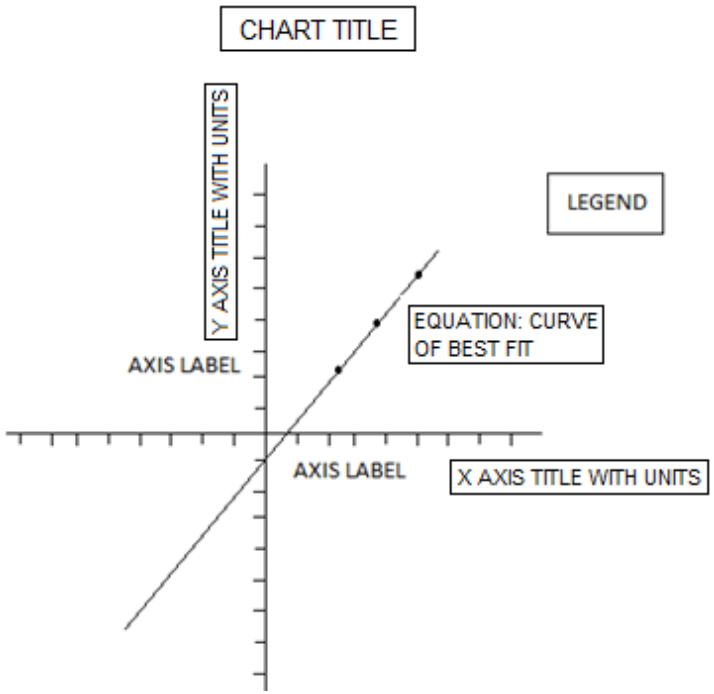
LAB COPY: Instructions for Plotting Graphs in Excel

A. Graph Requirements:

1. All graphs must contain the following:

   a. Chart Title
   b. Axis Titles: The physical quantities that x and y represent <u>with units</u>
   c. Axis Labels: The numbers next to the line markers along each axis
   d. Legend: Description of the curve being plotted (NO "Series 1"!)
   e. Curve of Best Fit (Trend or Regression Curve), where applicable
   f. Equation for the curve of best fit

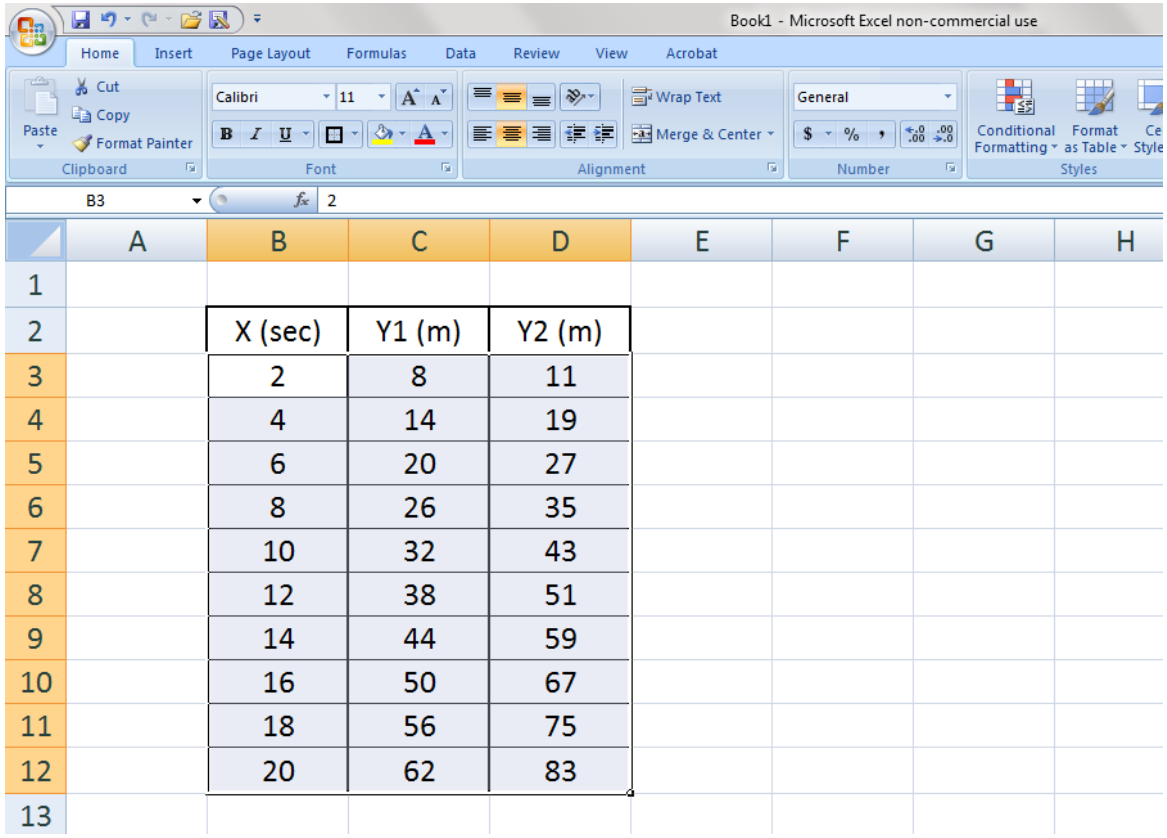
2. This should be arranged as per the template shown below:



B. Plotting in Excel:

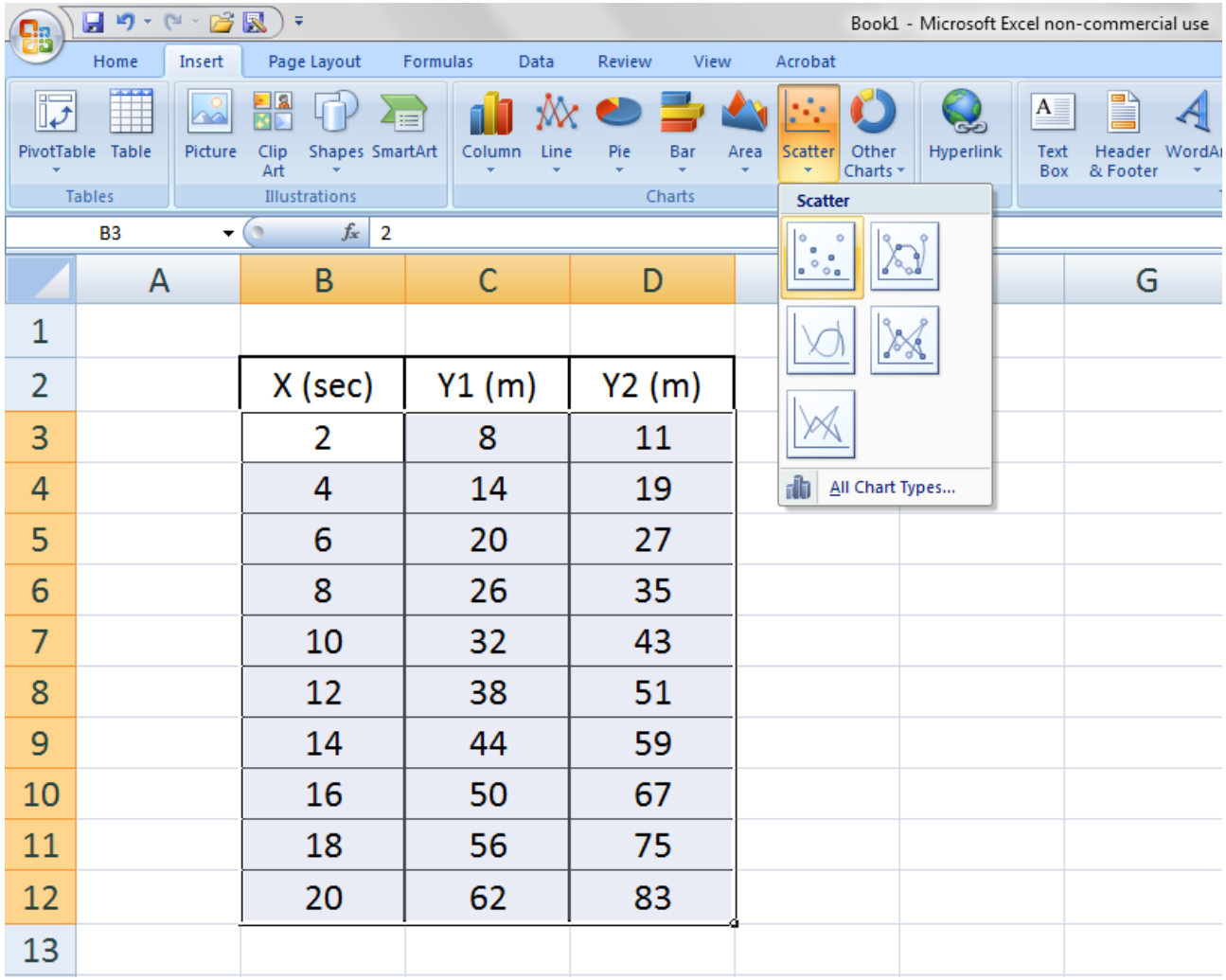
1. Begin by placing the required X and Y values side by side in the excel sheet, starting with X, followed by Y(s) as shown below and select X and Y(s).

Note: Although the example below demonstrates the example for when more than one plot is required on one graph, if there is only one Y column, please proceed with instructions in a similar manner.



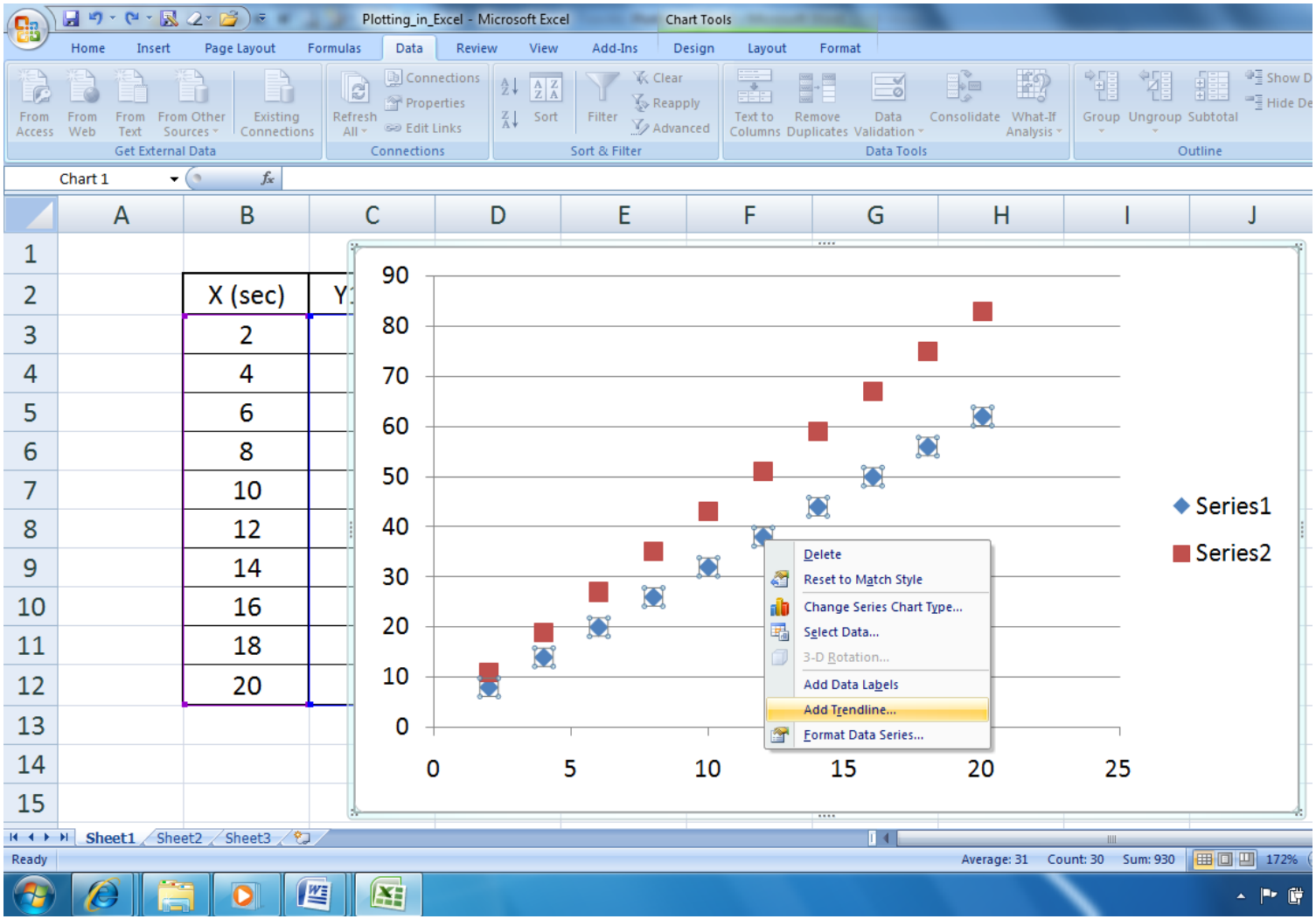
	A	B	C	D	E	F	G	H
1								
2		X (sec)	Y1 (m)	Y2 (m)				
3		2	8	11				
4		4	14	19				
5		6	20	27				
6		8	26	35				
7		10	32	43				
8		12	38	51				
9		14	44	59				
10		16	50	67				
11		18	56	75				
12		20	62	83				
13								

2. Go to the ***Insert*** → ***Chart*** → ***Scatter*** → Take the first option which is a ***scatter of points <u>without any connecting lines or curves</u>*** :



	A	B	C	D	G
1					
2		X (sec)	Y1 (m)	Y2 (m)	
3		2	8	11	
4		4	14	19	
5		6	20	27	
6		8	26	35	
7		10	32	43	
8		12	38	51	
9		14	44	59	
10		16	50	67	
11		18	56	75	
12		20	62	83	
13					

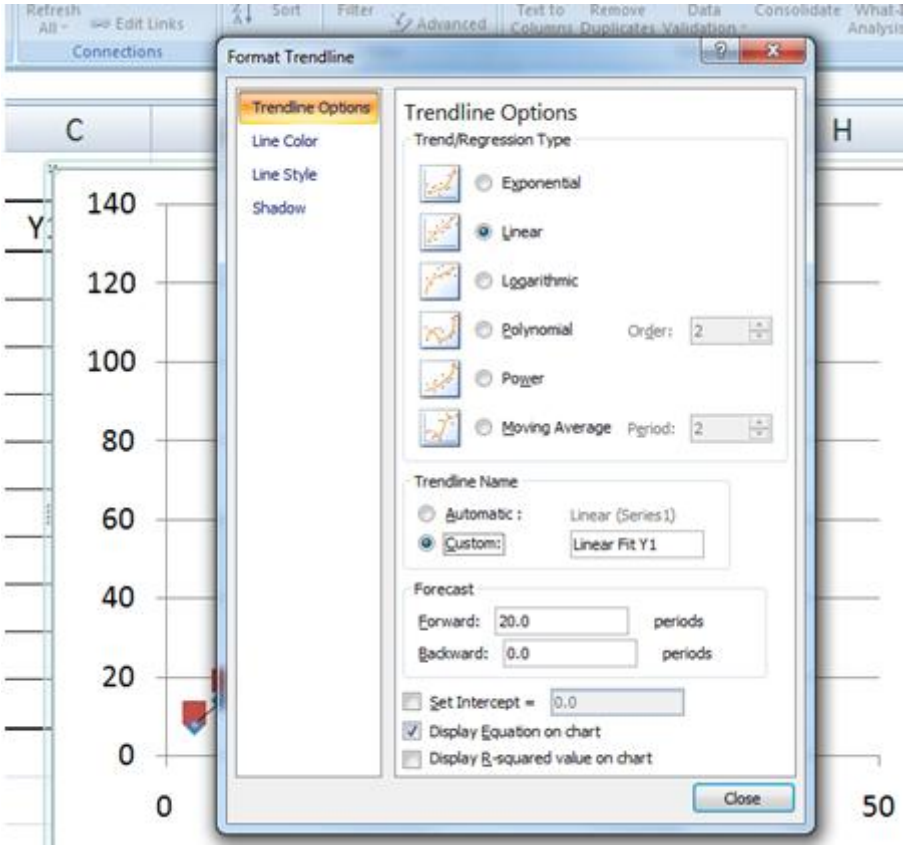
3. Right click on a data point to select the data series. And select the ***Add Trendline*** option.



4. In the Format Trendline menu:

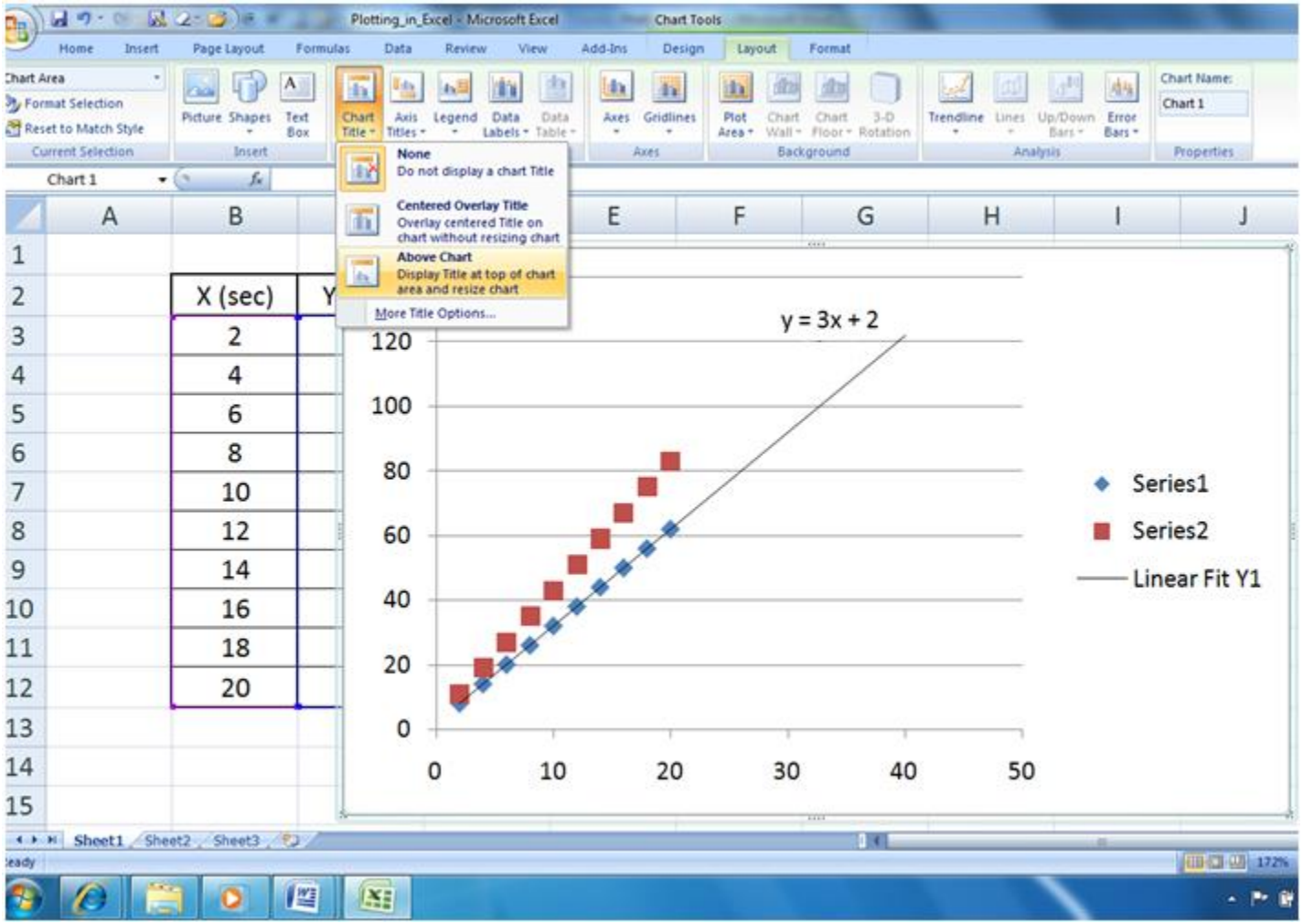
a. Select the correct ***Trend/Regression Type***
b. Select ***Custom*** in the Trendline Name section and enter an appropriate and descriptive name for the regression fit.
c. Select ***Display equation*** option
d. To extrapolate the fit, go to the ***forecast*** section and enter how much further ahead or how much further back you want to extrapolate the X axis values. *For example, below I have entered **forecast forward: 20** so the line of best fit be extended to 20 more than the highest x value. The highest X value is 20, so it is extended till X = 40.*
e. Click on ***Close***

You should have a trendline fitted to the selected data, with an appropriate label, equation and the R^2 value.



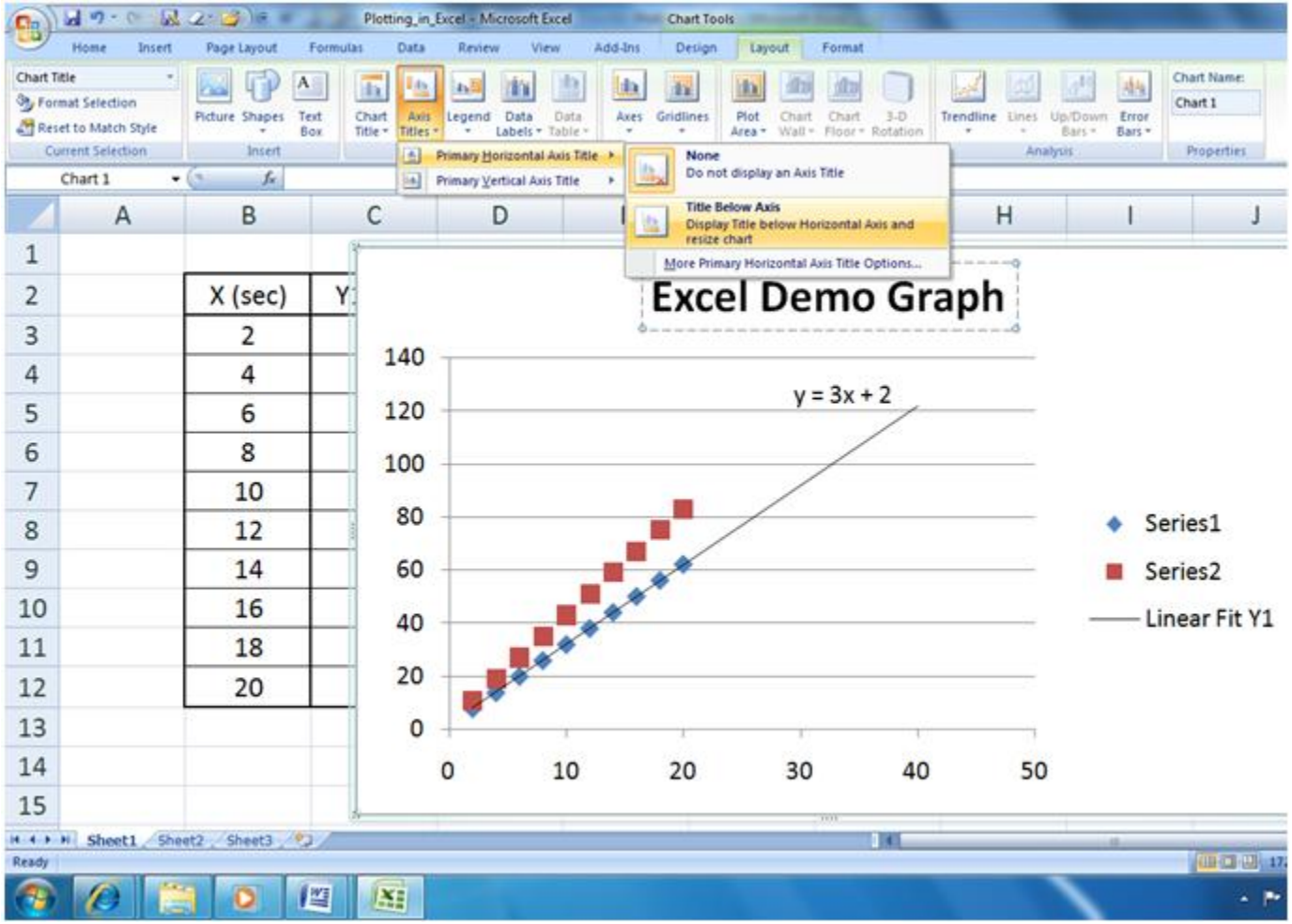
5. Chart title:

a. Ensure the graph area is selected
b. Click on: ***Layout → Chart Title (under Lables)→ Above Chart***
c. A text box will appear with ***Chart Title*** written. Type out an appropriate title after deleting what is in the text box.



6. X Axis Title:

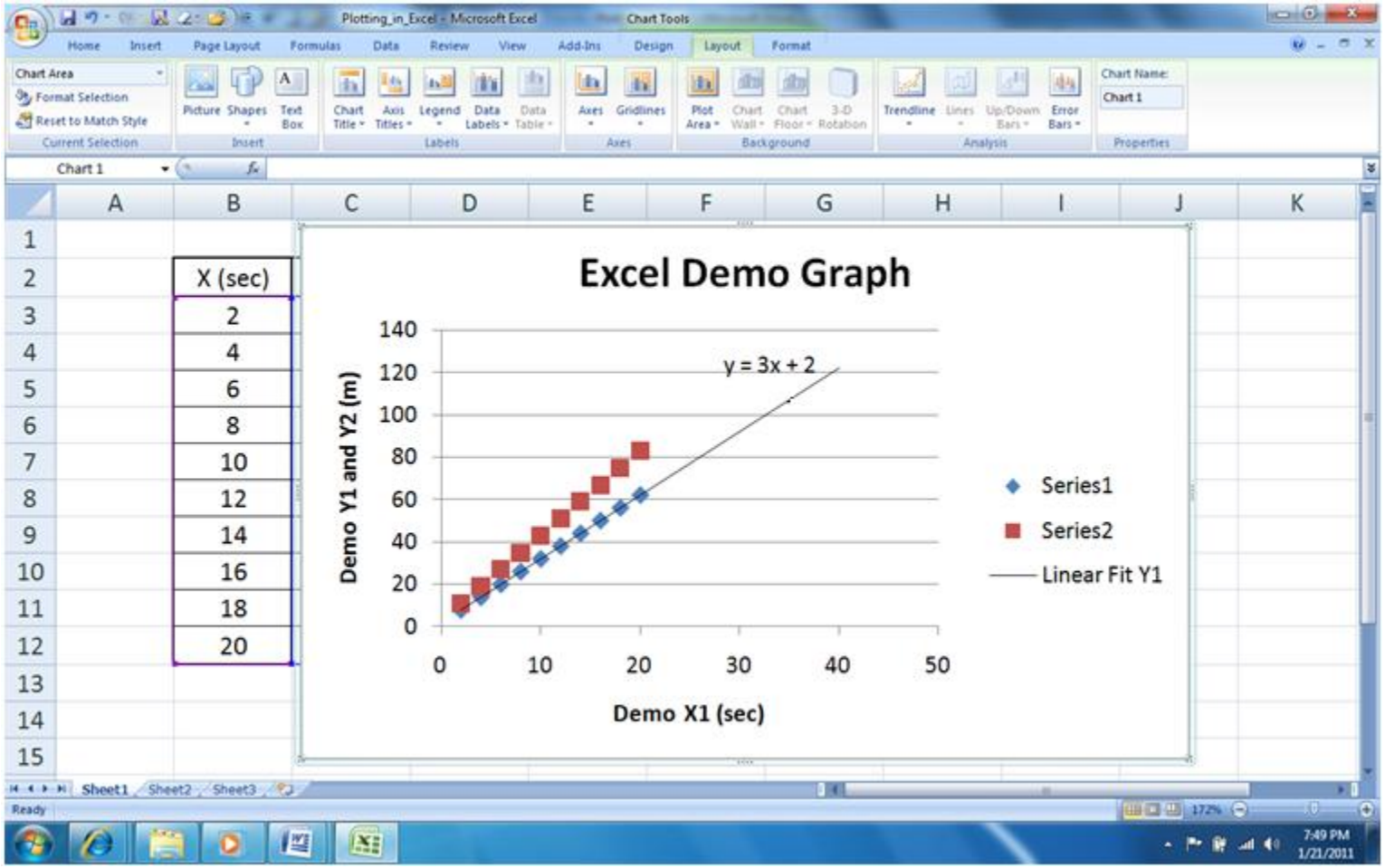
a. Ensure the graph area is selected
b. ***Layout → Axis Titles (under Lables)→ Primary Horizontal Axis Title → Title Below Axis***
c. A text box will appear with ***Axis Title*** written.
d. Type the description of the quantity on the X axis, after deleting what is in the text box. *Ensure you include UNITS.*



7. Y Axis Title:

a. Ensure the graph area is selected
b. ***Layout → Axis Titles (under Lables)→ Primary Vertical Axis Title → Rotated Title***
c. A text box will appear with ***Axis Title*** written.
d. Type the description of the quantity on the Y axis, after deleting what is in the text box. *Ensure you include UNITS.*

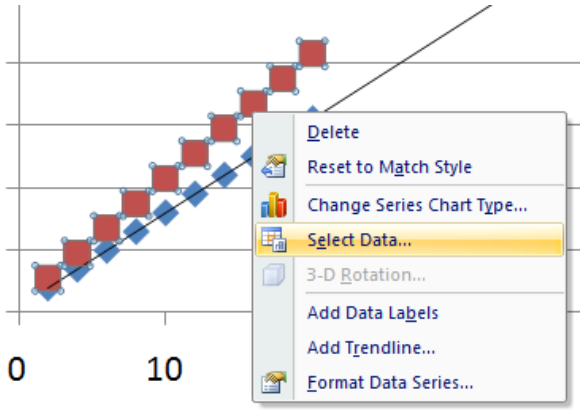
Your Axes titles should look as shown in the example below:

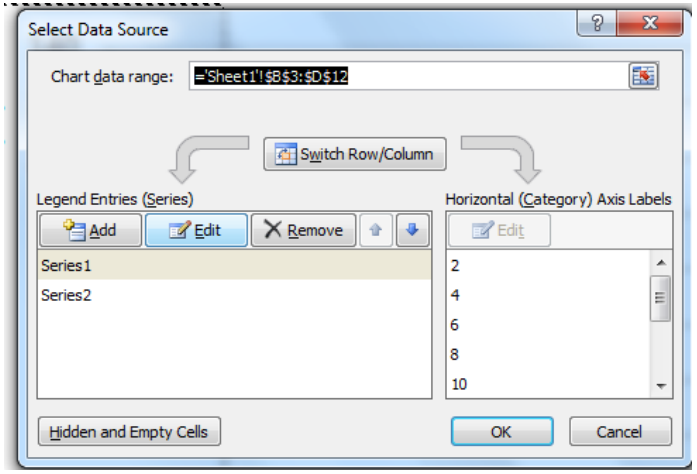


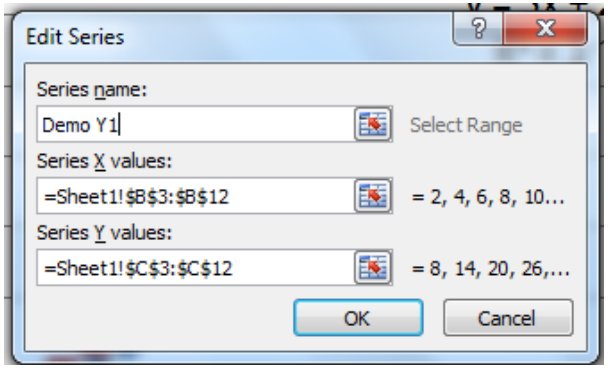
8. Legend:

a. Right Click on the data points on the graph and click on ***Select Data***
b. In the Select Data Source window that pops up, highlight ***Series 1*** and click on ***Edit***.
c. In the ***Edit Series*** Window that pops up, in the ***Series Name:*** section type out an appropriate series name.
d. You can also change the columns or cells selected to plot, by deleting the values in the sections ***Series X values*** and ***Series Y values*** and selecting the ranges you would like to plot.

Repeat this process for each data series in the graph by selecting the data one plot at a time







YOUR FINAL GRAPH SHOULD RESEMBLE THE COMPLETED EXAMPLE BELOW:

Note: Your graphs may not be exactly like this one but all the requirements described must be present.