



Cycle 7 Chemistry 2 Lesson 1

AGENDA – “Oxidation and Reduction” Unit

Hand In Shoptimes

Lab is THURSDAY Be Prepared

Preassessment: Unit Test

Vocab: “Oxidation”, “Reduction”, “Redox Reaction”

Work: Identify which substance in a reaction is oxidized and which substance is reduced.



Chapter menu

Resources





Chapter menu

Resources



Ancient Alchemists and “Reduction”

- The Alchemists of ancient times spoke of ‘**reducing**’ ores to the metal. Metallurgy is a very, very old part of Chemistry.
- Today we know that ores contain positively-charged metal ions such as Cu^{+2} , Fe^{+3} , Ag^{+} . “**Reduction**” is therefore the transfer of (negatively charged) electrons to these ions from other substances to give neutral metal atoms.
- Modern chemists generalize **reduction** as transferring electrons to a substance.
- Video of prehistoric copper smelting technique:
<https://www.youtube.com/watch?v=8uHc4Hirexc>

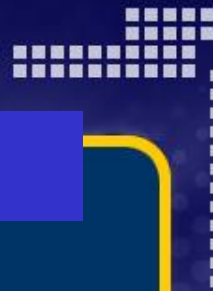




“Reduction” and “Oxidation” are Opposites

- “Oxidation” originally meant a substance combining with oxygen. Oxidation is now generalized as the opposite of reduction.
- **Oxidation** is electrons being REMOVED from a substance.
- Electrons CANNOT be CREATED or DESTROYED. Therefore oxidation and reduction must always occur together in a chemical reaction.
- Our textbook calls these “Oxidation-Reduction Reactions”





What are Oxidation-Reduction Reactions?

- Chemists in real life call them '**redox reactions**'
 - Important not to sound like a newb!
- They are reactions where one reactant is 'oxidized' and another reactant is 'reduced'
- Redox is NOT a NEW category of reaction – it can include synthesis, decomposition, displacement reactions
- Magnesium ribbon burns in oxygen – this is a Synthesis reaction, but is also REDOX
- Zinc metal displaces Copper from CuSO_4 – this is Single Displacement, but is also REDOX.



Chapter menu

Resources





What are Oxidation-Reduction Reactions?

- Magnesium ribbon burns in air.
- $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ ($\text{Mg}^{+2}/\text{O}^{-2}$)
- Mg is oxidized, O_2 is reduced
- Zn metal reacts with Cu^{+2} ion in solution to give Zn^{+2} ion and Cu metal.
- Zn is oxidized, Cu^{+2} is reduced.



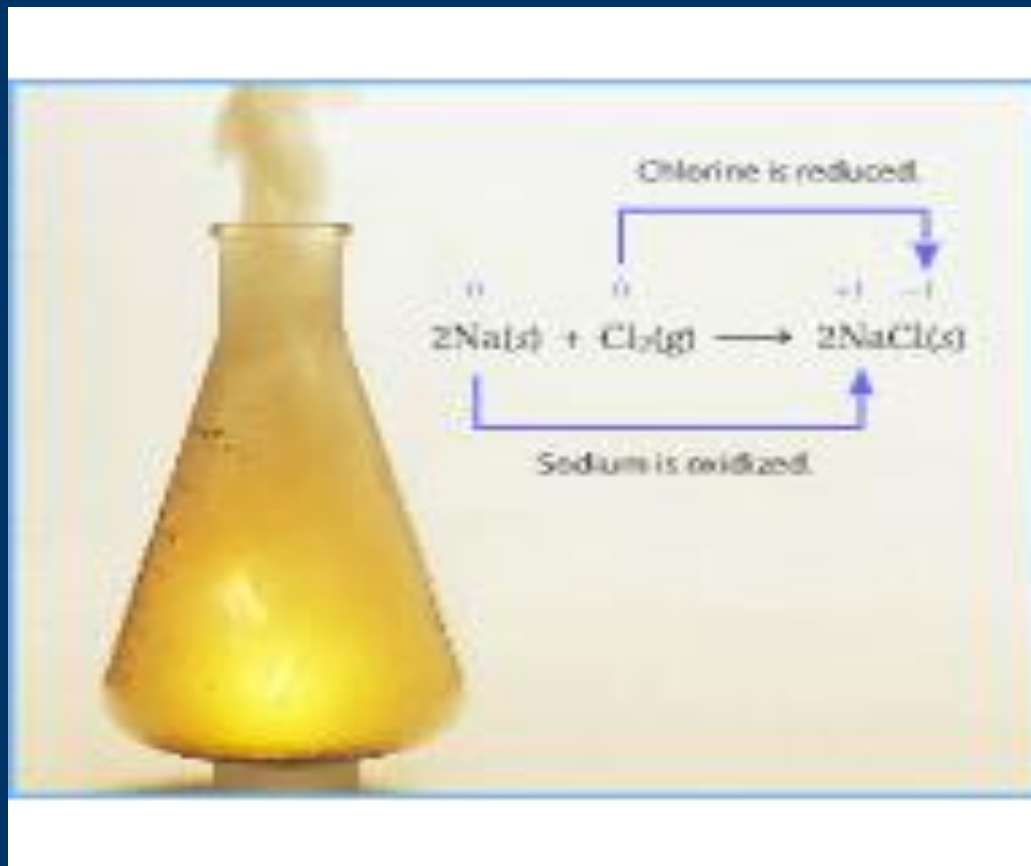
Chapter menu

Resources





Redox Reactions



End
Of
Slide



Chapter menu

Resources





Which is oxidized? Which is reduced?



(Check PT: K forms +1 ion, F forms -1 ion)

Remember elemental K and F₂ are neutral!

