Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_

**What is the red/brown stuff?**

**What is happening to produce it?**

After investigating the chemical reaction between aqueous copper (II) sulfate and aluminum metal, you developed a set of questions you had about the chemical reaction. The questions you asked will help you figure out what was really going on in that reaction. You will continue to investigate, collect data, and answer the **guiding questions, “What is the red/brown stuff?”** and **“What is happening to produce it?”**

It might help to think about this question in terms of chemical reactions:

CuSO4(aq) + Al(s) → ?

You need to continue your investigation in two parts -- each part of the investigation comes directly from the questions you submitted!

The goal of **part 1** is to answer the question, “What happens if we use a different metal?”

* To gather data to answer this question, you will have the following materials:
  + Copper (II) sulfate solution
  + Zinc metal
  + Magnesium metal
  + Beakers
  + Graduated cylinder

The goal of **part 2** is to answer the question, “What happens if we use a different solution?”

* To gather data to answer this question, you will have the following materials:
  + Copper (II) chloride solution
  + Iron (III) chloride solution
  + Calcium chloride solution
  + Aluminum metal
  + Beakers
  + Graduated cylinder

Create a data table where you can keep track of all the information you are gathering. Once you are done collecting data, you need safely clean up everything.

Now you’re ready to start analyzing! Look for patterns and information in the “reactions” you carried out to determine what the products are. You need to fill out the C-E-R argument paper using relevant evidence that is justified with scientific concepts.

Data Table

|  |  |  |
| --- | --- | --- |
| Question: | Reactants: | Observations: |
| What happens if we change the metal? | CuSO4(aq) + Zn(s) |  |
| CuSO4(aq) + Mg(s) |  |
|  |  |  |
| What happens if we change the solution? | CuCl2(aq) + Al(s) |  |
| FeCl3(aq) + Al(s) |  |
| CaCl2(aq) + Al(s) |  |