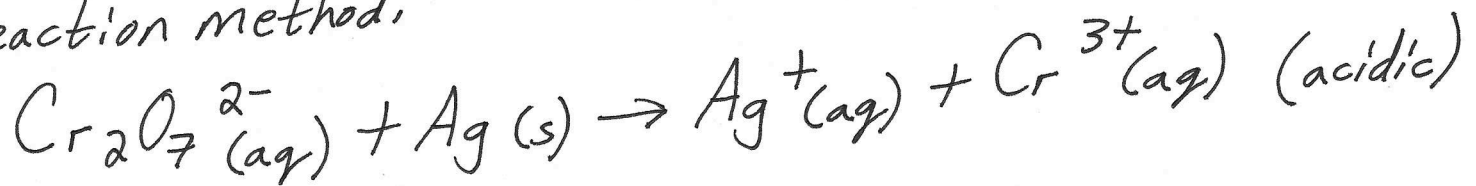


# Half-Reaction Method

Example!

Ⓐ Balance the following redox reaction equation, which takes place in an acidic solution, using the half-reaction method.

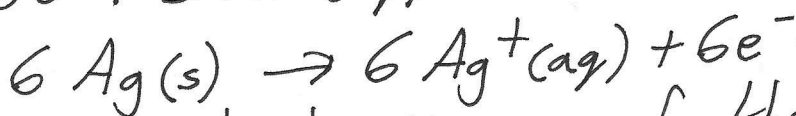
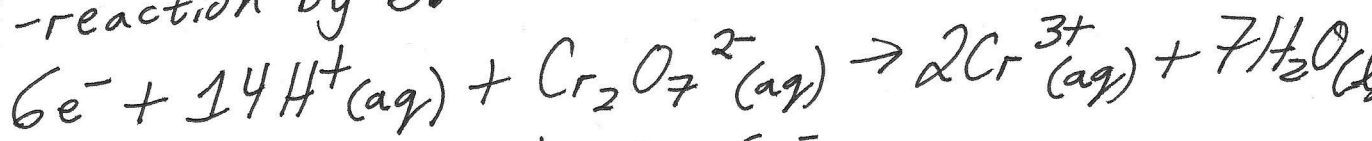


Ⓐ The unbalanced reduction half-reaction is:  $\text{Cr}_2\text{O}_7^{2-}(\text{aq}) \rightarrow \text{Cr}^{3+}(\text{aq})$   
The unbalanced oxidation half-reaction is:  $\text{Ag}(\text{s}) \rightarrow \text{Ag}^+(\text{aq})$

The balanced reduction half-reaction is:  $6e^- + 14\text{H}^+(\text{aq}) + \text{Cr}_2\text{O}_7^{2-}(\text{aq}) \rightarrow 2\text{Cr}^{3+}(\text{aq}) + 7\text{H}_2\text{O}(\text{l})$

The balanced oxidation half-reaction is:  $\text{Ag}(\text{s}) \rightarrow \text{Ag}^+(\text{aq}) + e^-$

Balance the # of electrons in the balanced two half-reactions above by multiplying the oxidation half-reaction by 6:



The net algebraic sum of the two half reactions is the balanced equation for the reaction:

