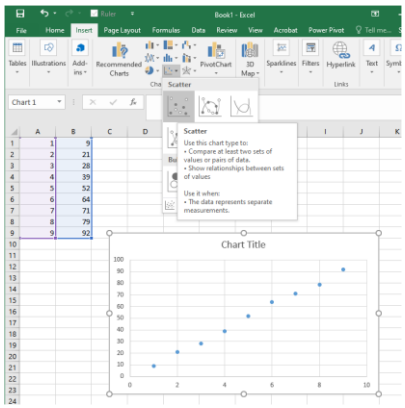
Excel Spreadsheet Basics

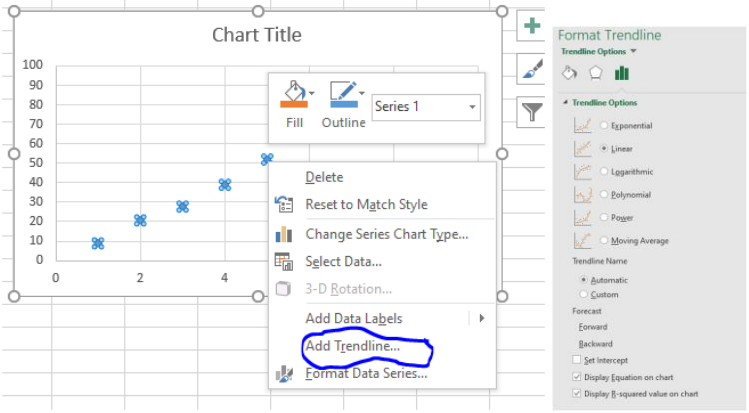
Excel is a powerful tool for many scientific purposes. In this course you will use it for saving and analyzing data. The Excel sheet is divided into cells, with the columns labeled by letters and the rows labeled by numbers.

>Data from Excel, either a group of cells or a plot of data, can easily be copied from Excel and pasted into a Word document for your lab report.

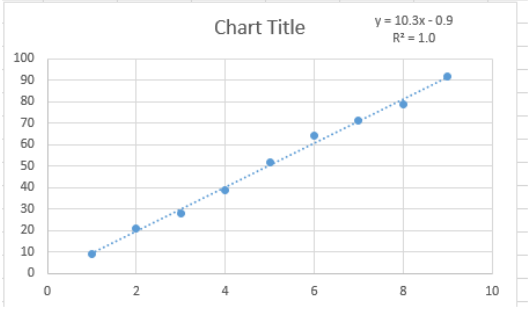
>To enter data for creation of a graph, type the x-axis values into a column in Excel, and the y-axis data into the adjacent column to the right. To create a graph, select both columns of data, click on the Insert tab, and among the chart options select Scatter Plot. For this course, you will always want to choose the Scatter Plot option showing data points NOT connected by straight lines:



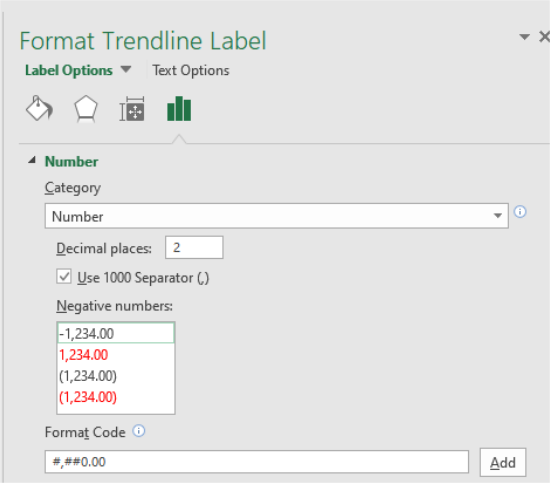
>To have Excel add a Trendline to the data that shows the best-fit slope and intercept of the data, right-click on the data and select the "Add Trendline" option. You will want to select the Linear fit and select the "Display Equation on Chart" and "Display R-squared value on chart" options.

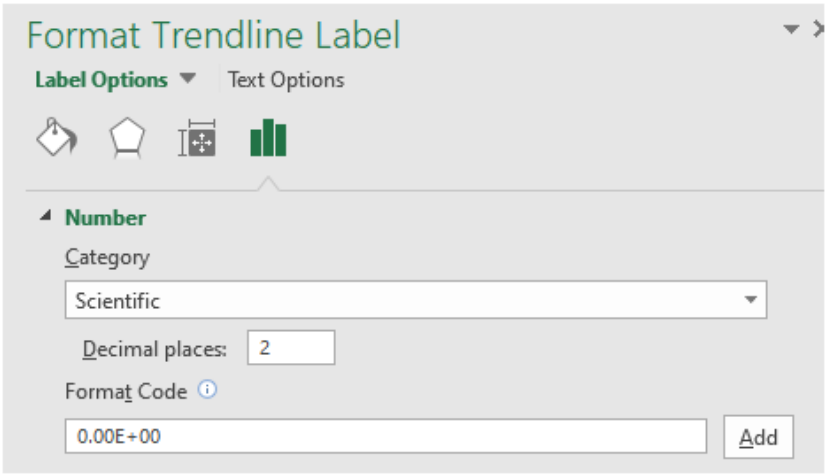


>You can adjust the format of the slope, intercept, and R^2 numbers shown for the trendline. You will want those numbers to be shown with at least three significant digits, unlike this graph:

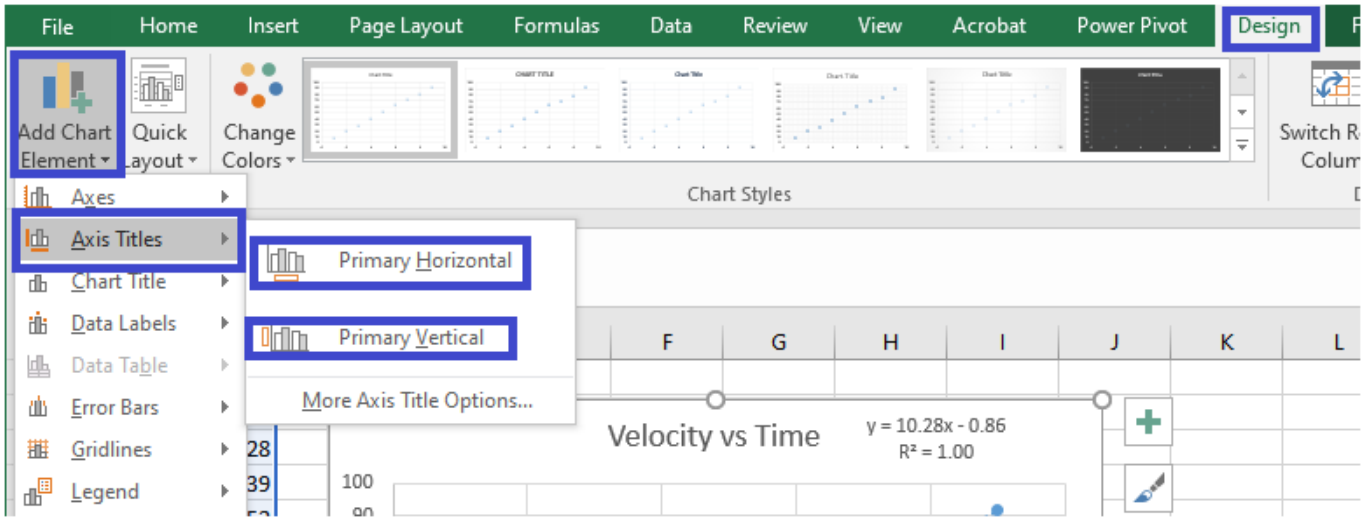


To reformat the numbers, right-click on the trendline label, select the “Format trendline” option, and choose “Number” with 2 or more digits (to the right of the decimal points) or choose “Scientific” with 2 or more digits.

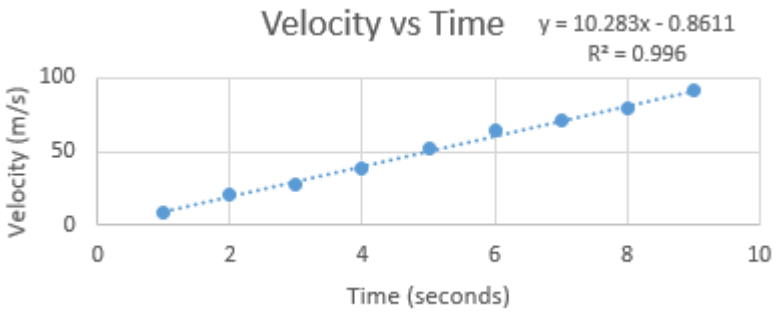




>You will also want to put an appropriate Chart Title on the graph and labels on the x- and y-axes. You can edit the Chart Title by just clicking on it and typing in the title you want. To label the x and y axes, go to the Design tab, click on “Add Chart Element”, and select the “Axis Titles” option, and then successively enter the Horizontal and Vertical axis titles.



>A well-formatted graph will then look something like this:



Points to note:
>On a Velocity vs Time graph, the Time is on the x-axis.
>The axis labels should show the units of the measured quantities.
>Try to adjust the range plotted on the x- and y-axes so the data nearly fill the horizontal and vertical ranges. To adjust the upper and lower limits of and axis, right-click on the axis numbers, select “Format Axis”, and you will then be able to enter the desired upper and lower limits for the plot range.