

## Learn to Use Excel

MS Excel has an interface similar to MS Word, but it is specialized in spreadsheets instead of documents. Spreadsheets are used to analyze data. If you are new to Excel, it will be helpful to go through following exercises before coming to the lab.

Open Excel program.

### 1. Basic skills:

**Select cell(s):** click on the cell with the mouse to select one cell. Click and drag to select adjacent cells. Selected cells are highlighted.

**Enter text or numbers to a cell:** select a cell and type something. Press “Enter” to finish entering the content. What you type will show up in the cell and in a blank space above the spreadsheet (called “formula bar”).

**Find the address of a cell:** select the cell and look at the display above the spreadsheet, at the far left. The cell address consists of a letter and a number like “C10”. That is the cell address.

**Copy the content of cell(s):** the conventional “Copy and Paste” works fine, but there is a quicker way: select the cells, then click and hold on the little black square at the lower-right corner of the selected area (cursor becomes a cross) and drag to the cells you want to copy to. Try it!

**Formula:** some cells contain formulas that calculate results from other cells. They always start with an “=” sign. The formula cells will display the result of the calculations and the formula bar shows the formula itself. For example, if you enter “3” in cell A1, “2” in cell B1, and “=A1+B1” in cell C1, C1 will display “5”. (The display of the formula cell can be toggled by pressing “Ctrl `”.)

**Graph:** select the data you want to graph (if you need to select another chunk of data, hold the “Ctrl” key after you have selected the first chunk of data), then click menu item “Insert – Chart”, choose “XY (Scatter)” option, and click “Finish”.

2. Now, start from a new spreadsheet and type following. The cells that have text in gray are calculated results, so you should type in formulas rather than numbers. The formulas are given below.

	A	B	C
1	Data and graph for rates of change lab		
2			
3	Glass D		
4			
5	Zero reading in cm	0.6	
6			
7	Measured Height in cm	Volume in glass in ml	Corrected height in cm
8	1.2	30	0.6
9	3.5	100	
10	5.2	160	
11	6.6	205	
12	8.1	230	
13			
		C8	=A8-\$B\$5
		C9	=A9-\$B\$5
		C10 - C12	etc

To calculate the rest of the corrected heights, we can simply copy cell C8: first, select cell C8. Then, right click and choose copy. hold on the C9 and drag to row 12, right click and choose paste.

Click on cell C9, C10 etc. to examine the formula. You should see C9 shows “=A9-\$B\$5” and C10 shows “=A10-\$B\$5” and so on. When copying, Excel will change the cell address based on the cell positions automatically, for example, in the above copy, A11 is changed to A12, A13 etc. If you do not want a cell to change, simply put in the \$ signs. The “\$” sign can be turned on/off by the “F4” key on your keyboard.

3. Select column B and C from row 8 to 12, right click and under the *insert* tab choose *Insert Scatter (x,y) or Bubble Chart* to graph the height as a function of volume. Adjust the graph until it looks like the one below.

