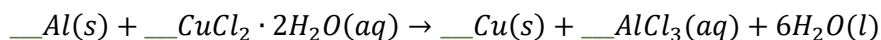


**Task 1: Limiting Reactant in Al and CuCl<sub>2</sub>·2H<sub>2</sub>O Reaction**

Look up or calculate the molar mass for the following elements or compounds, which you'll need for calculations.

Copper (Cu): \_\_\_\_\_ ( $\frac{g}{mol}$ )    CuCl<sub>2</sub>·2H<sub>2</sub>O: \_\_\_\_\_ ( $\frac{g}{mol}$ )    Aluminum (Al): \_\_\_\_\_ ( $\frac{g}{mol}$ )

Include coefficients to balance this chemical reaction that you'll be conducting in the experiment today.



Record all your data, observations, and calculations into your lab notebook first and then fill in the tables and answer the questions in this summary sheet. Always include proper units and sig figs for every value you write down!

	Beaker A	Beaker B
Observations Before Reaction Begins		
Observations After Reaction (what remains / formed in each beaker?)		
Based on <b>Observations</b> , which is limiting reactant?		
Mass CuCl <sub>2</sub> ·2H <sub>2</sub> O		
<i>Moles</i> CuCl <sub>2</sub> ·2H <sub>2</sub> O (show calculation)		
<i>Mass</i> Al		
<i>Moles</i> Al		
Theoretical Yield of Cu if CuCl <sub>2</sub> ·2H <sub>2</sub> O is limiting, in moles (show calculations)		
Theoretical Yield of Cu if Al is limiting, in moles (show calculations)		
Based on <b>Theoretical Yields of Cu</b> , what is the expected limiting reactant?		
<b>Mass of Cu</b> produced in your experiment.		

<b>Moles of Cu</b> produced in your experiment. (This is the <b>Actual Yield</b> ).		
What was the % yield of the reaction? (show calculation)		

### Task 2: Limiting Reactant Example in Cooking

In this box, write down the amount of each ingredient at your bench. Show calculations for any unit conversions you needed to do to get the amount of your ingredient to be the same unit as what is given in the recipe.

What is/are the <b>limiting</b> ingredient(s)? Why? Show calculation or provide an explanation.	What is/are <b>excess</b> the ingredient(s)? Why? Show calculation or provide an explanation.
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### Task 4: Reflect on your experience with today's experiment.

ALL experiments in science have experimental error from limitations of the equipment and techniques used. Identify one step in the procedure for Task 1 (not a calculation, not a potential mistake you made) that could have contributed to experimental error in mass of the final product of the Al and Cu reaction. Would this error cause the mass to be too high or too low? Explain why.