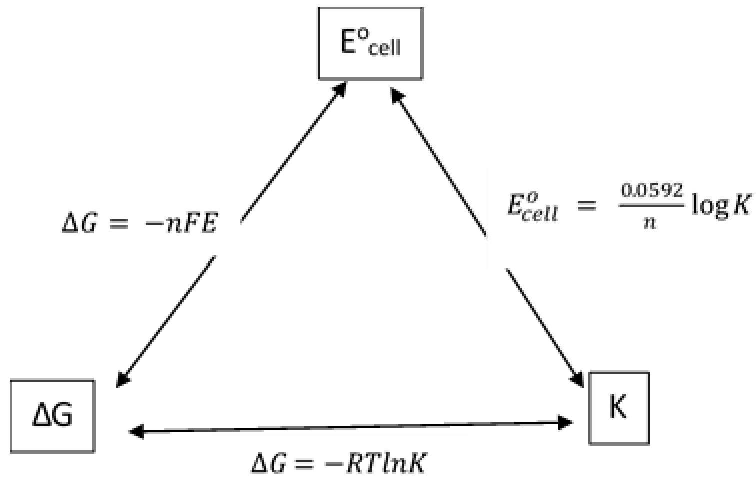
FRONT OF CARD INFO	BACK OF CARD INFO
Oxidation	Half reaction where electrons are lost Usually, the electrons are on the products side and the species losing becomes more positive. Example: $Cu \rightarrow Cu^{2+} + 2e^-$ **Side note:** most of the time if metals are being oxidized they are "dissolving in solution"
Reduction	Half reaction where electrons are gained Usually the electrons are on the reactants side and the species gaining becomes more negative. Example: $Au^{3+} + 3e^- \rightarrow Au$ **Side note:** most of the time the metal being oxidized will precipitate out of solution
Reducing agent	The species being oxidized is known as the reducing agent because it is "causing" the other element to be reduce Trick: don't over think this… the species being oxidized is ALWAYS the reducing agent!
Oxidizing agent	The species being reduced is known as the oxidizing agent since it is "causing" the other element to be oxidized Trick: don't over think this… the species being reduced is ALWAYS the oxidizing agent
Anode	In a galvanic/voltaic cell the anode is the part of the cell where the oxidation reaction occurs
Cathode	In a galvanic/voltaic cell the cathode is where the reduction reaction occurs Trick for remembering… RED CAT (**RED**uction occurs at the **CAT**hode)
Salt bridge	Used in galvanic cells to balance out the charge in each half cell caused by the gain/loss of electrons The salt bridge is usually filled with an ionic salt so that it will form positive ions and negative ions. The positive ions will flow towards the cathode and the negative ions will flow towards the anode
Electrodes	Conductors placed in each half cell to allow for the transfer of electrons in a galvanic cell. Two common inert electrodes are graphite and platinum (meaning they will not react with what is in solution)

Voltaic cell (galvanic cell)	Electrochemical cell that physically separates the oxidation and reduction reaction to turn the energy from electron transfer into usable electrical energy It should be noted that galvanic cells tend to be thermodynamically favorable (positive E^o_{cell} value)
Relationship between G, K, E	
E^o_{cell}	Overall cell potential for a galvanic cell How to calculate: determine standard reduction potentials of each half reaction. The more positive value remains reduction and the other will become your oxidation (switch sign). Add the two values together
Standard conditions for galvanic cell	25^{o}C and 1M solutions Beware: the standard condition is normally notated with the "naught" symbol. If your conditions are not standard you are looking at a concentration cell or will need to use the Nernst equation
Nernst equation	Used to describe the effect on overall cell potential that nonstandard conditions will cause. Normally the conditions are nonstandard because of the molarities. Trick: you can actually use LeChatelier's principle instead of using this!

Reaction Quotient (Q)	Used to describe the ratio of product concentrations to reactant concentrations when we are not at equilibrium (more on this later)
Equilibrium constant (K)	Used to describe the ratio of product concentrations to reactant concentrations when we are at equilibrium (more on this later)
Concentration cell	Galvanic cell created by using two different molarities of the same species. Trick: Molarities will try to balance out! The higher molarity will want to decrease the ions in solution through reduction and conversely the lower molarity solution will want to increase ions in solution through oxidation
Standard reduction potential	Reduction potential relative to the standard hydrogen electrode. The more positive the value the more likely the species is to be reduced
Electrolytic cell	Non-thermodynamically favorable electrochemical cell (negative E^o_{cell}). The same pnemonics from galvanic cells still apply: FAT CAT and RED CAT, only this time we also need to think of EPA (Electrolytic Positive Anode). These cells will also need a power source to occur How to recognize: The overall cell potential will be negative Don't freak out, the only real thing that happens here is that the anode is positive because the positive ions from the salt bridge flow towards the anode.
# Coulombs = It	This equation relates the amount of amps (I) to the total charge needed and the time that it will take for the reaction to occur Watch out: 1 Amp = 1 C/sec, so your time in this equation always comes out in seconds Another trick: remember Farady's constant = 96,485 C/mole e^- So to get # coulombs we will need to know mole of electrons transferred