IA Topic

* Research Question:
  + To what extent does the pH of a buffer solution vary with temperature?
* Real life purpose:
  + In the soap making industry, buffer solutions are used to create soap with a pH of 5.5, which is the pH of our skin. By making soap a pH of 5.5 the companies are making sure that our skin won’t become damaged. By conducting this experiment, many companies can find out how a temperature affects the pH, and then determine how it affects the Ka value of the acid, thereby determining the strength of the acid in solution.
* Materials:
  + 50 mL Acetic Acid (0.5 M)
  + 50 mL Sodium Acetate Solution (0.5 M)
  + 50 mL beakers (3)
  + 150 mL Beakers (2)
  + pH Probe (1)
  + Temperature Probe (1)
  + Hot Plate (1)
* Procedure:

1. Measure the initial pH at room temperature of the acid solution
2. Create the Buffer solution by mixing 10mL of the Acid + Conjugate Base
3. Stir the solution vigorously for some time
4. Measure the pH of the buffer solution
5. Repeat above process, but heat the two solutions to 50O C, and prepare buffer solution by mixing the two solutions and measuring the resulting pH
6. Repeat this for multiple trails