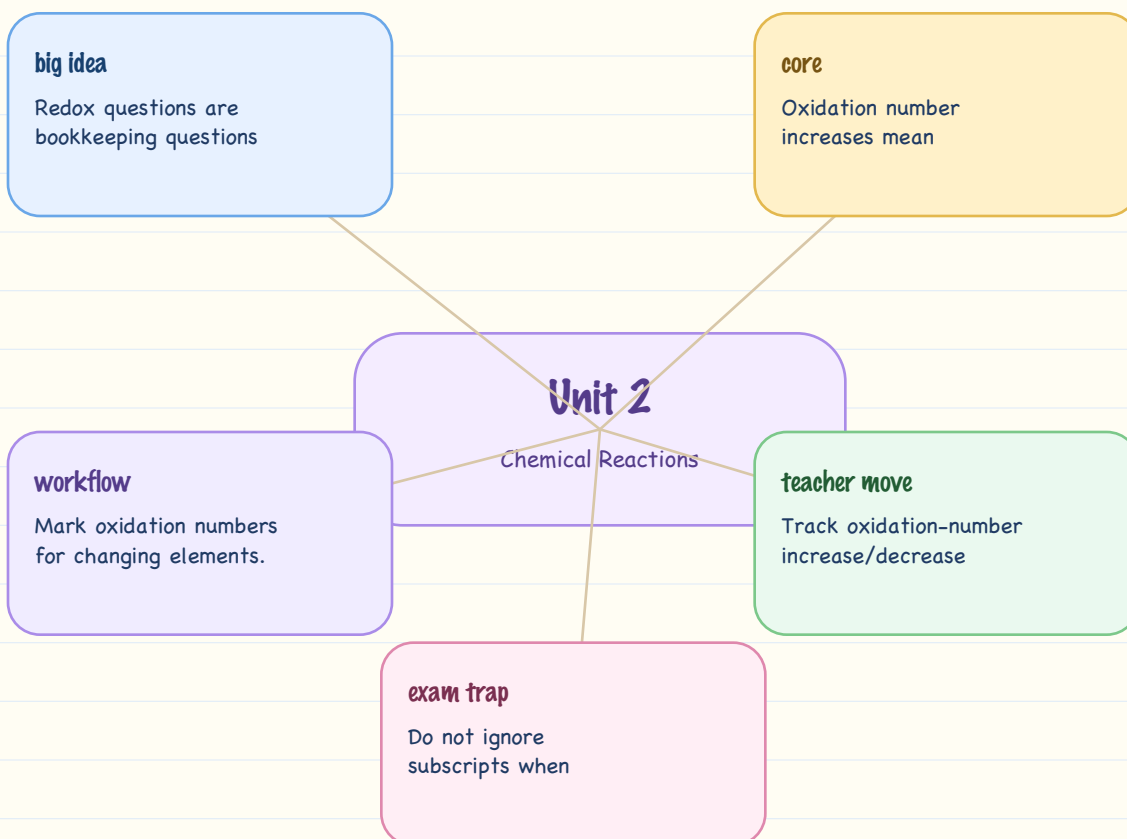


Unit 2 Visual Notebook

Oxidation, Reduction, and Redox Equation Writing

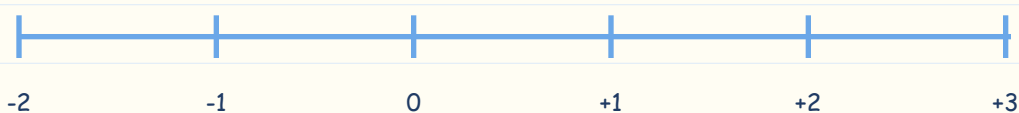
DISTILLED FROM VIDEO

11 lessons, P14–P24. Diagrams summarize the same source-locked workflows.



Visual Strategy

oxidation number increases → oxidation



oxidation number decreases → reduction

Teacher routine

- Mark oxidation numbers before balancing.
- Name agents from electron transfer.
- Include subscripts when counting total electron change.

Cornell Notes

cue

Core idea

Core idea

- Oxidation number increases mean oxidation; oxidation number decreases mean reduction.
- An oxidizing agent causes another species to lose electrons and is itself reduced.
- A reducing agent causes another species to gain electrons and is itself oxidized.

cue

Workflow

Workflow

- Mark oxidation numbers for changing elements.
- Decide whether the reaction is best handled forward, backward, or from both sides.
- List the oxidation-number change per atom and include subscripts.
- Use the least common multiple of electron change to set key coefficients.

cue

Teacher moves

Teacher moves

- Track oxidation-number increase/decrease before balancing coefficients.
- Name the oxidizing agent and reducing agent from electron transfer, not from memory alone.
- Assign fixed or obvious oxidation numbers first, then solve the rest.
- Forward balancing works well when changing elements are clear on the reactant side.

Cornell Notes

cue

Common traps

Common traps

- Do not ignore subscripts when computing total oxidation-number change.
- A higher oxidation number does not automatically mean stronger oxidizing power in every question.
- In acidic or basic media, add H^+ , OH^- , and H_2O according to the medium and charge balance.
- For unfamiliar redox equations, first infer products from the prompt before balancing.

Example Cards

example 1

Unit 2 teacher move, P15-P20

Assign the oxidizing agent

1. In $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$, Zn changes from 0 to +2.
2. Cu changes from +2 to 0.
3. Zn loses electrons, so Zn is oxidized and acts as the reducing agent.
4. Cu^{2+} gains electrons, so Cu^{2+} is reduced and acts as the oxidizing agent.

Answer: Oxidizing agent: Cu^{2+} . Reducing agent: Zn.

example 2

Unit 2 teacher move: include subscripts

Count electron change with subscripts

1. Find the changing element first.
2. Write the oxidation-number change per atom.
3. Multiply by the number of changing atoms in the formula.
4. Use the least common multiple so electron loss equals electron gain.

Answer: Use total electron change, not only the change on one atom.