# Microsoft Word® for Report-Writing
(2016 Version)

Microsoft Word® is a versatile, widely-used tool for producing presentation-quality documents. Most students are well-acquainted with the program for generating text documents. In physical science and chemistry, however, special symbols, notations, and formats, as well as mathematical equations, are commonly used, and the student may not be as familiar with the features in Word® for incorporating these. The purpose of this lesson is to become acquainted with these special features. Let's look at them!

1. **Subscripting and Superscripting**

   Short-hand symbols are often used to represent physical substances or concepts.

   The chemical formula for water, H_2O, is well-known. To write the formula, type H2O, highlight the "2" with the arrow/mouse, and click on the icon $\boxed{x_2}$ in the formatting toolbar.
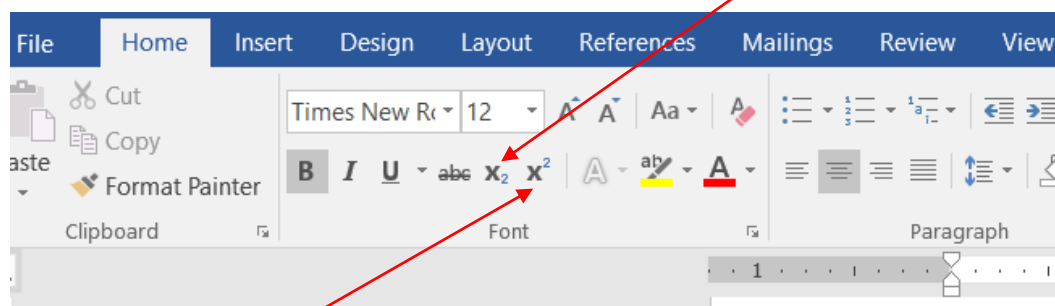

   Powers of x (or some other variable), such as x^2 or x^3 are frequently encountered. To write such powers, type x2 or x3, highlight the "2" or "3" with the arrow key or mouse, and click on the icon $\boxed{x^2}$ in the formatting toolbar.

2. Symbols

Symbols and special characters are commonly encountered in equation-writing. To retrieve a symbol, first click on **INSERT** in the standard toolbar. Then click on **SYMBOL** on the menu bar, and a table of symbols will appear. Click on the desired symbol and then click on **INSERT** and close the window. Common symbols encountered are:

º   used for expressing temperature (25ºC)
π   "pi"
•   can be used for multiplication
Δ   delta, indicates change (ΔT indicates change in temperature)
÷   division
θ   theta, for angle (θ = 90º)
λ   lambda (used for wavelength)
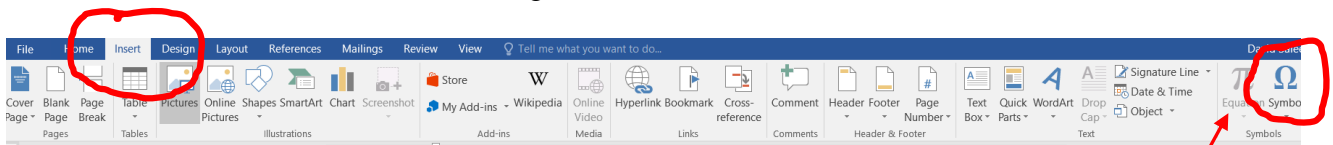
3. Writing Equations

Some equations may be typed using alphanumeric characters and symbols (No. 2 above), but other equations are best typed using the equation editor feature, whose icon $\boxed{\pi}$ is found in the formatting toolbar.

4. Page Numbering

Word® allows the option of numbering pages in a variety of formats. To number pages, click on **Insert** in the top toolbar, click on **Page Number** tab, and select your preference for page formatting from the drop-down menu.
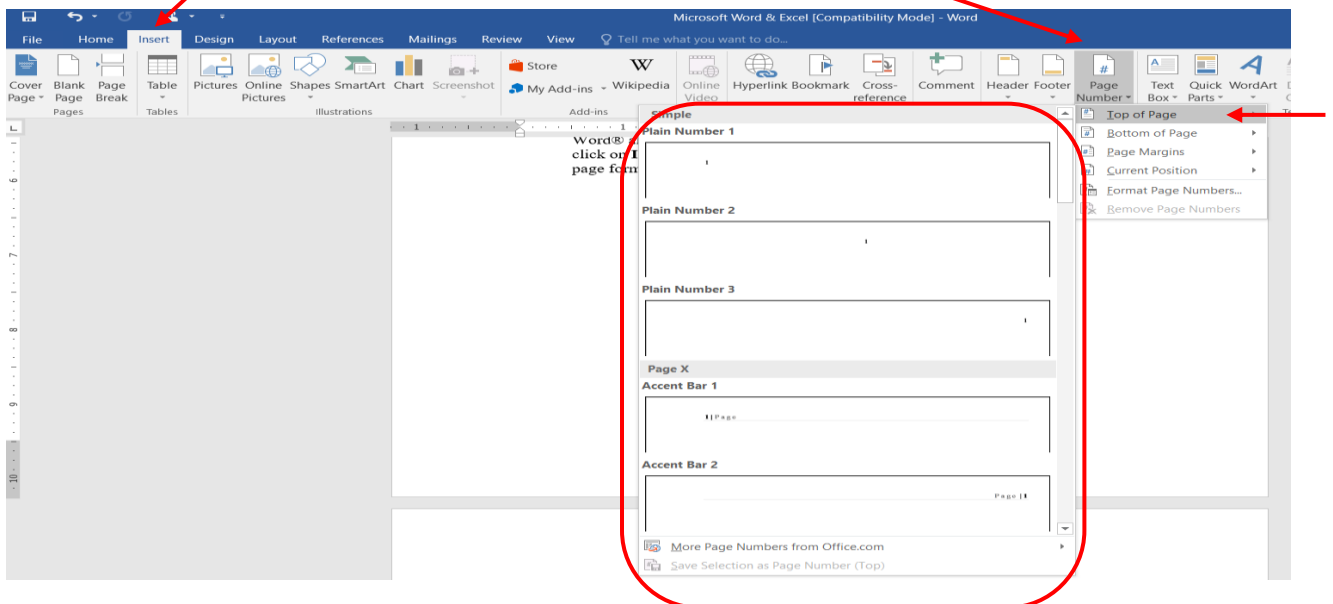
5. Creating Data Tables

For most lab reports you will be required to present one or more tables of data or numerical values that you collected or calculated during an experiment. Several features in Word® allow you to create tables which are professional in appearance and can be customized to meet your own particular needs and preferences.

Creating a Table

To create a table, click on **INSERT** and then click on the **TABLE** tab. Click on **INSERT TABLE** and select the number of rows and columns you plan to create. When selecting a number, remember that you need to reserve two rows for the table number/title and column headings alone.
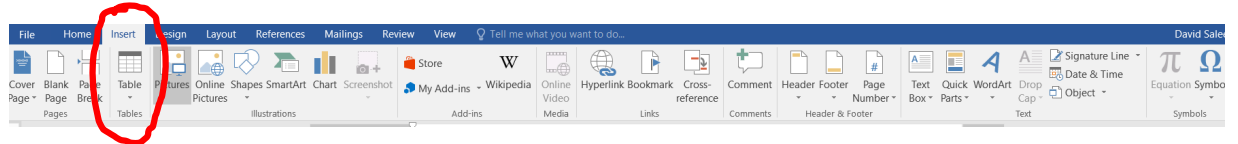

Splitting and Merging Cells

After you have created your "skeleton" table, you can split a cell by right clicking in the cell, selecting "Split Cells" from the pop-down menu, and choosing the number of rows and columns.
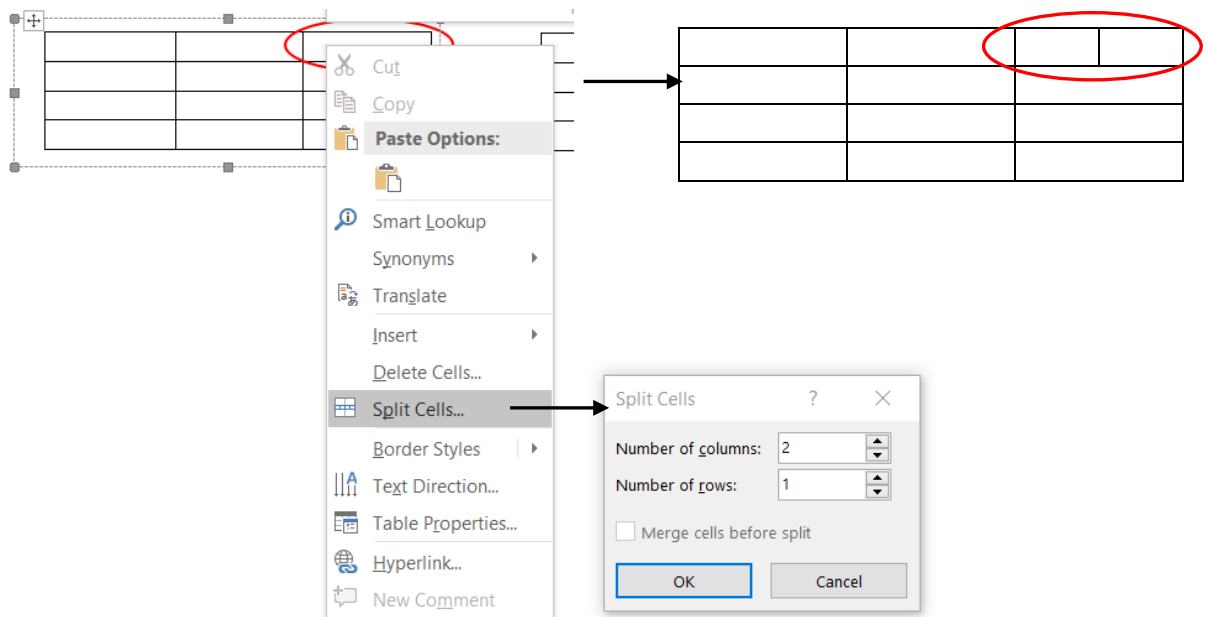
You can also combine or merge cells into one by highlighting all those cells (across a row or down a column) that you want to merge, right clicking on the highlighted area, and clicking on "Merge Cells" from the pop-down menu.
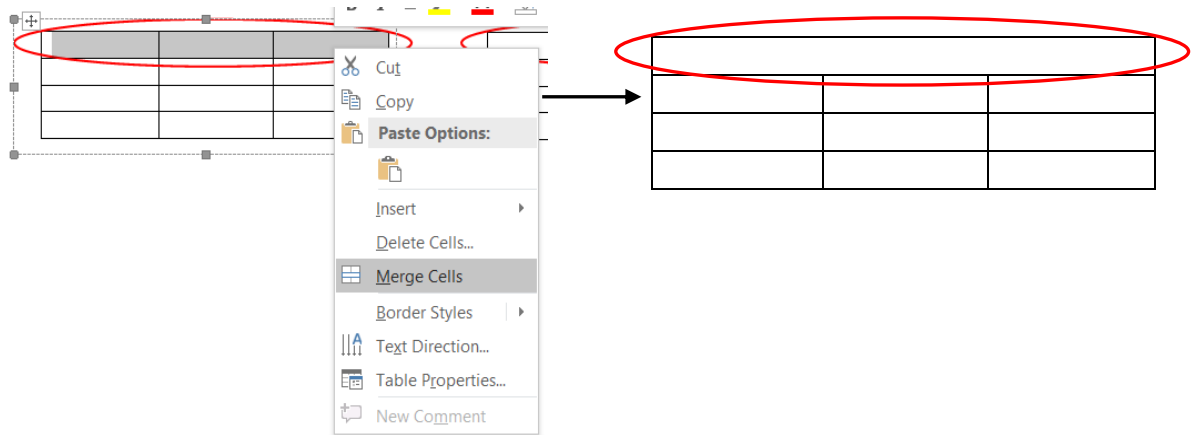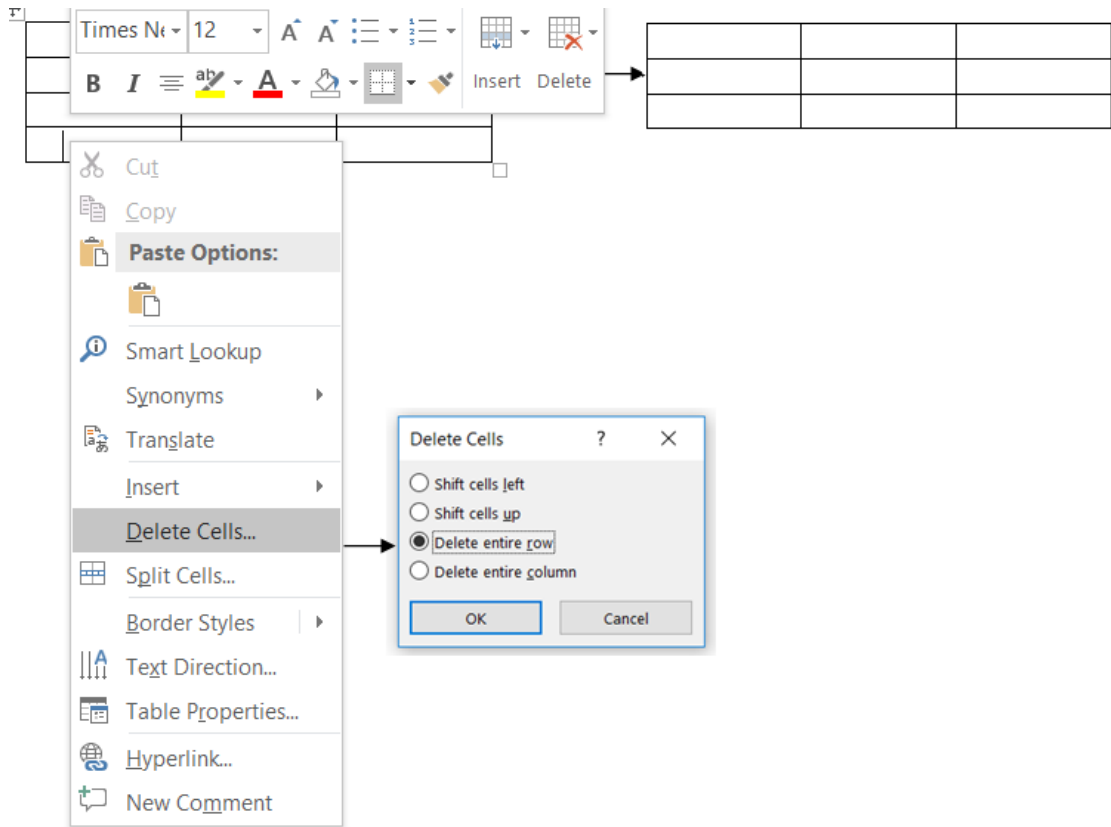
Adding and Deleting Rows and Columns

If you later see the need to add rows or columns, right click on a cell and select "Insert" from the pop-down menu and click on your option.
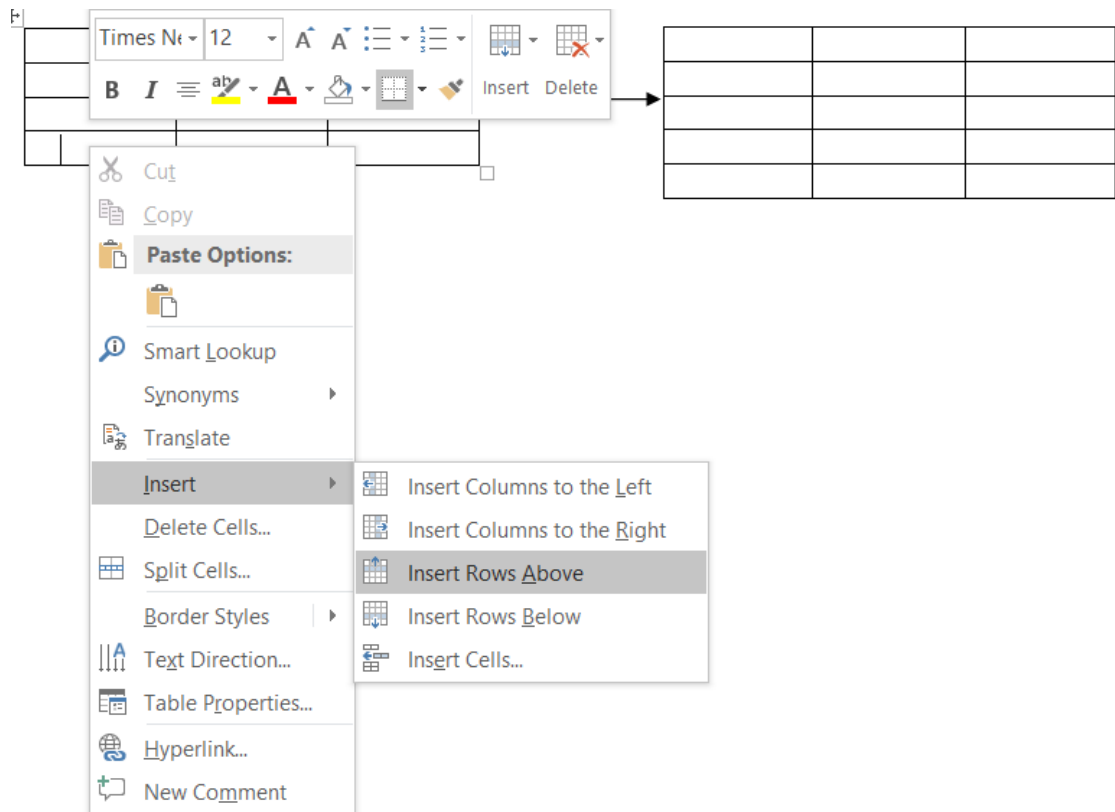
You may also delete rows or columns by right clicking in a cell in the row or column and selecting "Delete" from the pop-down menu.

Formatting Tables

Once you have created your table with the cells where you want them, and after you have entered your text and numerical values into the table, you can format your table for a variety of appearances. You can select your font size, style, and color just like you normally do when typing text in Word®, you can shade rows and/or columns perhaps to highlight a set of values, you can give your table color, and you can format your values (e.g., number of decimal places, scientific or general notation, etc.)

Note: Microsoft Excel® may also be used for creating tables and may be preferred if graphs or charts are to be created.

# Microsoft Excel® for Creating Charts (Graphs)
(2016 Version)

1. Click on **START** (lower left-hand corner).
2. Go to **ALL PROGRAMS** and then to **Microsoft Office**.
3. Click on **Microsoft Excel** (A spreadsheet appears.)
4. Enter your data sets in columns. Note: If your purpose is only to create a graph and you are not interested in saving the table, always enter your x-axis data as the first column and the y-axis data in the next column(s). Determine if you need to add (0,0) value at the beginning, depending on the nature of the experiment. If you add (0,0), your graph will pass the origin.
5. Highlight the **x** column and the **y** column(s) you wish to graph.
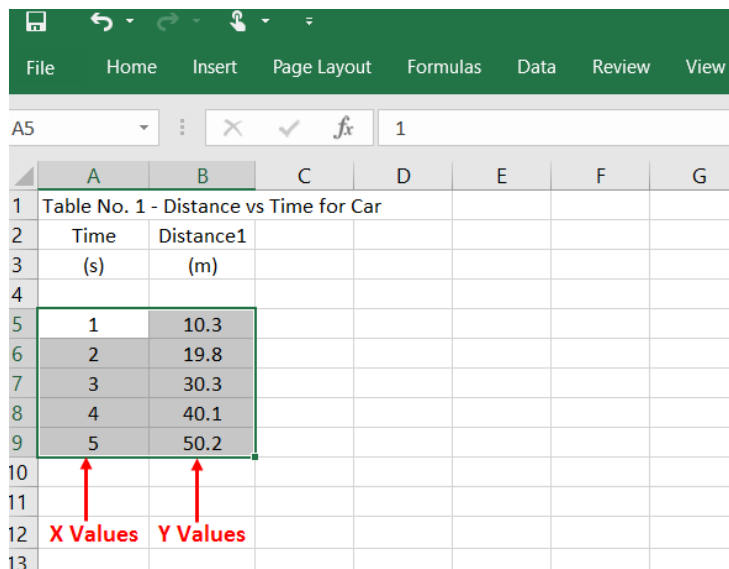

6. Click on the **Insert** tab in the top toolbar.
7. Choose the **Chart Type** (usually XY Scatter) directly beneath and then the **Subtype**.
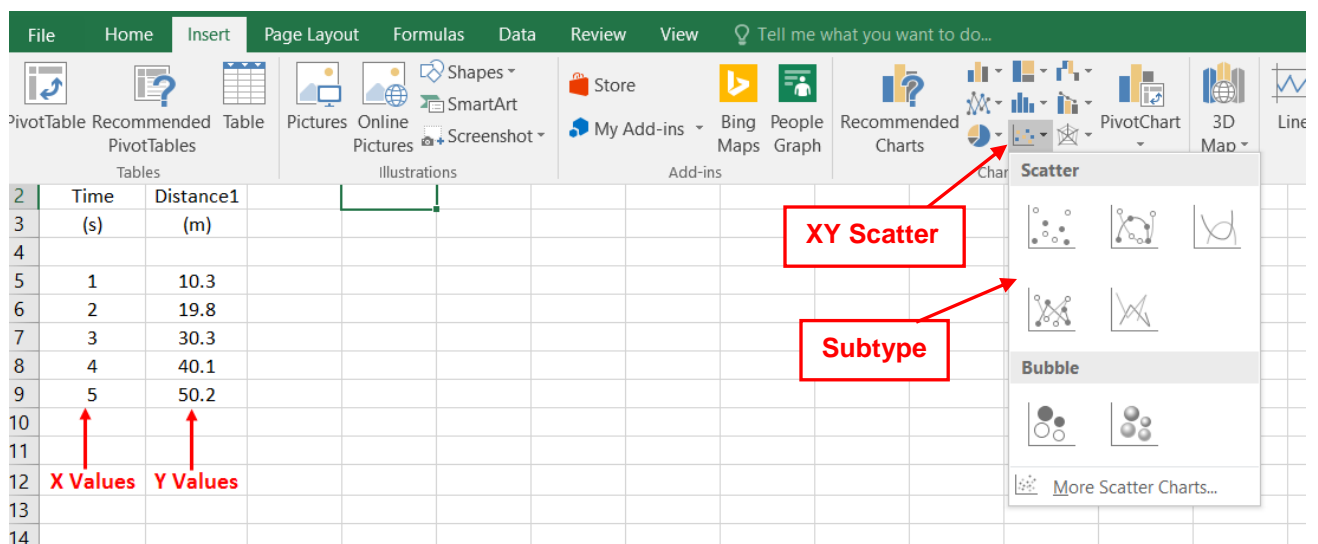
The skeletal chart will overlay the spreadsheet as shown below.
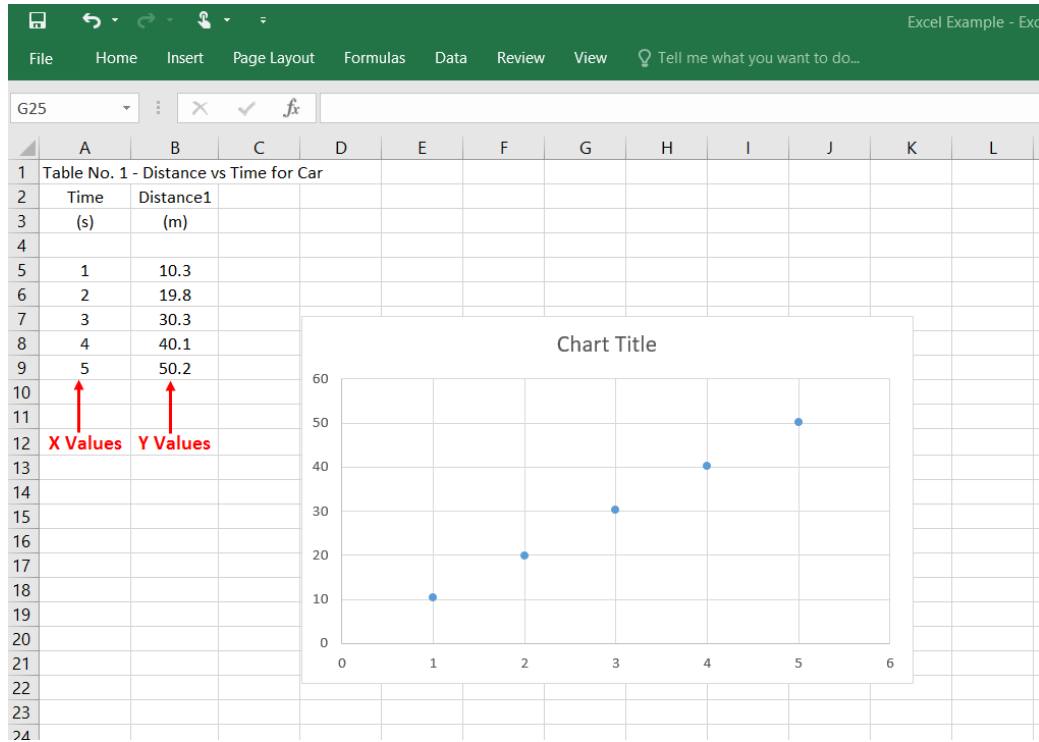
8. Click on an open space within the chart. A box with a + sign will appear to the right of the chart as shown below. Click on the + sign, and a menu will pop up. Check the **Axis Titles** box. (Usually, the **Axes**, **Chart Title** and **Gridlines** boxes are checked by default.)
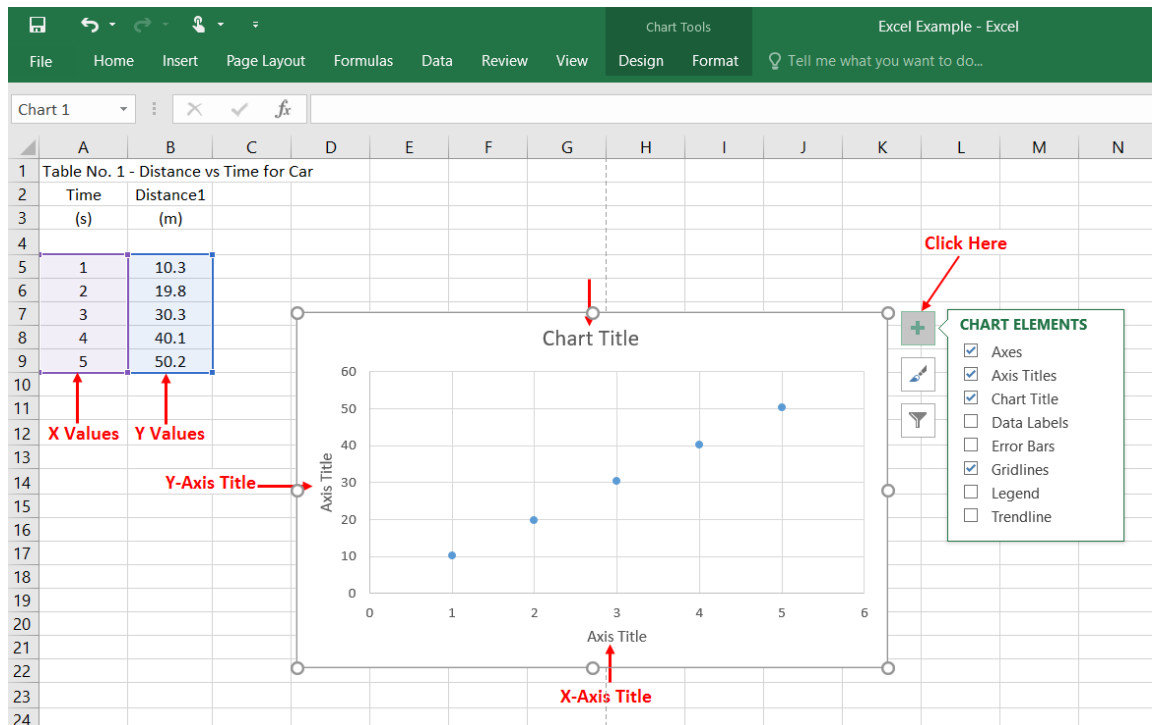
9. Click in the **Chart Title** field and type the graph no. and title for your chart.
10. Click in the **Axis Title** fields and type your axis titles <u>with the appropriate units</u>.
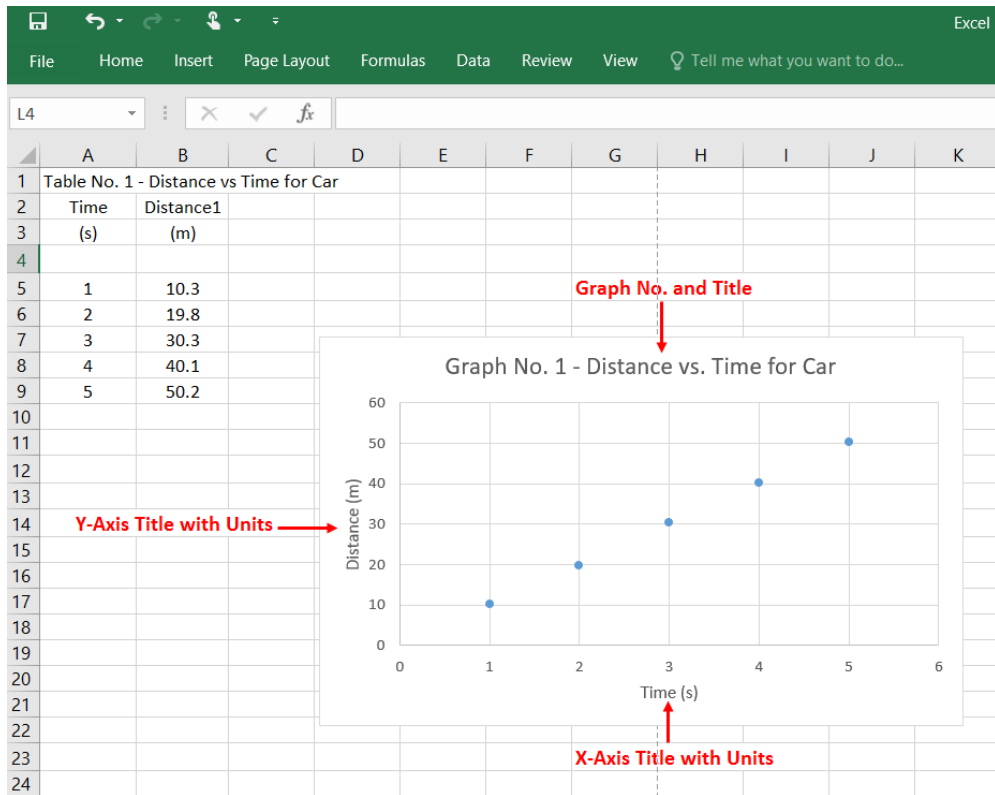
Note: At times the + box to the right of the chart may not appear when clicking on the chart. When this is the case, another approach is to click on the **Design** tab in the toolbar at the top, click on **Add Chart Element**, and select your option (such as **Axis Titles**) from the drop-down menu, and then make your selection as prompted by the arrow to the right.


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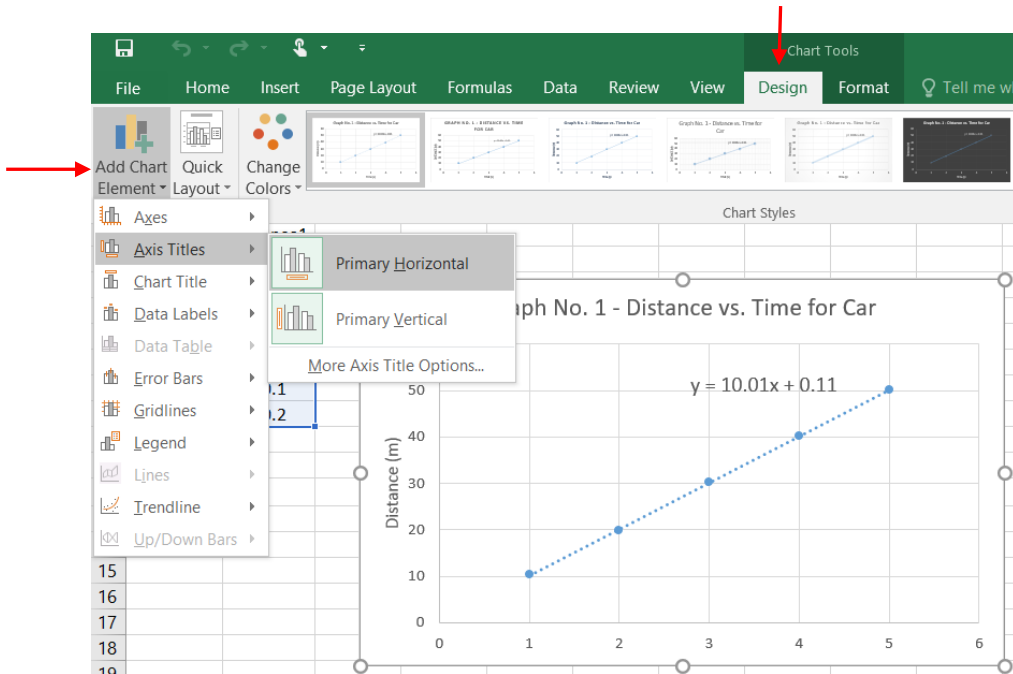
11. If your data points appear to form a straight line (linear) as opposed to a curve (nonlinear), you can perform a linear regression analysis (also called a straight line fit or a trendline).

To do a straight line fit:
   a) Place the cursor arrow on the line and right click. You will see the line "highlight."
   b) A menu box will pop up. Click on **Add Trendline**.
   c) Under **Options** in the pop-down menu to the right, select **Linear**.
   d) Check the box next to **Display Equation on Chart** and click on **Close**.

An equation of the form y = **m**x + **b** will appear next to the line. **m** is the slope of the line, and **b** is the y-intercept.


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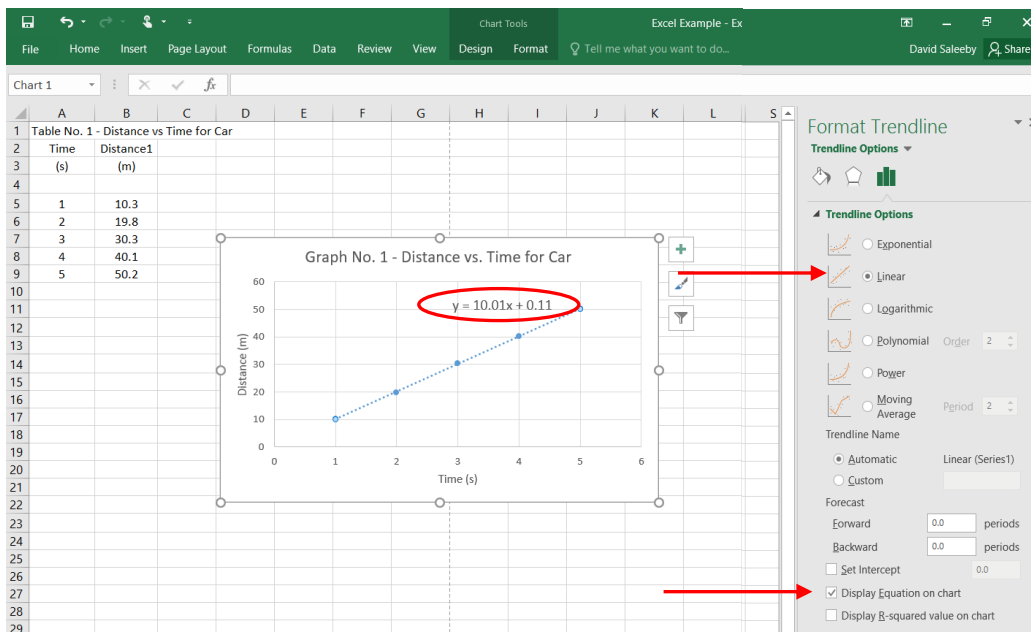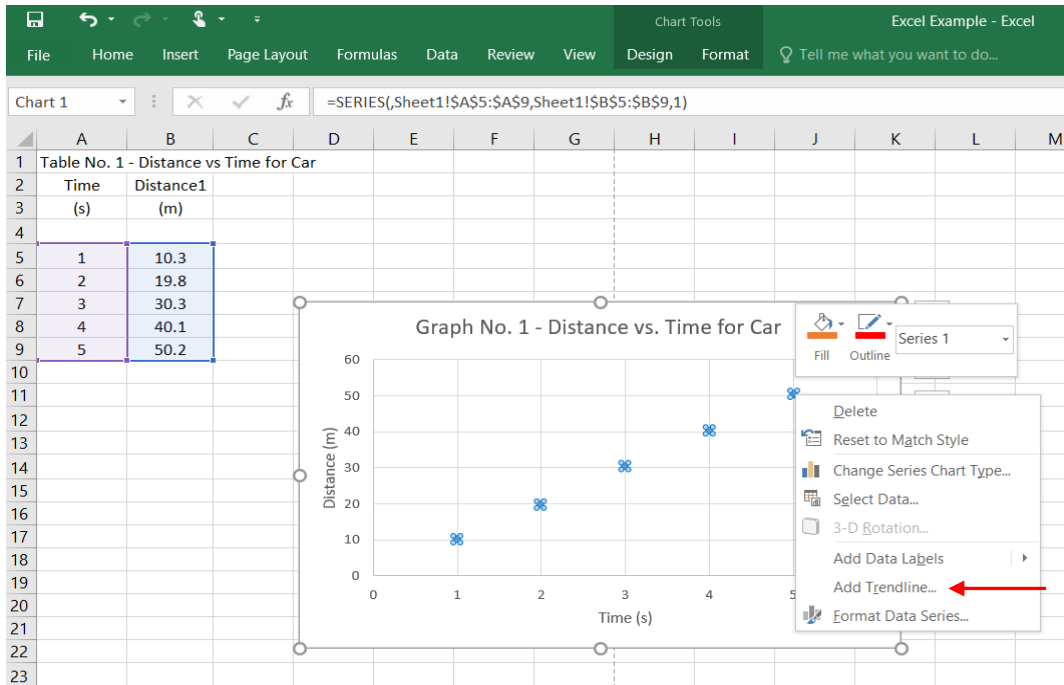
12. Transferring the graph to a Word® document.

Option 1:
The graph may be copied and pasted into a Word® document with a portrait orientation. Simply right click on the graph, select copy in the pop-up menu, and paste into the Word® document.

Option 2:
To display your graph separately on an entire page with a landscape orientation, right click in the blank area on the right side of your graph, select **Move Chart** from the pop-down menu, and select **New Sheet** on the box that appears, and click **OK**. Your graph will appear full-screen on a chart tab at the bottom.
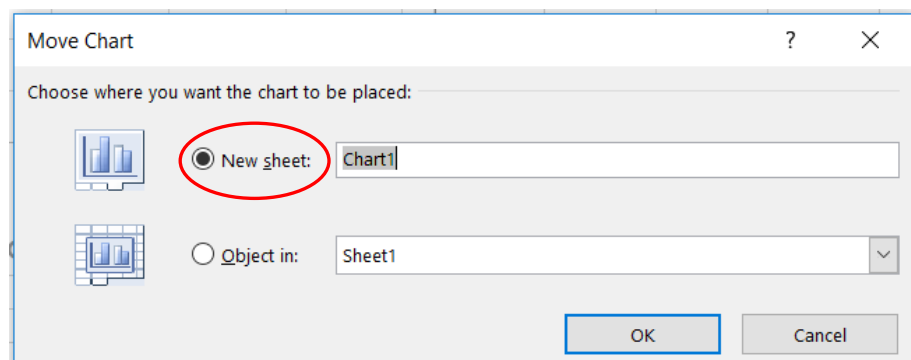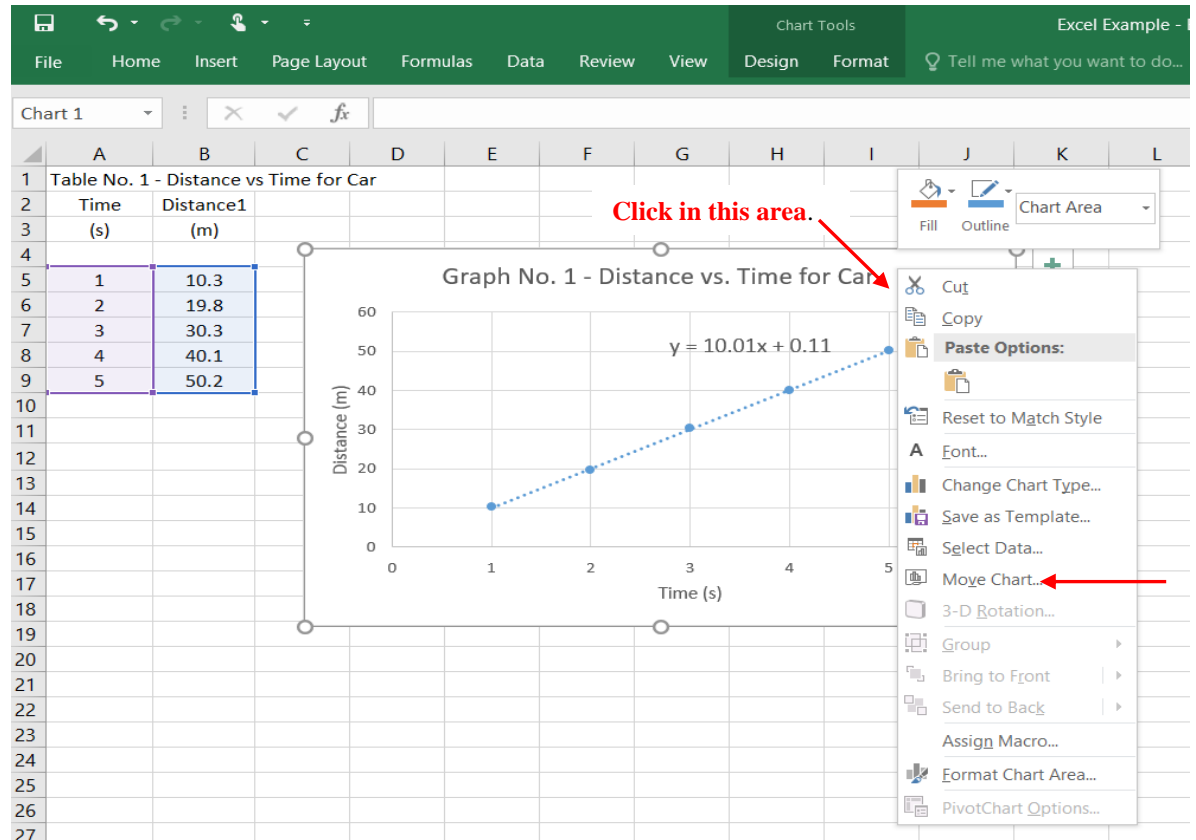
13. If you have two or more sets (columns) of y-values, highlight all those values together with the x-values and proceed as before.
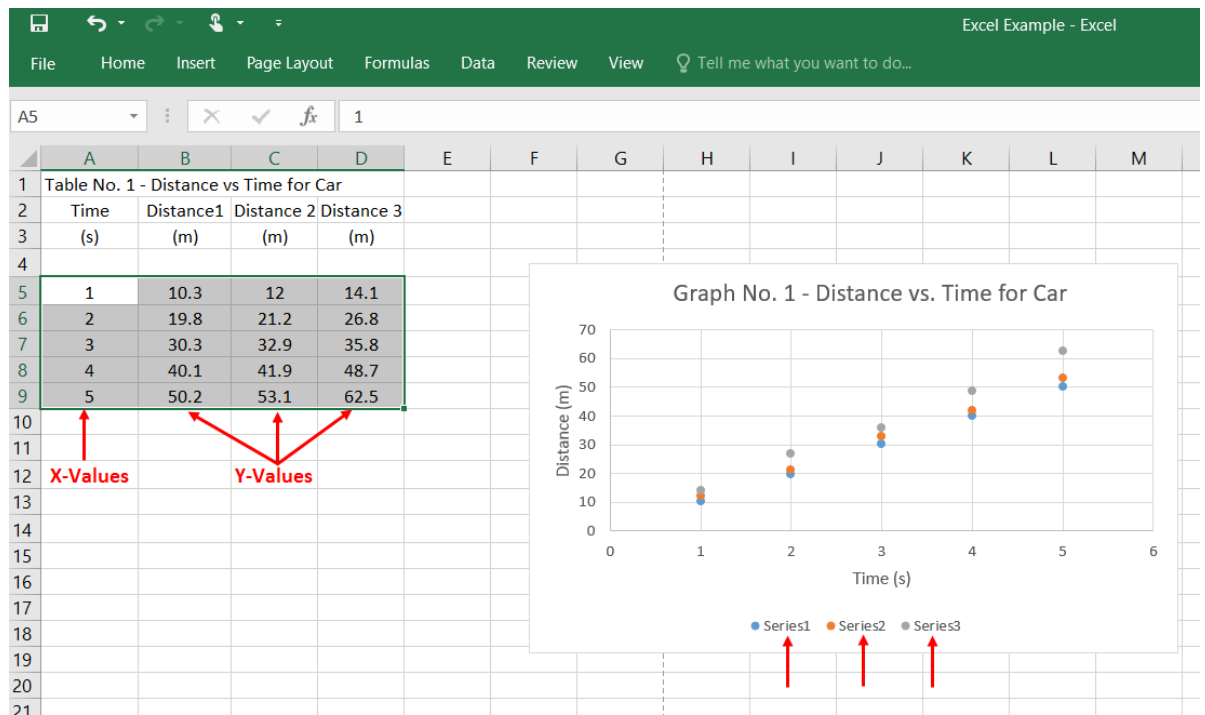

A plot will appear for each set of y-values on the same graph, and the points for the different sets of y-values will be distinguished either by different colors or different marker shapes. A *legend* will appear either below or to the right of the plot as **Series1**, **Series2**, **Series3**, etc. The purpose of the legend is to allow identification of the various plots on the graph.

To identify the various plots, right-click on the legend and click on **Select Data** on the pop-up menu that appears. A dialog box will appear, as shown below. To identify the first data set, click on **Series1**, then click on **Edit**, type the series name and **OK**. Repeat for Series2, Series3, etc. until all data sets have been identified.
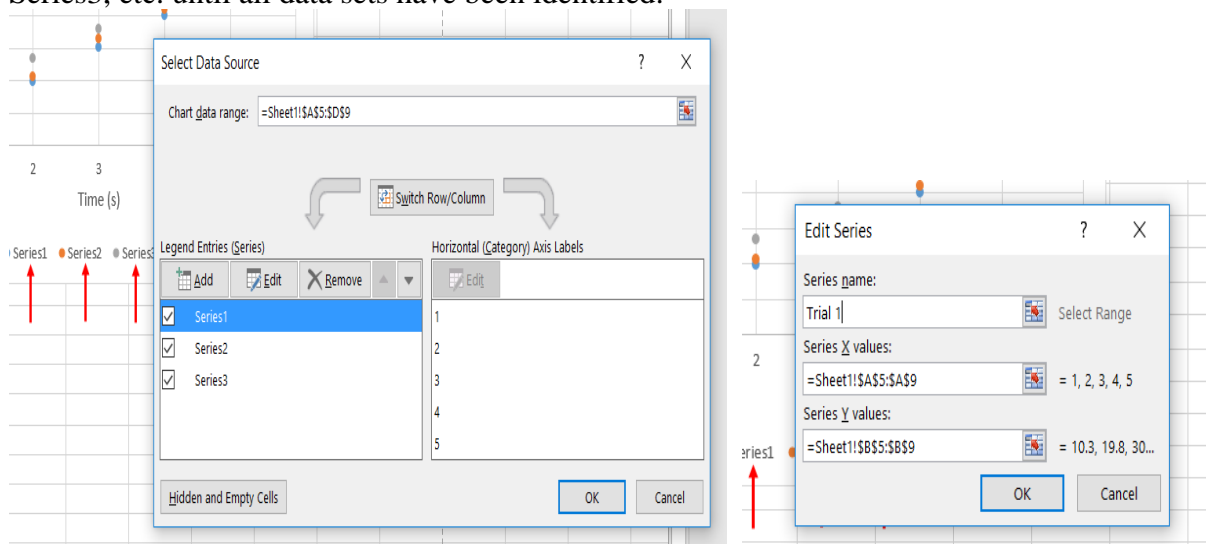
Note also that for multiple data sets, the trendline function must be performed for each data set in order to obtain the best fit line and equation for the line.
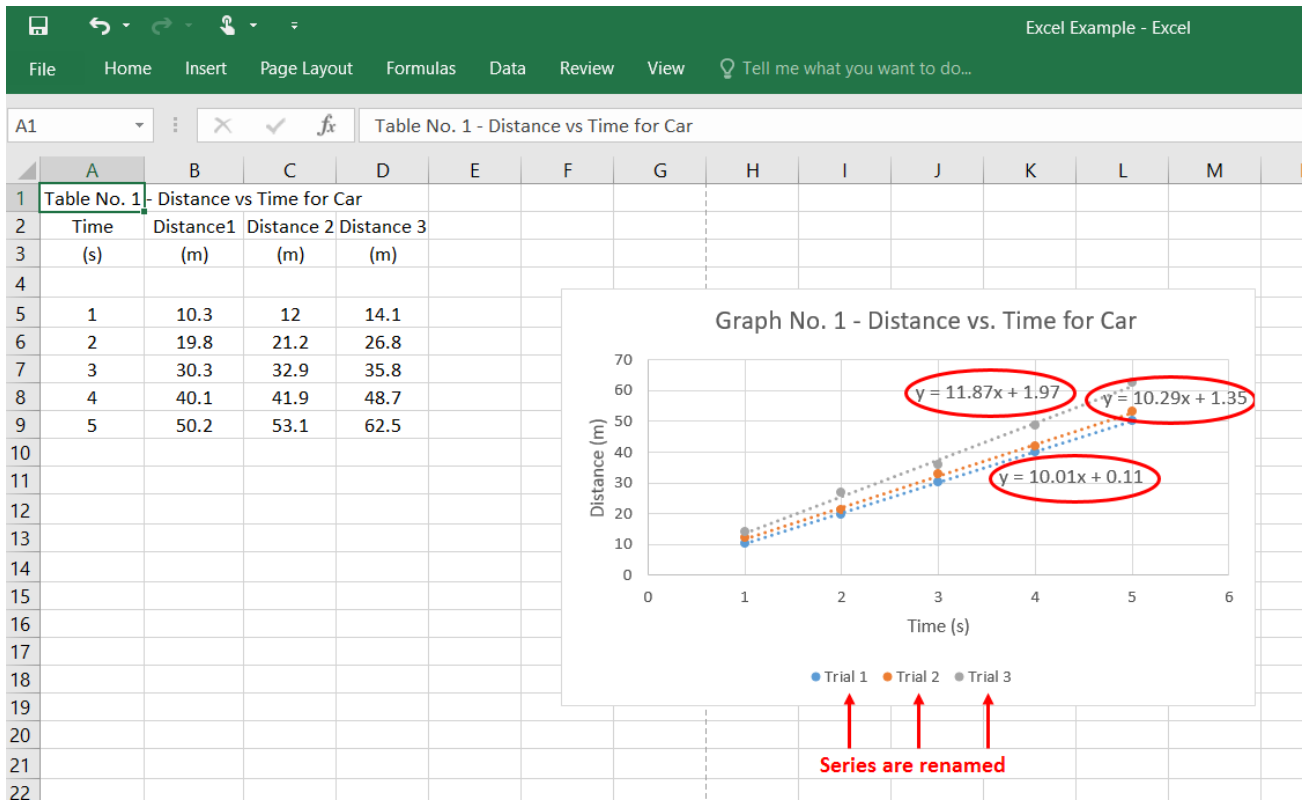
Note: There are many options available for formatting your charts (font styles and sizes, colors, shading, etc.). You are encouraged to experiment with as many of these as possible.