Excel Exercise

Chemistry 104 requires that you use the spreadsheet Microsoft Excel to process and graph data that you have collected in the lab or have been given to you as part of a lab exercise. Being able to use a spreadsheet is as much a "life skill" as using a word processor, so you may already know how to use Excel. If you will be learning it for the first time for this class, you will be able to use the skills you acquire in other classes in the future.

In order to confirm your existing abilities with Excel, or to convince you to go through the training we offer if you are unfamiliar with Excel, you are being assigned an exercise worth 10 points towards your grade.

You can download the appropriate exercise from the web at the General Chemistry web site on the **Materials for Lab** page, or via the link in Learn@UW under **Lab Stuff**.

Choose the data set with same number as the last (10^{th}) digit of your student ID number.

- If you are using, **Netscape** under any operating system, click on the appropriate link and a dialog box will appear that allows you to specify the location on a drive where the file will be saved.
- If you are using **Internet Explorer on a Windows Operating System**, right click on the appropriate link, then choose "Save Target As…" and a dialog box will appear that allows you to specify the location on a drive where the file will be saved.
- If you are using **Internet Explorer on a Macintosh**, hold down the **control** key and click the appropriate link, then choose "Save Target As…" and a dialog box will appear that allows you to specify the location on a drive where the file will be saved.

Follow the instructions on the first sheet of the workbook you have downloaded, and submit your completed work to your T.A. as an attachment to an e-mail message. Be certain to include your name, section number and student ID number *in the spreadsheet* so that your T.A. will have no difficulty in identifying the work as yours. The deadline for submission will be set by your professor or TA. If you can do this exercise without further training, do it for this deadline and get it out of the way.

If you don't know how to use Excel, or find that your prior knowledge, combined with the quick reference sheets attached here is insufficient to allow you to complete the exercise, you don't have to hand in the completed exercise by the deadline. Instead, you should register for a training session provided by the ARCH labs. Do this by going to the ARCH web site at http://www.arch.wisc.edu/ and clicking the **Sign up for now for Chemistry Excel Sessions** link. Training sessions begin on Sunday, Feb. 4, and run on various evenings as posted online for several weeks.

The ARCH web site provides you with information on the times and locations of Excel training sessions for Chemistry students. There is an on-line sign up process. Do not sign up for more than one time. Duplicate registrations will be cancelled. You will receive a receipt confirming the time of your training session. Print two hard copies of this receipt, which shows *when* you have registered for training and your name, ID number, email, etc. Submit one copy of this printed receipt to your T.A. by the deadline, and keep the other for your records. Your new deadline for submission for the Excel exercise is THREE DAYS AFTER your training session. This way you can get the training you need, then do the exercise to use what you've learned and prove your proficiency.

The following pages represent a "Quick Reference Sheet" for you to use to refresh your memory of what you have learned previously, or what you will learn in the ARCH training. These pages are *not* intended to *teach* you how to perform tasks in Excel, and should not be relied upon to do that. No matter how proficient you are in using Excel, the Quick Reference sheet may prove useful to you in the future, so keep it where you can find it.

Excel is a useful and powerful data manipulation and graphing tool. You will be well served by a knowledge of its use no matter what your eventual major may be.

Microsoft Excel Quick Reference - Chemistry

This handout is a reference tool for you to use when you are completing Excel problems. In this handout, you will be given basic instructions on how to perform the following functionalities in Excel:

1. Formatting cells
2. Creating and Inserting functions
3. Creating and editing a graph
4. Adding a trendline
5. Adding a text box

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1. Formatting Cells:

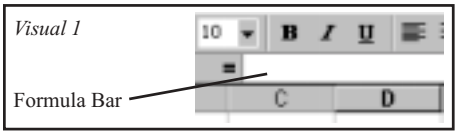
Change number of decimal places:

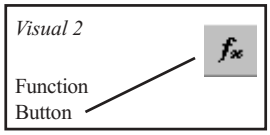
~ Click on the cell. Go to **Format**, then **Cells**. Choose the **Numbers** option on the left. Type in the number of desired decimal places on the right.

Change size of cells:

~ Put the cursor in between two columns (at the top of the worksheet) or rows (on the side of the worksheet) so that the cursor changes to a line with two arrows pointing in opposite directions. Click and drag the column or row to be bigger or smaller.

~ To make a column (or row) as big as the biggest piece of data, put your cursor in between the column (or row) with the big piece of data and the next column (or row) and double-click. This will automatically resize the column or row to fit the piece of data.





2. Functions:

Using Excel's built-in functions:

~ Choose a cell in which to store the function's results and click on the cell. Go to **Insert**, then **Function** (or click on the f_x button on the top of the toolbar - see Visual 2). Choose the function you wish to insert. Note that for most of the functions, you will need to enter ranges of cells that you will use in the function. This can get complicated, so the best way to figure out how to use the built-in functions is to use Excel's help files.

Creating your own function:

~ Choose a cell in which to store the function's results and click on the cell. Click on the **Formula Bar** (see Visual 1) and type in the formula (Remember to put an equals sign before the function). Press **ENTER** when finished typing in the function. The result of the function's calculations should now appear in the cell.

Applying the function to numerous rows or a column of data:

~ Click on the cell with the function in it. Put your cursor over the lower right corner of the cell so that the cursor changes to a black plus sign. Click on this part of the cell and drag the mouse down (or left) to the last row (or column) that you want the function to apply to.

~ You can also click on the cell with the function in it and highlight the cells which you want the function to apply. Go to **Edit**, then **Fill**, then **Down** (or go to **Edit**, then **Fill**, then **Left**).

Microsoft Excel Quick Reference - Chemistry

3. Graphing:

Creating a graph:

~ You should already have at least 2 columns of data to create a graph (the leftmost column should be your x-axis data, and the rightmost column should be your y-axis data). Select the two columns and click on the Chart Wizard button on the toolbar (see Visual 3).
~ If you wish to select two non-continuous columns, select the first column. Then, hold down the Control key while selecting the other column.

Visual 3

The 4-step Chart Wizard window will appear. In **Step 1**, choose the chart type and sub-type. In **Step 2**, you should not need to change anything. In **Step 3**, you can add a chart title, axes titles, add/remove gridlines, add/delete the legend, add/delete data labels and add/delete the data tables. In **Step 4**, you should choose to place the graph **As an object in Sheet 1**. Click **Finish**.

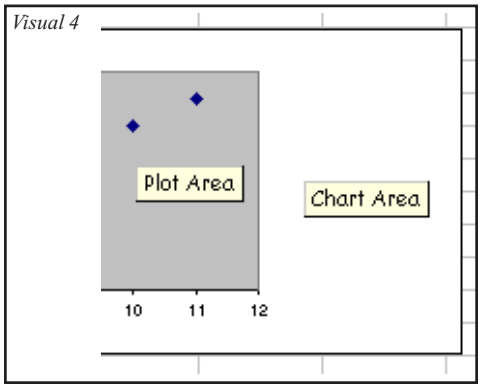
Editing parts of a graph:

~ To edit any part of the graph, **Double-Click** on that part. This includes changing the colors of the data points, the color of the background, the shape of the data points, the scale increments, etc.

Changing the size of a graph:

~ Click on the white part of the graph (the Chart Area - see Visual 4) so that **8** boxes appear around the entire graph. Click on one of the boxes and drag to make the graph bigger or smaller.
~ Or, to change the size of the actual graph (the Plot Area - see Visual 4), click somewhere inside the Plot Area so that **8** boxes appear around the entire plot area. Click on one of the boxes and drag to make the area bigger or smaller.

Visual 4

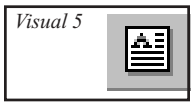


4. Trendline (line of best fit):

Creating a trendline:

~ Click on one of the data points in the series to select the data series (on your chart). Right-click on one of the data points, and then click on **Add Trendline...** Your **Trend/Regression Type** will most likely be Linear, so you won't need to change anything here. Click on the Options Tab. You can choose to display the equation of the trendline on the chart and display the R-squared value on the chart. Check the box next to each choice to display them.

Visual 5



5. Textbox:

Adding a textbox:

~ Click on the Chart Area of the graph (see Visual 4). Make sure the "Drawing" toolbar is shown. To do this, click on the Drawing Toolbar button located at the top of your screen (see Visual 3). Click on the Text Box icon on the Drawing toolbar (see Visual 5). Wherever you want to create the text box, click and drag to create the box. You can now type in the box. To resize or move the box, click on the text inside of the box. Then, either click on one of the **8** boxes surrounding the text box, and drag OR move the cursor to the edge of the text box and when it changes, click and drag the entire text box.