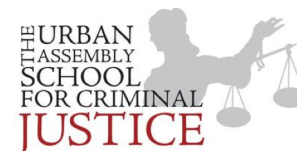


Name: _____ Date: _____

Chemistry ~ Ms. Hart

Class: Anions or Cations



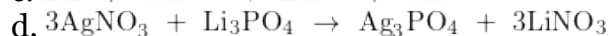
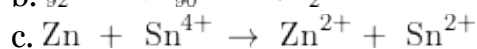
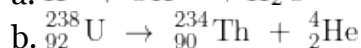
11.3 Oxidizing and Reducing Agents – Guided Notes

SPARK:

1. Is this a Redox Reaction?




2. Which equation represents an oxidation-reduction reaction?



Objective: SWBAT identify oxidizing agents and reducing agents in a redox reaction.

REVIEW:

Redox reaction: Reaction in which both _____ (gain of electrons) and _____ (loss of electrons) occurs.

LEO the Lion goes GER  Loss of Electrons is **Oxidation**
Gain of Electrons is **Reduction**

Recognizing redox reactions

1. Assign oxidation numbers to each atom
2. If both reduction and oxidation occurs, it is a redox reaction

REVIEW EXAMPLE: $\text{Cu}^{2+} + \text{Zn} \rightarrow \text{Cu} + \text{Zn}^{2+}$

	Reactant Side	Product Side
Element	Ox. State	Ox. State

_____ is reduced _____ is oxidized

Oxidizing and Reducing “Agents”

- Agents are ALWAYS _____

New Terms:

Reducing Agent	
Oxidizing Agent	

CHECK YOURSELF: In review example what was being reduced? _____.

This is the oxidizing agent!

HOW DO I REMEMBER THIS??

Ox. Red. Agent

- If the substance is _____ it is the _____.
- Or
- If the substance is _____ it is the _____.

Quick check: Does the reducing agent gain or lose electrons? How do you know? _____

PRACTICE #1: Given the following: $4 \text{ Fe} + 3 \text{ O}_2 \rightarrow 2 \text{ Fe}_2\text{O}_3$ ~ HINT: how do I find the charge of Fe?!

Option 1... reverse criss-cross

Option 2... make a table

Element				Total
Subscript (how many are there?)				
Oxidation State				
Sum of oxidation states				0

- a) What is being oxidized? _____
- b) What is being reduced? _____
- c) What is the oxidizing agent? _____
- d) What is the reducing agent? _____

YOUR TURN ~ LEO the lion goes GER

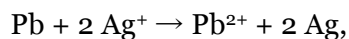
#2: Given the following: $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$

- a) What is being oxidized? _____
- b) What is being reduced? _____
- c) What is the oxidizing agent? _____
- d) What is the reducing agent? _____

#3: Given the following: $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$ (remember polyatomics are in Table E)

- a) What is being oxidized? _____
- b) What is being reduced? _____
- c) What is the oxidizing agent? _____
- d) What is the reducing agent? _____

4. In the reaction



the oxidizing agent is

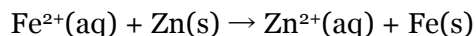
- (1) Ag^+
- (2) Ag
- (3) Pb
- (4) Pb^{2+}

Independent Practice:

- 5. An oxidation-reduction reaction involves the
 - (1) transfer of electrons
 - (2) transfer of protons
 - (3) sharing of protons
 - (4) sharing of electrons
- 6. Which balanced equation represents a redox reaction?
 - (1) $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$
 - (2) $\text{BaCl}_2 + \text{K}_2\text{CO}_3 \rightarrow \text{BaCO}_3 + 2\text{KCl}$
 - (3) $\text{CuO} + \text{CO} \rightarrow \text{Cu} + \text{CO}_2$
 - (4) $\text{HCl} + \text{KOH} \rightarrow \text{KCl} + \text{H}_2\text{O}$
- 7. What happens to reducing agents in chemical reactions?
 - (1) Reducing agents gain protons
 - (2) Reducing agents gain electrons
 - (3) Reducing agents are oxidized
 - (4) Reducing agents are reduced
- 8. In a redox reaction, the oxidizing agent will
 - (1) lose electrons and be reduced
 - (2) lose electrons and be oxidized
 - (3) gain electrons and be reduced
 - (4) gain electrons and be oxidized

Keep going... you can do it!

9. Given the redox reaction:



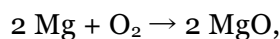
Which species acts as a reducing agent?

- (1) $\text{Fe}(\text{s})$
- (2) $\text{Fe}^{2+}(\text{aq})$
- (3) $\text{Zn}(\text{s})$
- (4) $\text{Zn}^{2+}(\text{aq})$

10. When a substance is oxidized, it

- (1) loses protons
- (2) gains protons
- (3) acts as an oxidizing agent
- (4) acts as a reducing agent

11. In the reaction



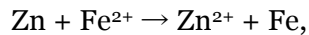
the magnesium is the

- (1) oxidizing agent and is reduced
- (2) oxidizing agent and is oxidized
- (3) reducing agent and is reduced
- (4) reducing agent and is oxidized

12. All redox reactions involve:

- (1) the gain of electrons only
- (2) the loss of electrons only
- (3) both the gain and the loss of electrons
- (4) neither the gain nor the loss of electrons

13. In the reaction



the reducing agent is

- (1) Zn
- (2) Fe^{2+}
- (3) Zn^{2+}
- (4) Fe

Explain your answer to number 13...
