class
        X Axis = Exam Number
        Y Axis = Score

Please note that they are many other options that can be modified in STEP 3. For now, we will leave these as default.

STEP 4: The fourth and final window asks us how we want to see the data, 1) as a new worksheet within this workbook or 2) as an object on this current worksheet. Let's leave it as an object on this worksheet.



That's all there is to basic chart making. You can always go back up to the **Chart** menu make any modifications you want to this chart. You can also click on the chart itself to change visual options like patterns, scale, text alignment, etc.

Now that the chart is created, it is live. That means that as changes are made to your data, the chart will update itself. Try changing some test score values now and watch what happens.

## 5. FORMATTING OPTIONS

Information can be strengthened or weakened by the manner in which it is presented. A messy report, however important, can lose its effectiveness simply because it's hard to read or confusing. The following section will cover how to make the information we present visually pleasing and effective.

Cell formatting

Cell formatting can take a number of different options. Basic options include font size, font type, color, style (**bold**, *italic*, underline), and justification (left, center, right). Cells can also be formatted for the kind of numbers being used (general, currency, percentage), what kind of border lines are present, and if the text should "wrap" or be placed vertically instead of horizontally.

Although many of these features appear in the Button Bar, all of them can be found by going to the **Format** Menu and selecting **Cells…**

Try out a few of these settings to see what they do.

Merging cells

An often-used feature, called merging cells, allows data to be spread across multiple cells in a row. This is useful for Titles, where you might want the information in larger typeface and centered across the top of the page. In our example of Mr. Johnson's 5th Grade Class, the first row is our Title. To see how merge cells works, highlight cells A1 through D1 in this sample spreadsheet and then click on the Merge Cells button on the Button Bar.



You will notice that the Title has now been spread across all five cells and is automatically centered. You can also increase its font size to give it more emphasis.

Auto formatting

The Auto Format feature (**Format…Auto Format**) is a very quick method for polishing up any spreadsheet. Let's try this with our example for Mr. Johnson's 5th grade class. Select any cell in our designated area, then go to the **Format** menu and select **Auto Format**. You are presented with a variety of example pre-made formatting styles. Select one and see the results. If you don't like it, go to **Edit…Undo Auto Format**, and try again. This is a nice, fast way to get your spreadsheet looking professional and presentable.

## 6. PRINTING

Printing a spreadsheet is different than printing a Word document. With a Word document, you are almost always printing in portrait mode, which is 8.5 by 11 inches. Every now and then, you may choose to print in landscape, 11 x 8.5.

With spreadsheets, it all depends on how you need to present the information. You may also choose to only print a certain area of your document, while leaving the remainder alone. This might be applicable if you were creating a budget and had a series of sub categories all detailed out but only wanted to print budget totals or category totals.

Setting print area

Once you have decided what area of the worksheet you want to print, you must highlight it and go to the **File** Menu and select **Print Area**…**Set Print Area**. Now Excel knows what needs to be printed. When you are ready, you can go to **File…Print** to print your pages. If you were to simply print, without setting a print area, Excel would print everything that is on your worksheet.

Headers/Footers

You may want to label your printed document with information in the header and footer regions for purposes such as document title, date printed, date last modified, page number etc. All header/footer options can be found by going to **File…Page Setup**.

Rows to Repeat at Top

In the same Page Setup window, you will see an option for Rows to Repeat at Top. This is a great feature for when you have long lists, over a series of pages, that share the same column heading over and over. Using this feature, you only need to create the column heading once, then select it for repeating on each page when printing.

## 7. BASIC FUNCTIONS AND FORMULAS

*Functions* are mathematical operations that Excel can do automatically for you. There are many functions that are available. For now, we will focus on three that are used often.

Sum
Average
CountIf

A *Formula* is a statement that includes a function. For example, we can say that "Sum" is the name of the function for adding. A formula, in laymen's terms, might be a statement that says "Sum the numbers 1, 5, and 10" and the answer would be 16. In Excel, the formula statement looks a bit different, and we will see examples of that below.

*Sum Function:* The Sum function is used so often, there is a button on the Button Bar to represent it. A sum will take the total of any cells that you select and put them into the cell that contains the formula, like our previous example on Page 2, under Formula Bar.

Let's try a SUM function here. Create a grocery list with five items in Column A and their respective prices in Column B. Select the cell below the last price in Column B, and click on the Sum function button that looks like this:

$$\Sigma \quad \blacktriangledown$$

The Sum will automatically "Guess" that you want to add up the cells above your selection. Hit the Enter key on your keyboard to confirm this. The formula will be replaced by the total in that cell. However, in the Formula Bar, you will see how the actual formula is represented, "=SUM(B1:B5)"

*Average Function:* The average function will take an average of all values in a selection. You can select the Average function from the same button on the Button Bar, but instead of clicking on the symbol, you can click on the downward arrow to see other function options, including average.

In addition to using the button bar options, you can go to the **Insert** menu and select **Function**… to get access to all the functions available in Excel. You can also choose to simply type your formula into the Formula Bar.

*CountIF:* In this example, we will type the formula into the cell. The CountIF function works to tell you how many instances appear of any given item. For example, let's say you have a list of responses from people in a survey. In Column B you have a series of YES and NO responses, and you want to get totals for each response. The CountIF function helps to count the number of YES responses, or the number of NO responses. Give this a try.

An example formula statement is "=COUNTIF(A1:A25, "YES")" where A1:A25 represents the <u>range</u> of cells that you are selecting, and "YES" in quotes represents the <u>string</u> of text that you want to find. What would the formula look like to get a total for NO responses?

Functions and formula statements are the heart of Excel, and there is much more to know in this area. What we have covered here is just a small sampling of the possibilities.

**CONCLUSION**
There are many more useful tools within Excel that I encourage you to explore. We have only touched the tip of the iceberg. Below are some potential topics for future training sessions.

**FUTURE TOPICS**

| | |
|---|---|
| Format Painter tool | Protecting Cells |
| Split Screen | Validation |
| Freeze Pane | Hiding and Unhiding Cells |
| Linking Cells | Comments |
| Conditional Formatting | Pivot Tables |