

Graphing Using Excel 2013 For Widows 8

Chem 111-Packet

GRAPHING

A graph is an effective way to show a trend in data or relating two variables in an experiment.

Consider the following data for exercises #1 and 2 given below.

Temperature, °C	g of salt Y/100g H ₂ O
50	72.4
60	76.5
70	87.0
80	100.0
90	117.2
100	149.0

Exercise 1

Plot a graph on a graph paper

1. Determine which quantity depends on the other. In the data given above, the solubility was measured at specific temperature. Hence, the solubility depends on the temperature at which it is measured. The dependent variable, in this case, the solubility, goes on the y-axis (vertical) and the independent variable, the temperature, goes on the x-axis (horizontal).
2. The chart must be large to be read easily. Select a scale that allows the data to fill out most of the area of the graph. The scale does not need to start at zero and should be divided into equal increments until the highest value.
3. Label the axis and provide units.
4. Add a title. The title should include the dependent and the independent variables.
5. The data points can be each plotted by placing a dot at the intersection of a vertical line (solubility) with a horizontal line (temperature).
6. Use a pencil to draw a smooth faint curve connecting the dots. Do not extend the curve past the first and last data points. Once the curve looks acceptable, you can darken it with your pencil.
7. **Pick up a graph paper from your instructor and plot a graph for the data given above. Show your graph to your instructor and get his/her approval. Staple your graph to this packet and hand it in at the beginning of next lab period.**

Instructor's approval: _____

Exercise 2

Computer Graphing Using Excel 2013 for Windows 8

You can plot data using any graphing program. Below you will find instructions on using Excel 2013 for Windows 8 to plot a graph for the data given on page 1

Sign-in

Use the cursor to click on the computer screen.

Sign in by entering your name and password.

You will see the Start screen with many tiles for the Apps available.



On Windows 8, the Start menu maybe launched by pressing the Start key logo found on the bottom left corner of the keyboard.



Open Excel 2013

1. Do the following to open Excel program:

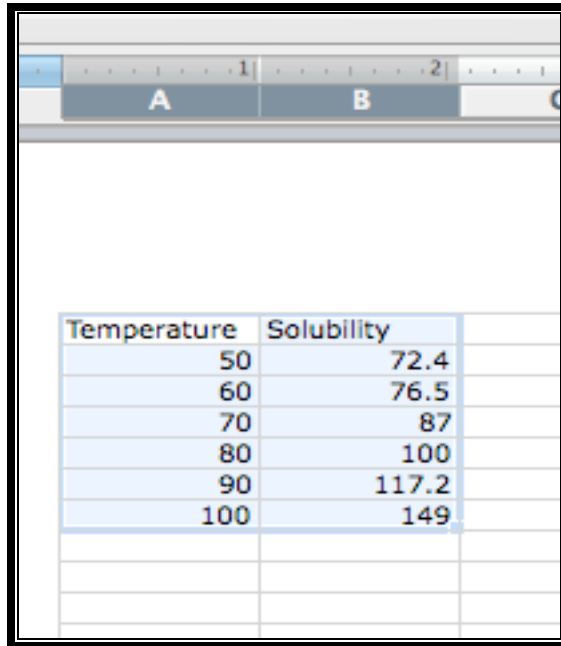


To search the PC for the Excel program, press the start key then start typing "excel". Click "enter" on the keyboard to initiate the Excel program. A display of workbooks will show up. Click on the Blank Worksheet on the far left to select it.

(If you do not click "enter" the Excel 2013 tile will show up instead. Click on the Excel 2013 tile to open it.)

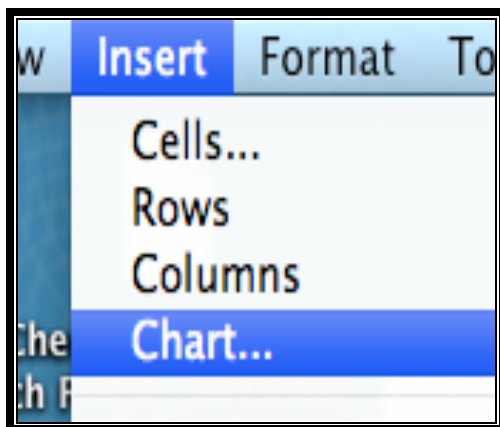
2. In column A, enter the data given on page 1 for x-axis - Temperature data
3. In column B, enter the data given on page 1 for the y-axis - Solubility data.
4. Highlight the data by dragging the cursor over the data range

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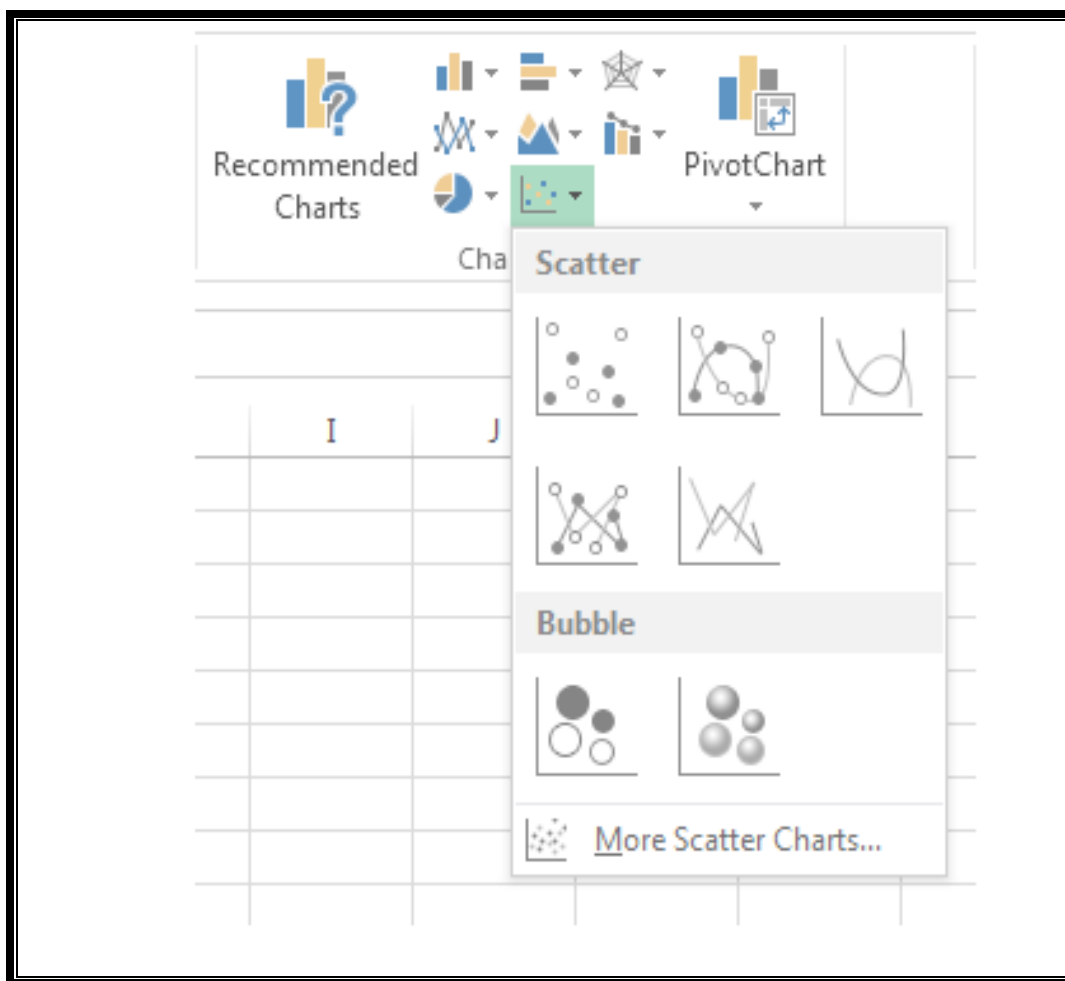
Temperature	Solubility
50	72.4
60	76.5
70	87
80	100
90	117.2
100	149

5. From the Menu bar on the top, click **Insert**, then **Charts**.



6. Click the **XY (scatter) chart** icon and you will see the dropdown menu

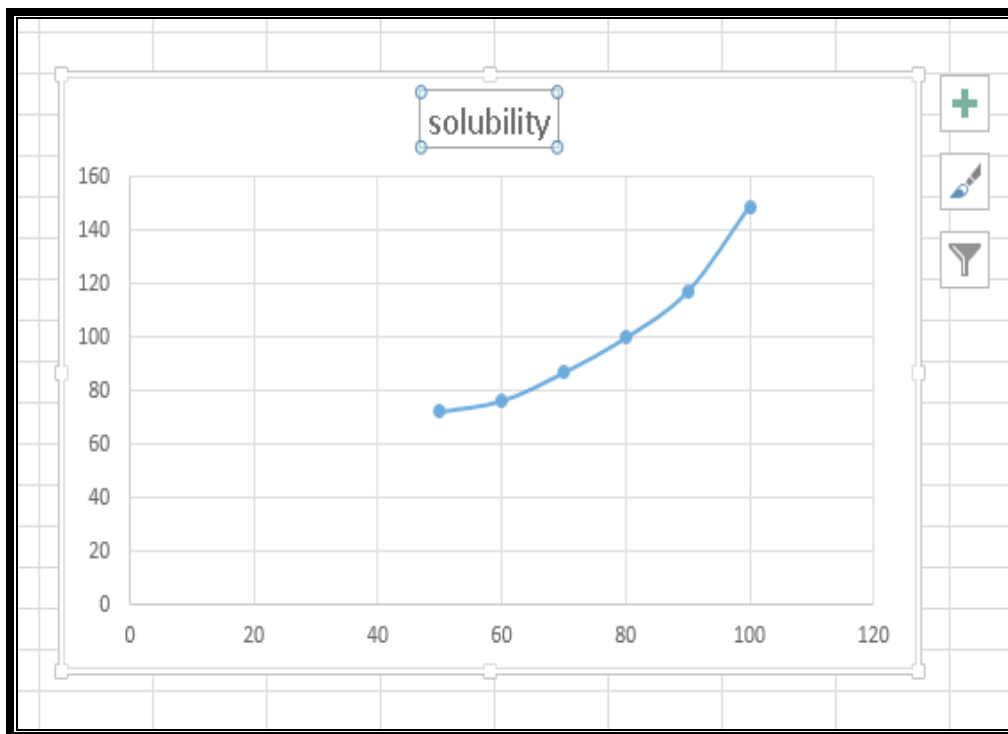




7. From the dropdown menu, click the “scatter with smooth line and markers” icon which looks as follows:



8. Now you should see your data plotted as a graph.

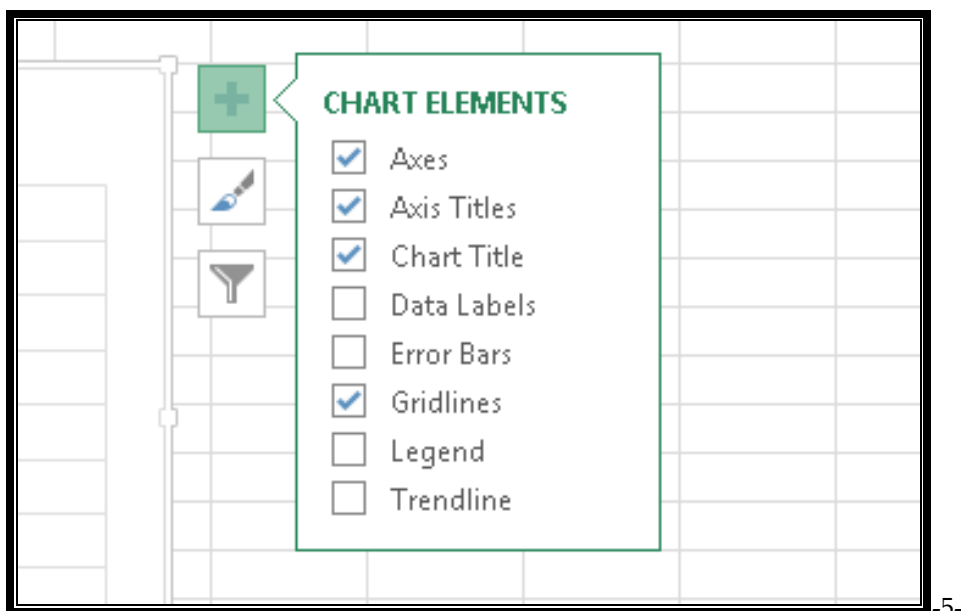


Add a Title to Your Graph

Select the graph by clicking on the blank area within the graph borderline. Now, you are ready to type a title on the top area of the graph. Type "Solubility vs. Temperature", then click "enter" on the keyboard. (Note: The title you typed will not show up until you click "enter".)

Label the X-Axis and Y-Axis

1. Click the "+" mark on the top right corner of the graph. The **Chart Element** box will show up. By default, there is a check mark, , next to **Axes**, **Chart Title**, and **Gridlines**. Now select **Axis Title** and a check mark, , will show up there, too.



2. Label the y-axis by placing the cursor on the left side of the graph and type "Solubility, grams of solute/100 g water". Press **enter** on the keyboard. . (Note: The title you typed for the y-axis will not show up until you press "**enter**".)
3. Label the x-axis by placing the cursor at the bottom of the graph and type "Temperature, C". Press **enter** on the keyboard. . (Note: The title you typed for the x-axis will not show up until you press "**enter**".)

Add Gridlines

1. Click on **Add Chart Element** in the menu bar. Select **Gridlines** from the dropdown menu, then **primary minor horizontal**.

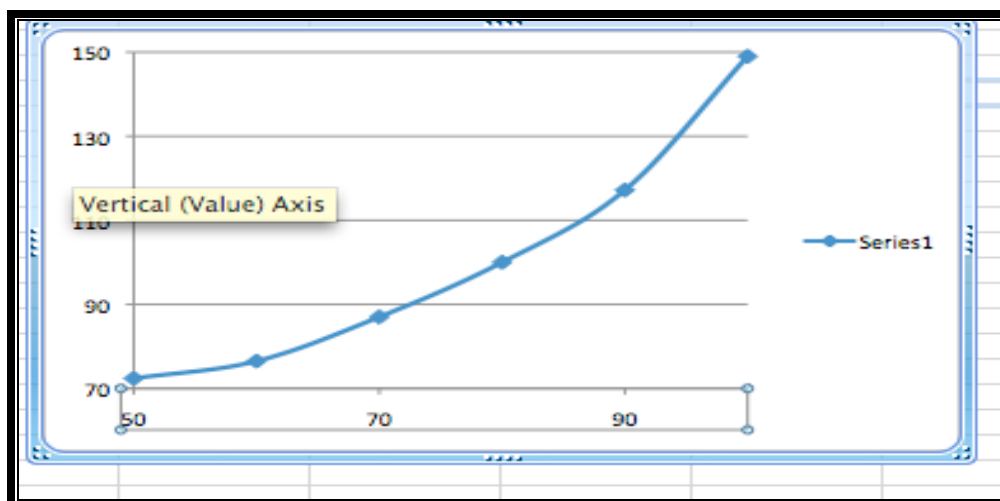


2. Click on **Add Chart Element** in the menu bar. Select **Gridlines** from the dropdown menu, then **primary minor vertical**

Format the Y-axis

1. Place the cursor on any solubility data point present on the y-axis to display Vertical value axis.

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2. Now right-click the data point. A box will open. Choose **Format Axis**.
3. The **Format Axis** pane will show up on the right side of the screen. Under the Axis Option, for vertical value axis, type 70, 150, 10, and 2 for Minimum, Maximum, Major, and Minor respectively. (Note: you have typed 70 and 150, because these are the lowest and highest data points for solubility.)

The screenshot shows the 'Format Axis' task pane in Excel. The pane is titled 'Format Axis' and has two tabs: 'AXIS OPTIONS' (selected) and 'TEXT OPTIONS'. Under the 'AXIS OPTIONS' tab, there are four icons: a hand, a pentagon, a grid, and a bar chart. The 'AXIS OPTIONS' section is expanded, showing the following settings:

Bounds		
Minimum	70.0	Reset
Maximum	150.0	Reset

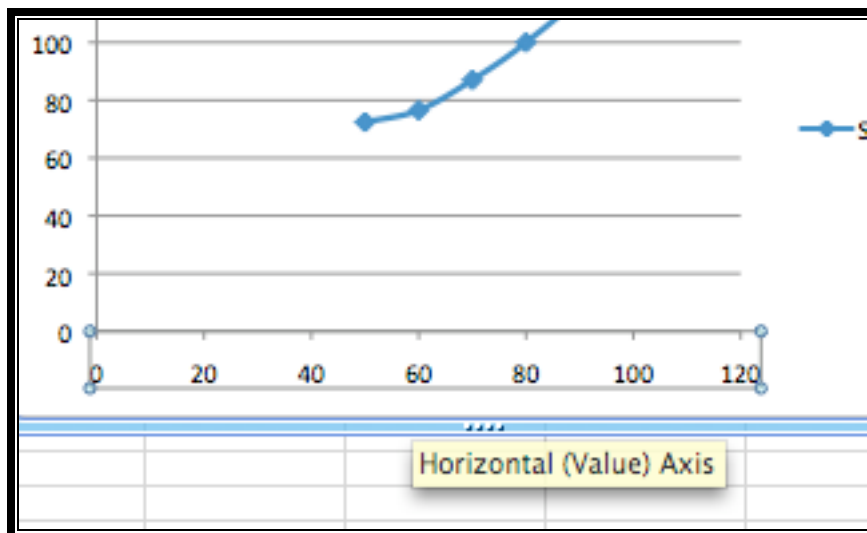
Units		
Major	10.0	Auto
Minor	2.0	Auto

Horizontal axis crosses

Automatic

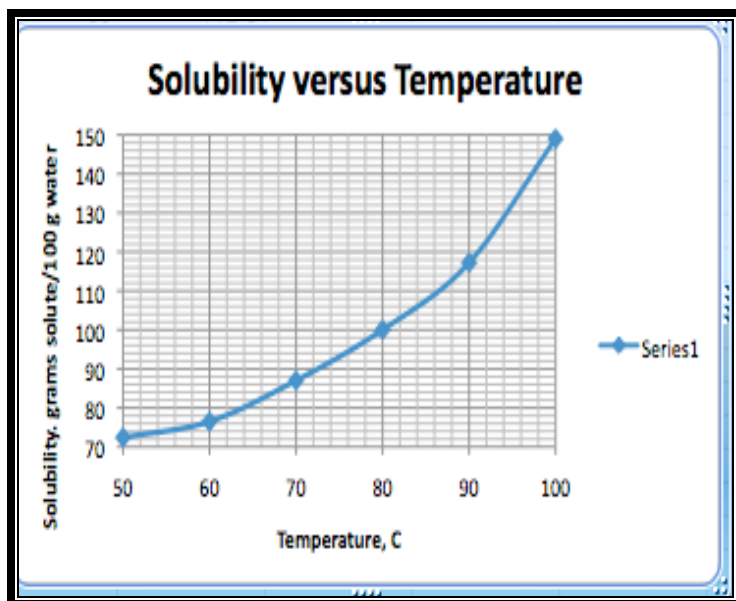
Format the X-axis

1. Place the cursor on any temperature data point present on the x-axis to display Horizontal value axis.



2. Now right-click the data point. A box will open. Choose **Format Axis**.
3. The **Format Axis** pane will show up on the right side of the screen. Under the Axis Option, for horizontal value axis, type 50, 100, 10, and 2 for Minimum, Maximum, Major, and Minor, respectively. (Note: you have typed 50 and 100, because these are the lowest and highest data points for temperature.)

The final graph will look as follows:



Save your Excel Document to a Flash Drive

Select the graph by clicking in the blank area within the borderline of the graph. Click **File** in the menu bar, then **Save As**. Now give your document a name which is your first- and last name. Save the Excel document to your Flash Drive.


Exercise 3

Plot a graph for the data given below using Excel or any other computer- graphing program.

Temperature, °C	Solubility of a salt (g salt/100 g water)
20	30.2
40	73.9
60	120
80	179
100	256

Log off the Computer



1. Click the Start key  found on the bottom left corner of the keyboard.
 2. You need to be at the screen that shows your desktop (Not Start desk) to remove the flash drive safely.
 3. Click on your name on the top right corner of the screen.
 4. Sign out (log off)
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- *You will hand in to your instructor three graphs for exercises # 1, 2, and 3.*
 - *Staple all three graphs, and write your name before submitting to your instructor.*