

Lab Set-up:

• Materials:

- 250 mL beaker
- 100 mL beaker
- graduated pipettes (2)
- 50 mL graduated cylinder
- funnel : filter paper
- spatulas
- copper powder (0.1g)
- zinc filings (0.1g)
- 8 M NaOH
- 8 M HNO_3
- 1 M H_2SO_4
- stir rod
- hot plate
- oven mitt

• Purpose:

- To find out what happens when you perform a series of rxns, starting with copper metal.

• Procedure:

- Measure 0.1g copper powder & put into 250 mL beaker.
- In fume hood, put 2 mL of 8 M HNO_3 into beaker.
- When brown gas goes away take beaker to station
- Add 25 mL of water to beaker
- Measure 2 mL of NaOH & pour into beaker.
- Place beaker on hot plate & set to medium.
- Stir with stir rod until a solid appears
- Use oven mitt to remove beaker from hot plate & cool.
- Filter solution with a funnel : filter paper.
- Use a spatula to scrape the solid from the paper into a 100 mL beaker.
- Add 15 mL of 1 M H_2SO_4 & stir
- Add 0.1g zinc filings & stir until colorless
- Pour off the liquid (NOT the solid)
- Add 10 mL water to rinse
- Pour off liquid
- Clean up your area



Now You See It...

Purpose: In this lesson you will complete a formal laboratory procedure. You will begin with copper powder and take it through a series of chemical steps, carefully observing and recording what happens at each stage. The goal is to figure out what happened to the original copper.

**Instructions:**

Follow the steps for completion of the experiment as outlined in the lab procedures. Complete the table below as you do the experiment. Make observations after each stage of the experiment (there should be about seven or eight main steps).

What you added or did	What you observed
Got copper powder from teacher	Brownish, copper-colored fine solid
After adding HNO_3 (aq) (8M)	-Turned sky blue-liquid -Gave off brownish gas
After adding water	-Still blue liquid
After adding NaOH (aq) (8M)	-Clumpy dark blue
After heating	-Turned black -Black solid in clear liquid
After adding 1M H_2SO_4	-Clear blue solution
After adding Zn	-Bubbled -Chunks of solid appeared
Final H_2O rinse	-Zinc turned black & disappeared -Brown powder appeared

Data Table #1

Student Worksheet

What Goes Around Comes Around


 Name _____
 Date _____ Per _____

Purpose: The goal of this activity is to use chemical symbols to keep track of an element when it goes through various chemical transformations.

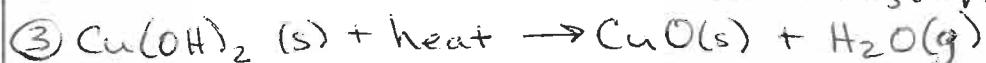
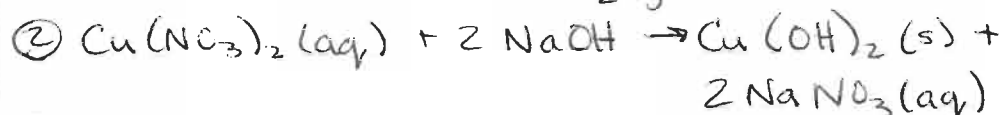
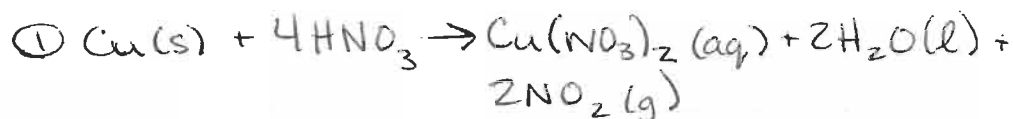
Instructions: Work as a team to figure out where the copper was during all of the stages of the lab. Use your observations from the copper lab, and the worksheet from "A New Language", Lesson II-1.

What you did	Chemical added Write the chemical formula	What you saw Your observations from the lab	Write the chemical formula and name of the copper compound at each stage	Where is the copper?
Got a sample of copper	Cu (s)	orangish-brown fine powder	Cu (s) solid copper powder	The copper is in the beaker because the teacher put it there.
Added nitric acid	HNO ₃ (aq)	- Sky blue liquid - brownish gas released	Cu (NO ₃) ₂ (aq) aqueous copper nitrate	copper is part of the copper nitrate substance
Added sodium hydroxide	NaOH (aq)	- Clumpy dark blue - some solid formed	Cu (OH) ₂ (aq) copper hydroxide	copper is part of copper hydroxide
Added heat (removes H ₂ O)	none	- turned black : cloudy	CuO (s) solid copper oxide	copper is in copper oxide
Added sulfuric acid	H ₂ SO ₄ (aq)	- Clear blue solution	Cu SO ₄ (aq) aqueous copper sulfate	copper is in the copper sulfate
Added zinc	Zn (s)	- Bubbles - chunks of solid - Zn disappeared	Cu (s) solid copper powder	Copper is a powder again

Making Sense: How would you describe what happened to the copper throughout this experiment?

Results:

- Chemical rxns that occurred in this experiment.



- What happened to copper @ each step?

- copper is present throughout the experiment

- it is part of every new substance made
 - * Cu was not destroyed or broken down into any other substance

- What is the Law of Conservation of Mass?

- matter (which is made up of elements) can neither be created or destroyed

Check-In:

