

## MICROSOFT EXCEL (graphing)

1. Get into the program (Excel)
2. Type in the following column headings into the corresponding cells:
  - A1 → [Iodate ion]
  - B1 → +/- [error]
  - C1 → average time
  - D1 → +/-  $\delta$
3. Enter the values from your experimental data table into the appropriate columns.

*Now you are ready to graph your data.*

4. Hold the control button (ctrl) and highlight the [Iodate ion] data. Keep holding down the control button and now highlight the time data. Both columns should be highlighted at the same time.
5. Move the mouse cursor over to the chart wizard icon and left click on it.
6. Choose the XY (scatter) graph, choose the graph with points and a smooth curve and click on the <next> button.
7. Enter the:
  - a. Chart title
  - b. X axis label and units
  - c. Y axis label and units
8. Hit the <next> button.
9. Save your graph as a new sheet. Hit the <finish> button.

*To put error bars on your graph ...*

10. Move the cursor to a data point on your graph and double left click on the mouse.
11. Click on the X ERROR BARS tab.
  - a. Click on the "both display" choice
  - b. Click on the custom option
  - c. Click on the icon appearing to the far right of the +
  - d. Click and drag down on the +/- [error] data and re-click on the same icon (now appearing in a small window on the upper section of your screen)
  - e. Click on the icon appearing to the far right of the -
  - f. Click and drag down on the +/- [error] data and re-click on the same icon (now appearing in a small window on the upper section of your screen)
12. Click on the Y ERROR BARS tab and repeat step 11 using the standard deviation data for the errors.
13. When finished, click on the <OK> button.

*Getting a modified graph.*

14. Move the cursor to a data point on your graph and right single click on the mouse.
15. click on the add trendline ...
16. click on the OPTIONS tab.
  - a. Click on “display equation” on chart option
  - b. Click on “display R-squared value” on chart option
17. Click back to the TYPE tab.
18. You may choose any trend or regression type you want until you get a regression factor of 0.998 (ideally).
19. click on the <OK> button.

Note: Each time you want to try a new trend, you must move the cursor to your old trend line and right click on that trend line. Click on the clear option. This will get rid of that trend line and allow you to plot a new one.

Note: Don't just rely on the regression factor to choose the trend line. Your equation must make sense and support your data.

Note: To print any graph, the graph must be highlighted. To do this, move the cursor to the edge of the graph and left click on the mouse. Your graph should be highlighted and you may now choose the print option.

Note: To print the data table(s), highlight the data table (headings and data) by click and dragging over the entire table. Now go ahead and choose the print option.