

Name: \_\_\_\_\_

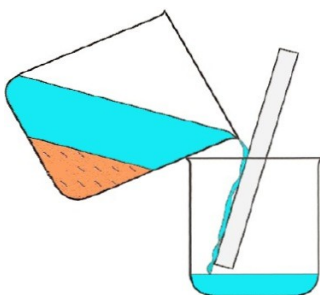
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## Stoichiometry Lab – Iron and Copper(II) Sulfate

**Objective:** To determine if the reaction between copper(II) sulfate and iron yields the iron(II) or iron(III) ion.

### Procedure:

1. Mass out, to the nearest hundredth **approximately** 5.00 g of copper(II) sulfate and 1.00 g of iron in two separate weighing dishes.
2. Add the copper(II) sulfate and 250 mL of distilled water to a beaker. Use the hot/stir plate to warm and stir the solution until all the crystals have dissolved. Do NOT let the solution boil.
3. Remove the beaker from the heat carefully and place on the table. Remove the magnetic stir bar.
4. Slowly and carefully add the iron filings to the solution.
5. Allow the beaker to cool for 10-15 minutes. You may use this time to work at your desk.
6. Decant the solution into a different beaker, trying not to disturb the copper.



7. Add approximately 10 mL of distilled water to the copper.
8. Write your name in pencil on a filter paper. Mass the filter paper, and filter the copper solution into a flask.
9. Record the mass of the filter paper and copper after it has fully dried – next class.

### Data:

Mass of iron: 1.97 g

Mass of copper(II) sulfate pentahydrate: 10.09 g

Mass of filter paper: 1.23 g

Mass of filter paper + copper: 3.45 g

### Analysis:

Write the reaction equation for each possibility – iron(II) sulfate as a product and iron(III) sulfate as a product.

Determine the mass of copper(II) sulfate in the 5.00 g of hydrate obtained.

Use the initial masses of reactants to determine the theoretical mass of copper that should be produced.

**Conclusion:** From the actual mass of copper recovered, explain which reaction (iron(II) or iron(III) sulfate produced) took place.