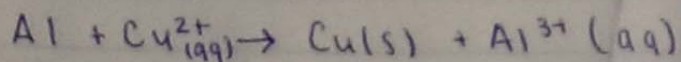
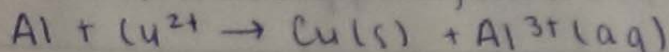
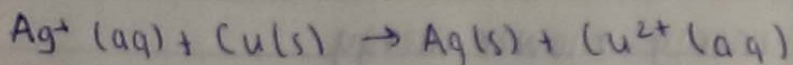


April 10, 2014

→ We can predict the energy of a cation by looking at the rxn.

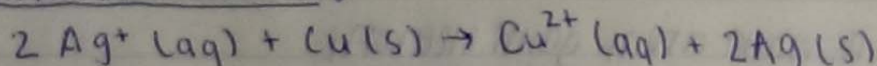


• This reaction is not balanced because the electrons on both sides must be balanced



• The reaction will stop when the systems come to equilibrium

↳ Equilibrium constant:



\* Solids don't appear in equilibrium constant.

$$K = \frac{[\text{Cu}^{2+}]}{[\text{Ag}^+]^2} \quad K > 1$$

→ Oxidation reaction: Process in which electrons are lost

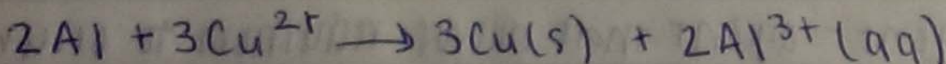
• higher energy = ↑ ease of oxidation

• lower energy = more stable = less likely to oxidize



\* electrons on Zn will want to move to the Cu. Any time electrons leave they need to go somewhere.

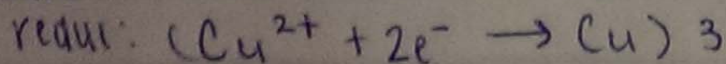
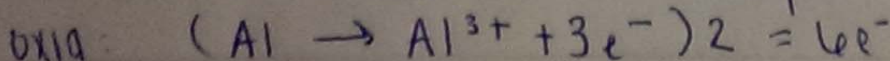
↳ The right side of the reaction is favored



How many electrons are moving in this reaction?

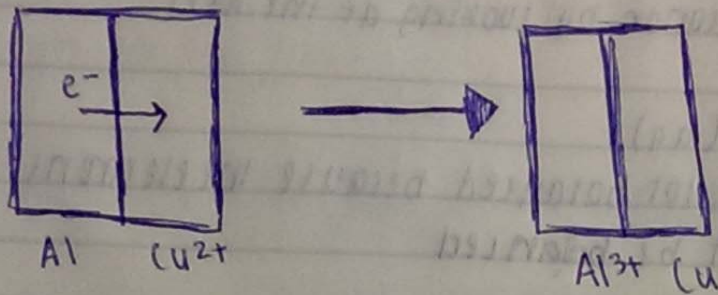
• 6 because electrons are moving from Al → Cu.

So 6 electrons transferred per mole per rxn

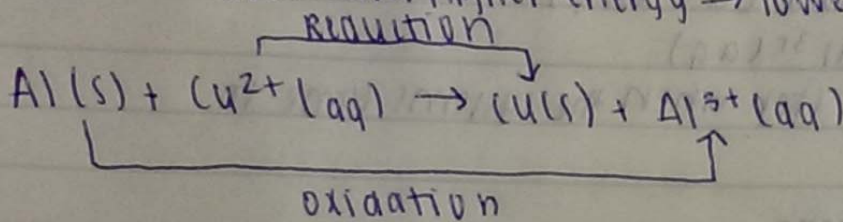




Free energy of  $2Al + 3Cu^{2+} \rightarrow 3Cu + 2Al^{3+}$



\* electrons move from higher energy  $\rightarrow$  lower energy



$\rightarrow$  Reduction is when atom gains electrons

$\rightarrow$  Oxidation is when atom loses electrons

O - oxidation

R - Reduction

I - is

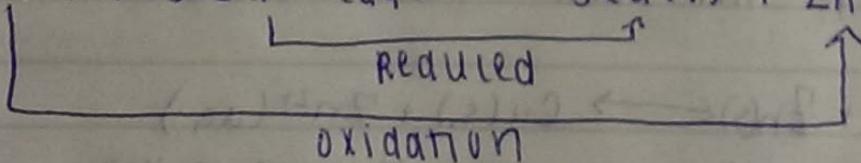
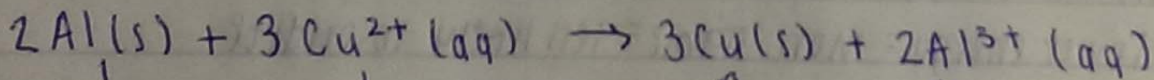
I - is

L - loss

G - gain

of electrons

of electrons



$\rightarrow$  Oxidation agent - agent that allows oxidation to occur (undergoing reduction)

$\rightarrow$  Reducing agent - agent that allows reduction to occur (undergoing oxidation)