

SIMPLE GRAPHING AND LINEAR REGRESSIONS USING MICROSOFT EXCEL 2007**CREATING A BASIC GRAPH**

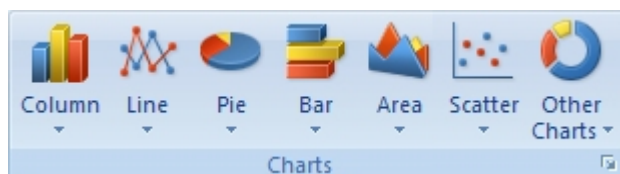
- ❑ Enter your data
 - Open Excel and type in your data into columns, like Table 1.
- ❑ Select your data to graph:
 - Click on the upper left cell with a number. While holding down the left mouse button, drag the cursor to the lower right corner of the cells with numbers. The data is now highlighted.

X	Y
0.1	2.24
0.2	4.52
0.3	6.75
0.4	8.90
0.5	11.94

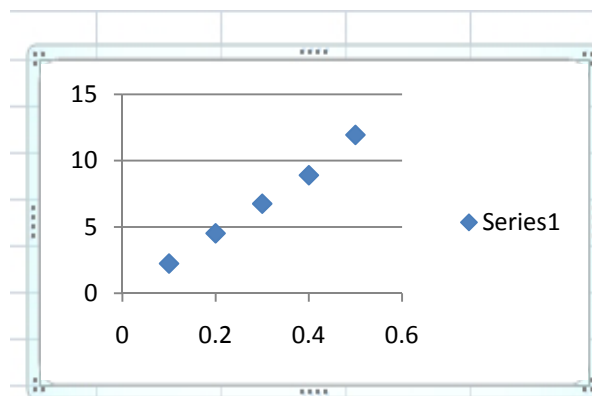
- ❑ Click the Insert tab



- ❑ In the Charts group, select the chart type as **Scatter**. Then select the sub-type as **Scatter with only markers**.



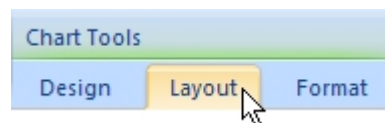
- ❑ Excel will create a basic chart based on the column(s) of data you selected. The thick light blue border around the chart indicates that it is currently active. See example below...your graph should look like this.



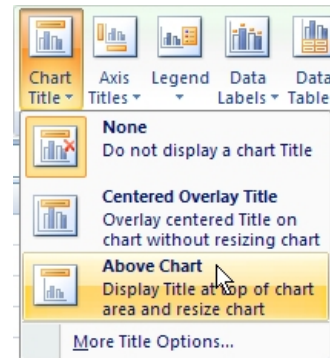
- ❑ Click on the horizontal gridlines to select them. The ends of the gridlines will now have circles. Press the delete key to remove.
- ❑ Repeat this for the legend, which says "Series 1". Select and delete to remove.

FORMATTING YOUR GRAPH

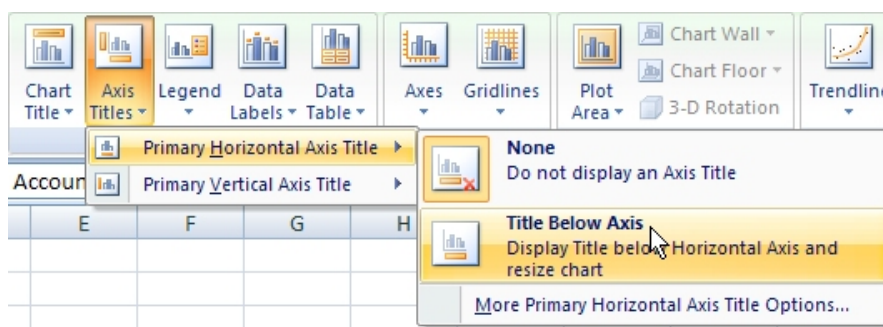
- ❑ With the chart active (blue border showing), A green Chart Tools section will be visible. Click the Layout tab. Locate the Labels section on the ribbon.



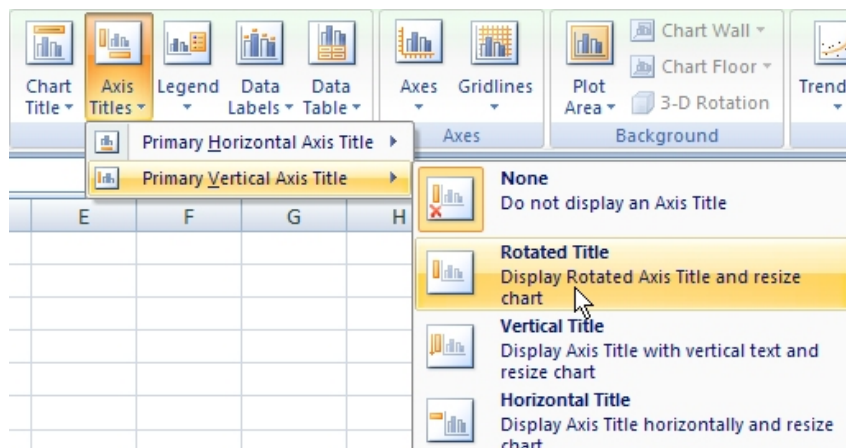
- ❑ Add a title
 - In the Labels section, select the Chart Title tool button and then the Above Chart option as shown below. Click on the title on the graph to type in whatever title you want.



- ❑ Add axis labels
 - Still in the Labels section, select the Axis Titles tool, the Primary Horizontal Axis Title option, and the Title Below Axis option (see below). Excel will add a default horizontal axis title. Click on the axis title to edit it to describe your data.



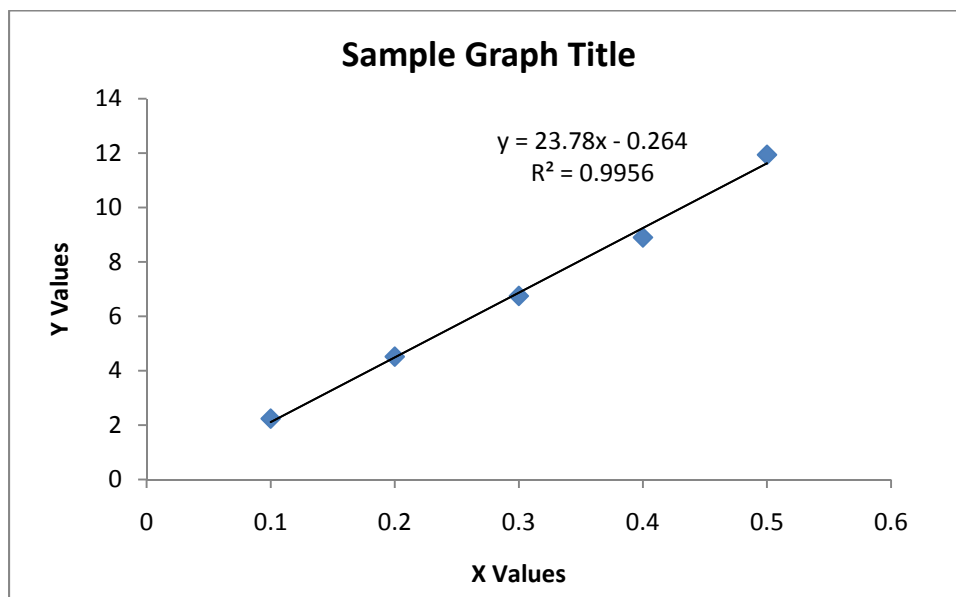
- Finally, select the Axis Titles tool, the Primary Vertical Axis option, and the Rotated Title option (see below). Excel will add a default horizontal axis title. Click on the axis title to edit it to describe your data.



FITTING A LINE TO YOUR DATA: SIMPLE LINEAR REGRESSIONS

Linear regression takes a number of x,y data pairs and tries to fit the data to a linear equation in the form of $y = mx + b$ where y is the variable dependent on the x variable, m is the slope of the line, and b is the y -intercept.

- Make sure the chart you just created is active in the spreadsheet (Does it have the light blue border?).
- Using the right mouse button, click on one of the data points on your graph. In the menu that appears, left click on "Add Trendline...".
- In the Trendline Options box that appears, choose the "Linear" type. Then check the two boxes labeled "Display Equation on chart" and "Display R-squared on chart" on the bottom. Click on the "Close" button.
- The graph should now show a line between your data points, the equation for the line and the R^2 value. The R^2 value tells you how close your data was to actually being linear; values close to 1.000 indicate the line was a good fit to your data.



- Save your file.
- To print only the graph, click on it to make it active then click on the Office Button in the upper left corner. Click on Print, then a Print box will appear. Under "Print what", the "Selected Chart" circle should be selected. Chose your printer and click "Okay".

Screenshots from <http://dsearls.org/courses/CreateExcelChart.htm>

YOUR ASSIGNMENT

- Create a graph of atomic number (x -axis) and atomic mass (y -axis) for elements 1-36. Include a unique title (e.g. Sammy's graph of atomic masses) and axis labels.
- Fit a line to this set of data.
- Print a graph to turn in.
- Do you see a linear relationship between atomic number and atomic mass? Explain your answer.