Colorimetry: Determination of Copper Ion in Solution

You will be preparing 5 copper solutions of different concentrations, plus the unknown. By plotting a graph of absorbances vrs concentrations for the 5 solutions, the concentration of the unknown can be determined.

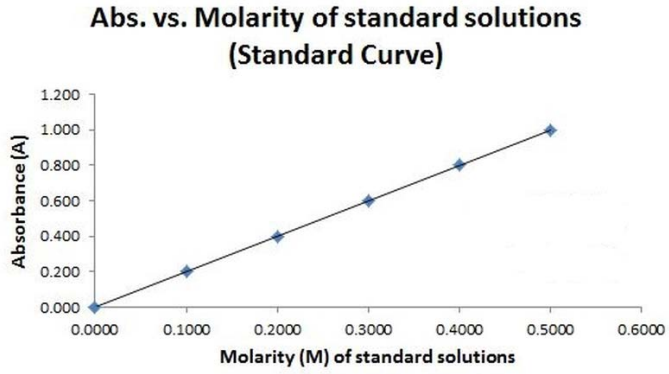
Calculations (some good revision calculations on dilutions from CHEM I)

1. This is just a simple molarity calculation: 0.30 g of copper (II) sulfate dissolved in 30.0 mL water. Remember, copper(II) sulfate in a pentahydrate when calculating its molar mass.

2. Use $M_1V_1 = M_2V_2$ to calculate the 5 ml diluted copper solution concentrations in tubes 1-5. When the ammonia (20 mL) is added to each, the solutions are again diluted (5 to 25mL total). So you will need to do a second dilution calculation for each tube. These will be the concentrations plotted in Q3.

3. Use graph paper to plot absorbance (vertical axis) vrs molarity of Cu solutions (horizontal axis).

4. From the absorbance of the unknown Cu solution, find its concentration



For example, if the unknown Abs is 0.80, the concentration would be 0.40 M in the above graph

5. Use dilution factors to find the molarity of the original (undiluted) Cu unknown solution.