

18B – ELECTROPLATING

Analysis

Table 1 – Electroplating

Observations	Positive electrode (+)	Negative electrode (–)
Identity of electrode		
Bubbling		
Appearance of electrode		

Table 2 – Reversed wiring

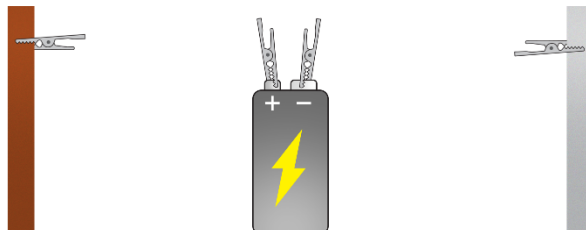
Observations	Positive electrode (+)	Negative electrode (–)
Identity of electrode		
Bubbling		
Appearance of electrode		

1. According to the first data table, which electrode showed bubbling? Propose a reason for the bubbling.
2. According to the first data table, which electrode showed evidence of plating? Explain.

3. What other observations were made during the electroplating process?
4. Describe what happened to the reaction when the wires were disconnected.
5. Describe what happened to the reaction when the wires were reversed.

Questions

1. Complete the picture by drawing lines to connect the electrodes to their appropriate battery terminals.



2. Place a check mark in either the zinc column or the copper column in Table 3 to properly describe which property or process occurred at each electrode during the electroplating process.

Table 3 – Properties and processes associated with each electrode

Property or process	Zinc	Copper
Positive (+)		
Negative (-)		
Anode		
Cathode		
Oxidation		
Reduction		
$\text{Cu(s)} \rightarrow \text{Cu}^{2+}(\text{aq}) + 2\text{e}^{-}$		
$\text{Zn}^{2+}(\text{aq}) + 2\text{e}^{-} \rightarrow \text{Zn(s)}$		
$2\text{H}^{+}(\text{aq}) + 2\text{e}^{-} \rightarrow \text{H}_2(\text{g})$		

- ❓ 3. What is the gas given off by the reaction? Explain your reasoning.
- ❓ 4. How could you test and confirm the gas identified in question #3?
- ❓ 5. As the electroplating reaction progressed, the pH of the solution changed. Did it become more acidic, more basic or more neutral? Explain. How could you test to prove this idea?
- ❓ 6. Describe what happened when the copper electrode was used as a cathode as opposed to as an anode. Write a half reaction to support your description of each electrode.