Name:_____
Blk:_____Date:_____

Chemistry 12
Electrochemistry Lesson #4
Balancing Half- Reactions

A half reaction must be balanced for _____and_____.

Memory-Aid for balancing Half reactions:
His name was: **MAJOR HYDROXIDE** or _____ _____.

1. Balance the _____ species first by adding _____

2. Balance the _____ atoms second by adding _____

3. Balance the _____ atoms third by adding _____

4. Balance the _____ last by adding _____.

Example 1.
Balance the half reaction **RuO_2 <--> Ru**. The reaction occurs in **ACIDIC** solution

Step 1.

Step 2.

Step 3.

Step 4.

TO BALANCE HALF REACTIONS IN BASIC SOLUTION FOLLOW THE FOUR STEPS OF MAJOR HYDROXIDE AND THEN ADD THE **DISSOCIATION OF WATER (**)SO THAT _____
_____.

Example 2.
Balance the half reaction: **Pb<--> $HPbO_2^-$** which occurs in **BASIC** solution.

Step 1.

Step 2.

Step 3.

Step 4.

Step 5.

Example 3:
Balance the half reaction which occurs in **ACIDIC** solution
H_2 <->

Step 1.

Step 2.

Step 3.

Step 4.

CHANGES IN OXIDATION NUMBERS DURING HALF-REACTIONS

In the half reaction: **Mn**O_4^- <--> **Mn**O_2
a. Calculate the Oxidation Numbers for Mn on both sides of the equation

b. Calculate the change in oxidation number (ΔON) and assign a value for the change

c. Balance the half reaction in **ACIDIC** solution using MAJOR HYDROXIDE

d. Determine from your answer in "b" if this is a reduction or an oxidation half reaction.

Seatwork/homework: EXERCISES 19, 22-23 pg 203-204 and PLO's T1.