

REDOX Reactions

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Types of Reactions

- ▶ **Precipitation Reaction:** Any reaction that takes place in a solution where one of the products is insoluble.
- ▶ $\text{AgNO}_{3(aq)} + \text{NaCl}_{(aq)} \rightarrow \text{AgCl}_{(s)} + \text{NaNO}_{3(aq)}$

Types of Reactions

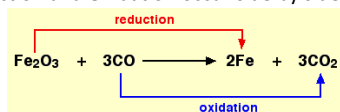
- ▶ **Acid-Base Neutralization Reaction:** An acid and a base react and neutralize each other to make a salt and water.
- ▶ $\text{HCl}_{(aq)} + \text{NaOH}_{(aq)} \rightarrow \text{HOH}_{(l)} + \text{NaCl}_{(aq)}$

Types of Reactions

- ▶ **Oxidation-Reduction Reaction:** A reaction that involves a transfer of electrons (a change in the atoms oxidation state (or charge)).
- ▶ Also called **REDOX** Reactions.
- ▶ $\text{Fe}_2\text{O}_3 + \text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$
- ▶ To determine what was oxidized and what was reduced we need to look closer.

REDOX Reactions

- ▶ **Reduction and Oxidation** occur side by side: **REDOX**



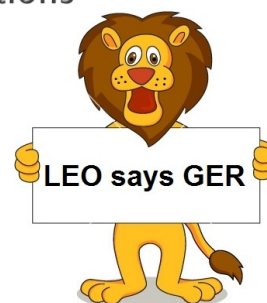
- ▶ **Reduction** is when the oxidation number is reduced.
- ▶ **Oxidation** is when the oxidation number is increases.
- ▶ **KEEP IT SIMPLE: LEO says GER**

REDOX Reactions

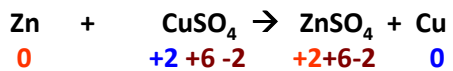
Losing
Electrons is
Oxidation

says

Gaining
Electrons is
Reduction



REDOX Reactions

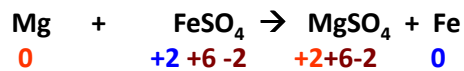


Zn: 0 → +2 → **Oxidized**

Cu: +2 → 0 → **Reduced**



REDOX Reactions

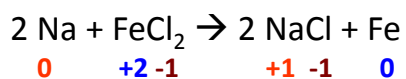


Mg: 0 → +2 → **Oxidized**

Fe: +2 → 0 → **Reduced**



REDOX Reactions



Na: 0 → +1 → **Oxidized**

Fe: +2 → 0 → **Reduced**



REDOX Reactions Summary

1. Assign Oxidation numbers to each element on both sides of the reaction.
2. Look for atoms that changed their oxidation state during the reaction.
3. Determine which element was oxidized and which element was reduced.



The End