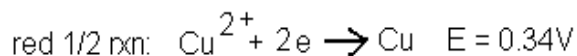
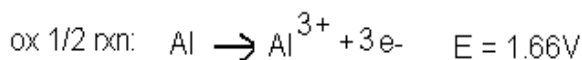
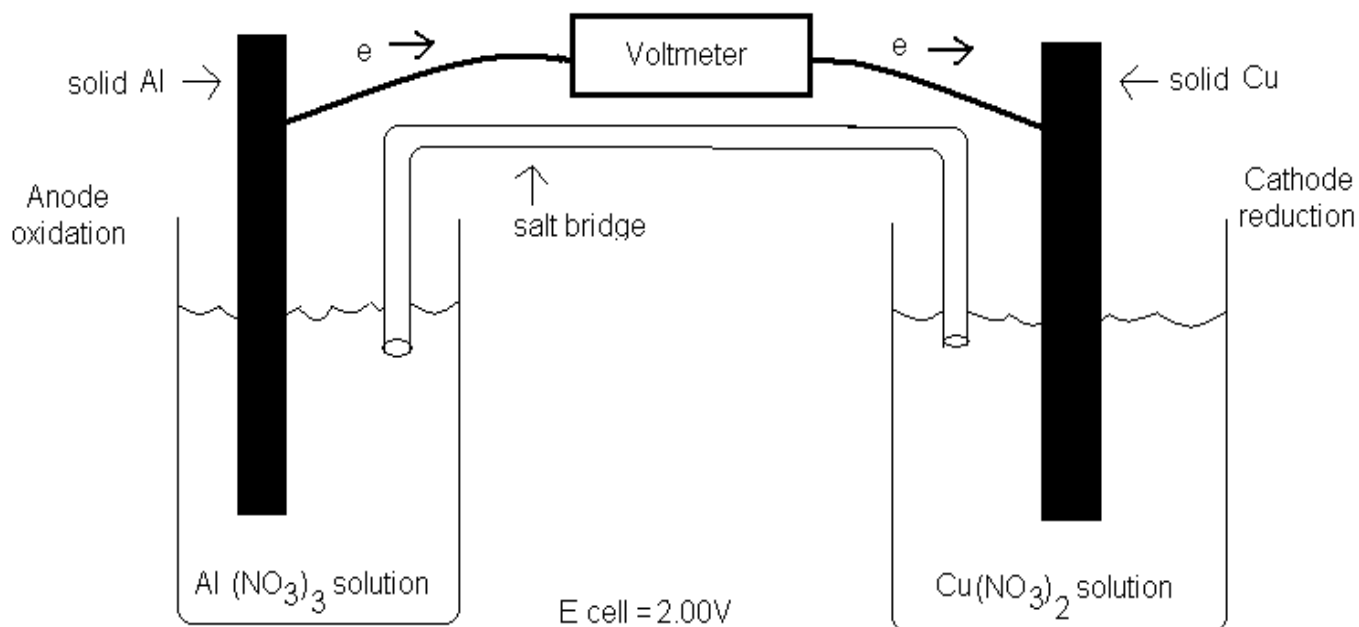


Battery Key

Create a functioning battery (cell), draw a complete picture of the cell, label all parts like I did for the example in lecture, calculate the cell potential or EMF, write the 1/2 rxns and overall reaction given:



Note you must determine which is the oxidation 1/2 reaction, and you must find the Volts in the Appendix.



The Al 1/2 rxn must be reversed, be oxidation so that the E cell is a positive number. So the solid Al become Al³⁺ ions is the anode, ox 1/2 rxn. The copper 2+ ions becoming solid Cu is the cathode, red 1/2 rxn. The overall rxn is $2\text{Al}(\text{s}) + 3\text{Cu}^{2+}(\text{aq}) \rightarrow 2\text{Al}^{3+}(\text{aq}) + 3\text{Cu}(\text{s})$. The short hand notation would be: $\text{Al}(\text{s}) | \text{Al}^{3+} || \text{Cu}^{2+} | \text{Cu}(\text{s})$. Note Al goes from zero to +3, charge up, so oxidation. Copper goes from +2 down to zero, charge down, so reduction.

How many electrons were transferred in the balanced rxn? Six. If sodium nitrate were the salt in the bridge, the sodium +1 ions would move to the cathode and the negative 1 nitrate ions would migrate to the anode.

Salt is some neutral ionic compound like KNO_3 or $\text{NaNO}_3(\text{aq})$

