

Recognizing Reduction and Oxidation



LEO the lion goes **GER** when he picks up the **CR****AyO**n off the student's **LAP** with **EFFORT** and throws it in the **VAN**

- ✿ **LEO** – Lose Electrons Oxidation
- ✿ **GER** – Gain Electrons Reduction
- ✿ **CR** – Cathode, reduction occurs
- ✿ **AyO** – Anode, oxidation occurs
- ✿ **LAP** – Electrolytic cell Anode Positive
- ✿ **VAN** – Voltaic cell Anode Negative
- ✿ **EFFORT**- Electrons flow from oxidation to reduction



LEO-Losing electrons

- Lets focus on oxidation
- **Oxidation-** is the process in which an atom or ion loses electrons
- **Example:**
 - $\text{Na} \rightarrow \text{Na}^+ + \text{e}^-$
 - $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$
- Note: Electrons are products



GER- Gaining electrons

- **Reduction-** is the process in which atoms or ions gain electrons
- **Examples:**
- $\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$
- $\text{Br}_2 + 2\text{e}^- \rightarrow 2\text{Br}^-$
- Note: Electrons are reactants



Examples

- Identify the following half reaction as either an oxidation or reduction half reaction.
- $2 \text{I}^- \rightarrow \text{I}_2 + 2\text{e}^-$
- Since I^- is losing electrons, this is an oxidation



Examples

- Identify the following half reaction as either an oxidation or reduction half reaction.
- $\text{Cl}_2 + 2\text{e}^- \rightarrow 2 \text{Cl}^-$
- Since Cl_2 is gaining electrons, this is a reduction



Examples

- Identify the following half reaction as either an oxidation or reduction half reaction.
- $\text{Fe} \rightarrow \text{Fe}^{2+} + 2\text{e}^{-}$
- Since Fe is losing electrons, this is an oxidation



Examples

- Identify the following half reaction as either an oxidation or reduction half reaction.
- $\text{Fe}^{3+} + \text{e}^{-} \rightarrow \text{Fe}^{2+}$
- Since Fe^{3+} is gaining a electron, this is an reduction



Example

- For the following reaction, indicate which element is oxidized and which is reduced
- $\text{H}_{2(g)} + \text{CuO}_{(s)} \rightarrow \text{Cu}_{(s)} + \text{H}_2\text{O}_{(l)}$
- Start with the oxidation numbers
- H is oxidized since it goes from a zero to a +1
- Cu is reduced since it goes from a +2 to a zero



Example

- For the following reaction, indicate which element is oxidized and which is reduced
- $\text{H}_{2(g)} + \text{Cl}_{2(g)} \rightarrow 2\text{HCl}$
- Start with the oxidation numbers
- H is oxidized since it goes from a zero to a +1
- Cl is reduced since it goes from a zero to a -1



Homework

- Continue to practice homework packet

