Chemistry Lab   Behavior of Copper in a Solution of Silver Nitrate

PROBLEM In this experiment, you will observe the reaction of a weighed quantity of copper wire with a solution of silver nitrate. You will compare
the moles of copper reacted with the moles of silver formed and write a balanced equation representing this reaction.

MATERIALS/EQUIPMENT: Copper Wire, balance, 50 ml beaker, silver nitrate solution, stirring rod, distilled water, & oven

PROCEDURE
Day One-
1. Cut a piece of copper wire 20 cm long. Mass the wire to the nearest .01 grams. Coil the wire around a pencil. Remove coil from pencil and fashion a hook at the end of the wire.
2. Label and mass a 50 cm^3 beaker.
3. Add 40 cm^3 of silver nitrate solution to the 50 cm^3 labeled beaker.
4. Suspend the coil of copper into the silver nitrate solution.
5. Let it stand over night.
Day Two-
1. Observe the beaker in detail the next day. Write down your observations.
2. Shake the silver crystals off the coil. Use a wash bottle to wash the silver crystals off. Dry the copper coil and weigh it.
3. Carefully pour (decant) the liquid off the silver. Add 20 cm^3 of distilled water, stir, decant. Repeat a total of 4 times.
4. Place the silver and beaker away to dry overnight
Day Three-
1. Weigh the dry beaker and silver. DO NOT THROW SILVER AWAY.

Data table   ____   mass of Cu wire day one
                     ____   mass of the dry beaker
                     ____   mass of Cu wire day two
                     ____   mass of beaker and dry Ag
                     ____   mass of dry silver

CALCULATIONS
1. Calculate the number of moles of Cu that reacted and entered the solution.
2. Calculate the number of moles of Ag formed.
3. Determine the ratio, mole Ag/ mole Cu.
4. Determine and write a balanced equation for this reaction. (Single displacement, **Copper(II)Nitrate**)
5. What is the ratio, moles Ag/moles Cu according to the balanced equation.
6. Using the mass of copper metal reacted, calculate the mass of silver that should (theoretically) have formed.
Four step problem.
7. Calculate the % yield.
8. Calculate the % error.