

## Balancing Oxidation-Reduction Equations

- 1) Assign ON's; Decide what is oxidized, what is reduced
- 2) Write these substances as reactants and products in half-reactions
- 3) Balance all atoms in equations except O and H
- 4) Balance O using  $\text{H}_2\text{O}$ ; Balance H using  $\text{H}^+$
- 5) Balance charge using  $e^-$
- 6) Multiply half-reactions by numbers such that  $e^-$  are the same, add half-reactions
- (7) If reaction is in **basic solution**, add same number of  $\text{OH}^-$  to both sides of equation (number of  $\text{OH}^-$  to add equals number of  $\text{H}^+$  in equation); make  $\text{H}^+$  and  $\text{OH}^-$  on same side of equation into  $\text{H}_2\text{O}$  and cancel extra  $\text{H}_2\text{O}$ }