

# Balancing Redox Reactions

**redox reaction**



**electron transfer  
occurs**

redox reaction



**oxidation**

(lost two electrons)

redox reaction



**reduction**

(gained two electrons)



## Simple redox reaction

To balance this reaction we just look at  
electrical charges

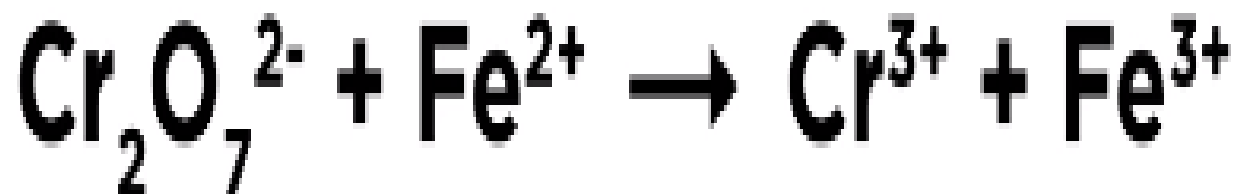
**redox reaction**



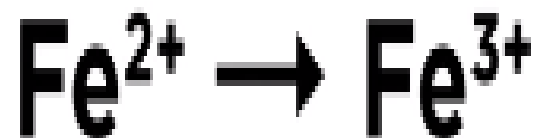
**iron transfers two  
electrons to  
the copper ion**

# Another Redox Reaction

Firstly divide into half reactions

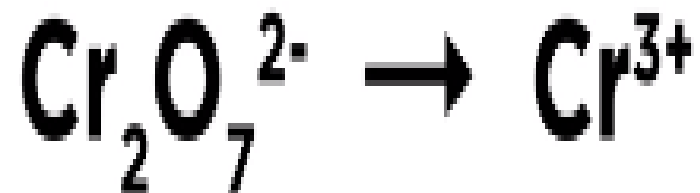


oxidation half-reaction



Loss of one  
electron

reduction half-reaction

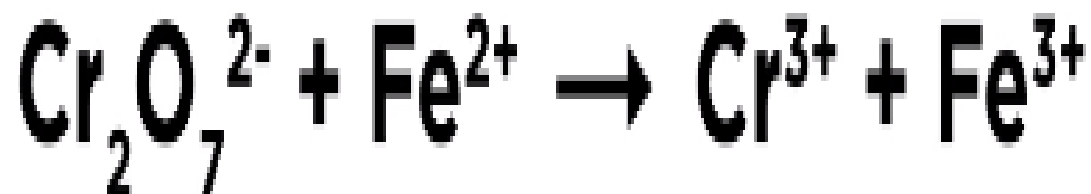


+6

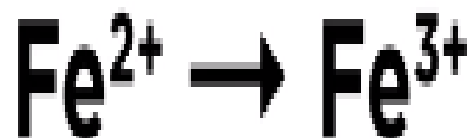
+3

Balance elements other than H and O

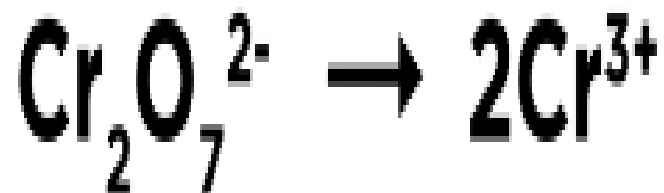
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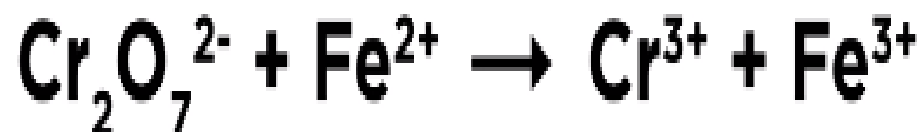
oxidation half-reaction



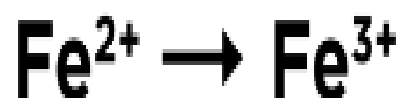
reduction half-reaction



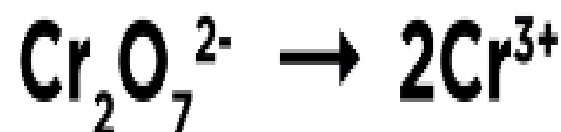
# Balance O with water molecules



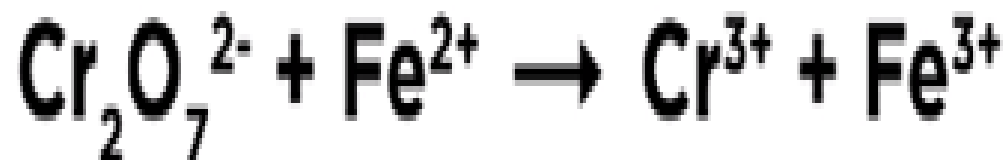
oxidation half-reaction



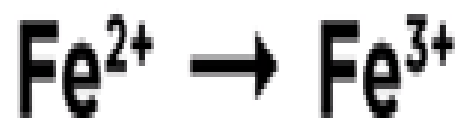
reduction half-reaction



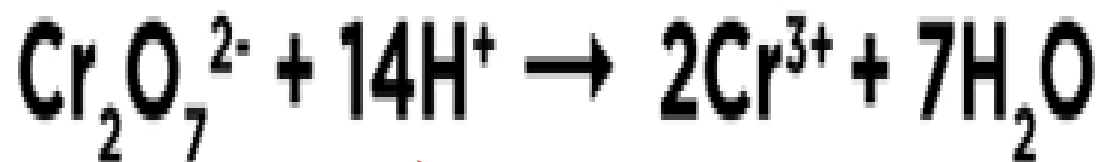
Balance H with hydrogen ions



oxidation half-reaction

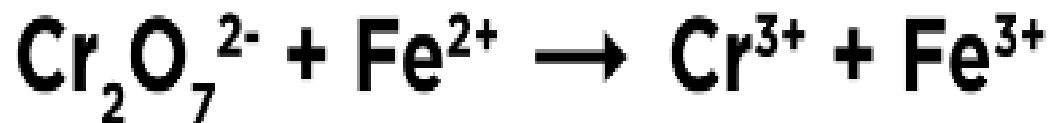


reduction half-reaction





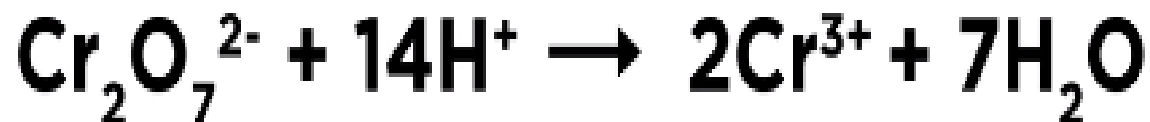
# Balance charge with electrons



oxidation half-reaction



reduction half-reaction



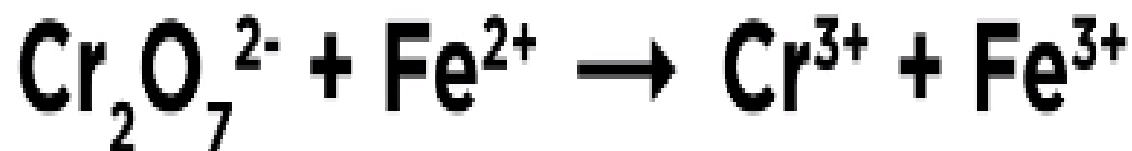
$$-2 + 14(1) = 12$$



$$2(3) = 6$$



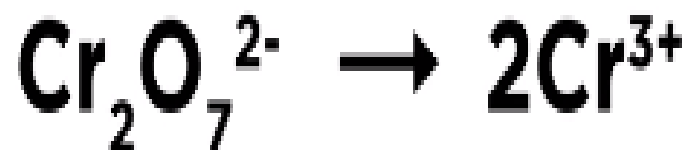
# Balance charge with electrons



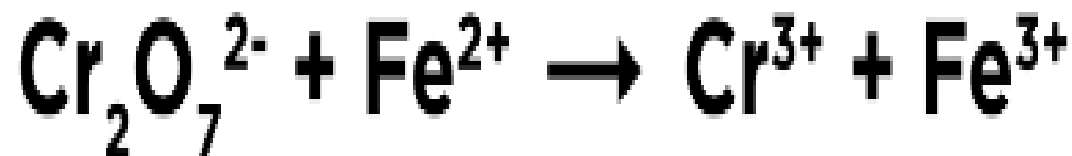
oxidation half-reaction



reduction half-reaction

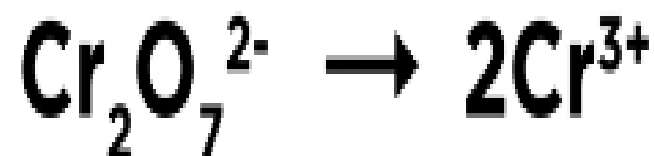


Make the electron numbers equal

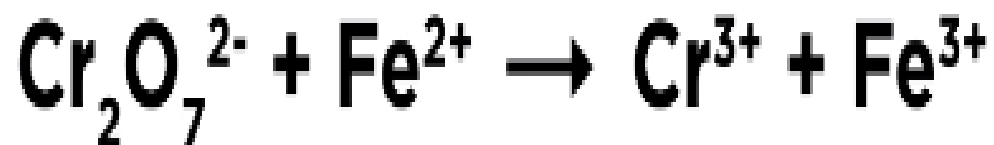


oxidation half-reaction

reduction half-reaction



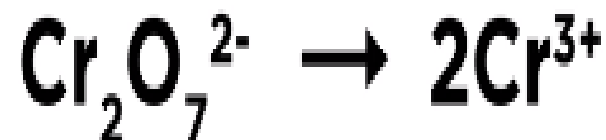
Make the electron numbers equal



oxidation half-reaction



reduction half-reaction



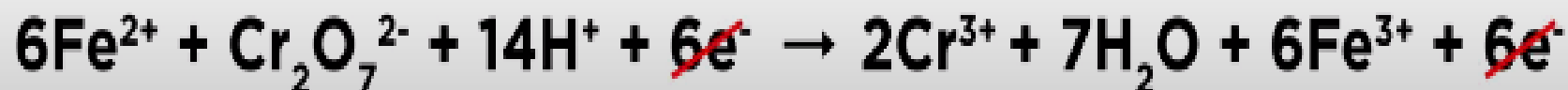
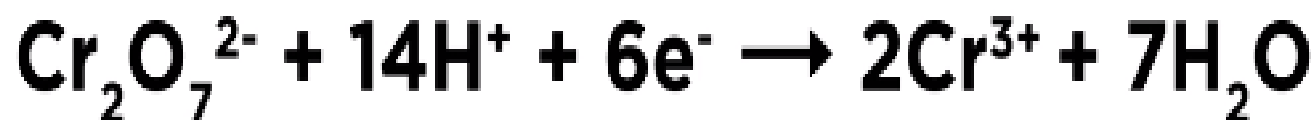
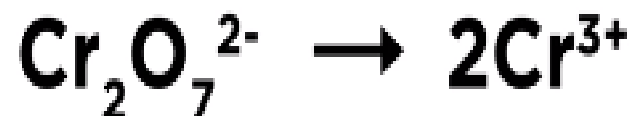
# Combine the half reactions



oxidation half-reaction



reduction half-reaction



# Balanced reaction

