

CHE 111 - Extra Practice - Ch 4e
Oxidation/Reduction Reactions

Name: _____

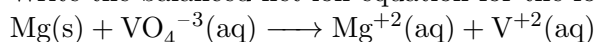
Date: _____

Tips for balancing REDOX reactions.

- Determine the oxidation state of each element:
 - Elements in their natural state = 0
 - Hydrogen = +1 as a cation (99%) sometimes -1 (anion paired with a metal)
 - Oxygen = -2 (except in H_2O_2)
 - Halogens (ceF, Cl, Br, I) generally = +1
 - Elements written as monoatomic ions, oxidation number = charge
 - Polyatomics: \sum of the oxidation numbers = charge
 - Molecules: \sum of the oxidation numbers = 0 (molecules are neutral)
- Determine which element is oxidized and which is reduced.
 - Oxidation - (LEO) Lose Electrons (Oxidation number increases)
 - Reduction - (GER) Gain Electrons (Oxidation number decreases)
- Write the $1/2$ -reactions. Only write the atoms/molecules that change oxidation state.
- Balance the $1/2$ reactions:
 - Balance all atoms except H and O
 - Balance O by adding H_2O molecules
 - Balance H by adding H^+ ions
 - Balance charges by adding e^-
 - Oxidation Reaction - Add e^- to the Products side
 - Reduction Reaction - Add e^- to the Reactant side
- Multiply each $1/2$ -reactions by a number such that the electrons will cancel out when the $1/2$ -reactions are combined. Combine the two $1/2$ -reactions.
- Cancel out Like Terms (compounds or ions that are the same on the Reactant and Products side. The electrons **MUST** cancel out.
- In a **BASIC** reactions add OH^- to both sides of the reaction to cancel out H^+ ions. Take $\text{H}^+ + \text{OH}^- \longrightarrow \text{H}_2\text{O}$.
- Cancel out any Like Terms.
- Double check that the reactions is balanced (both atoms and charges).

Show work for the following problems on a separate sheet of paper. Record your final answer in the space provided.

- Write the balanced net ion equation for the following reaction assuming it occurs in an acidic solution.



Solution:

