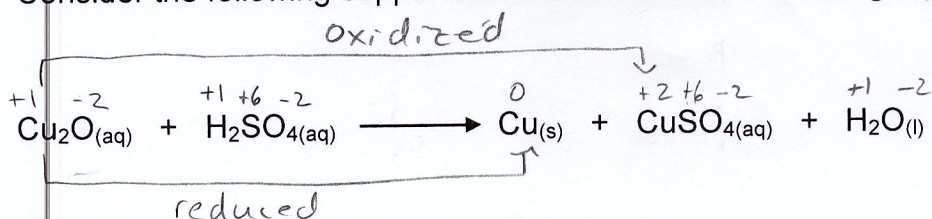


Disproportionation Reactions

- In most redox reactions, atoms of one element are oxidized and atoms of a different element are reduced
- It is possible for some atoms of one element to undergo oxidation and other atoms of the same element to undergo reduction in a single reaction
 - This type of redox reaction is called **disproportionation**
- Consider the following copper atoms and ions in the following equation

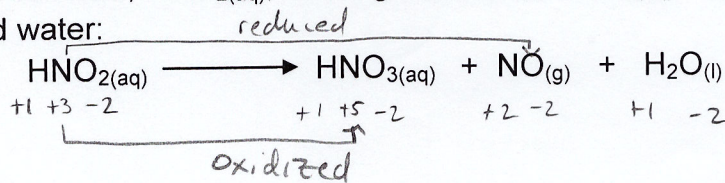


- Cu_2O is oxidized ($\text{Cu}_2\text{O} \rightarrow \text{Cu}^{2+}$)
- Cu_2O is also reduced ($\text{Cu}_2\text{O} \rightarrow \text{Cu}$)

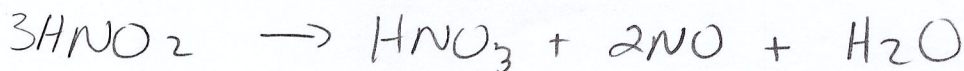
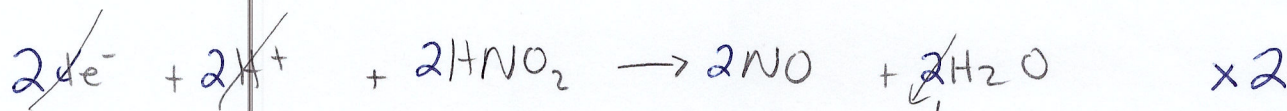
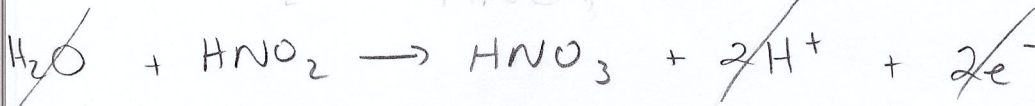
- Disproportionation reactions are balanced in the same way as any other redox reaction (ie. either using half-reactions or oxidation numbers)

EXAMPLES

- 1.) Balance the following unbalanced equation for the disproportionation, in acidic solution, or nitrous acid, $\text{HNO}_{2(\text{aq})}$, forming nitric acid, $\text{HNO}_{3(\text{aq})}$, nitrogen monoxide, and water:

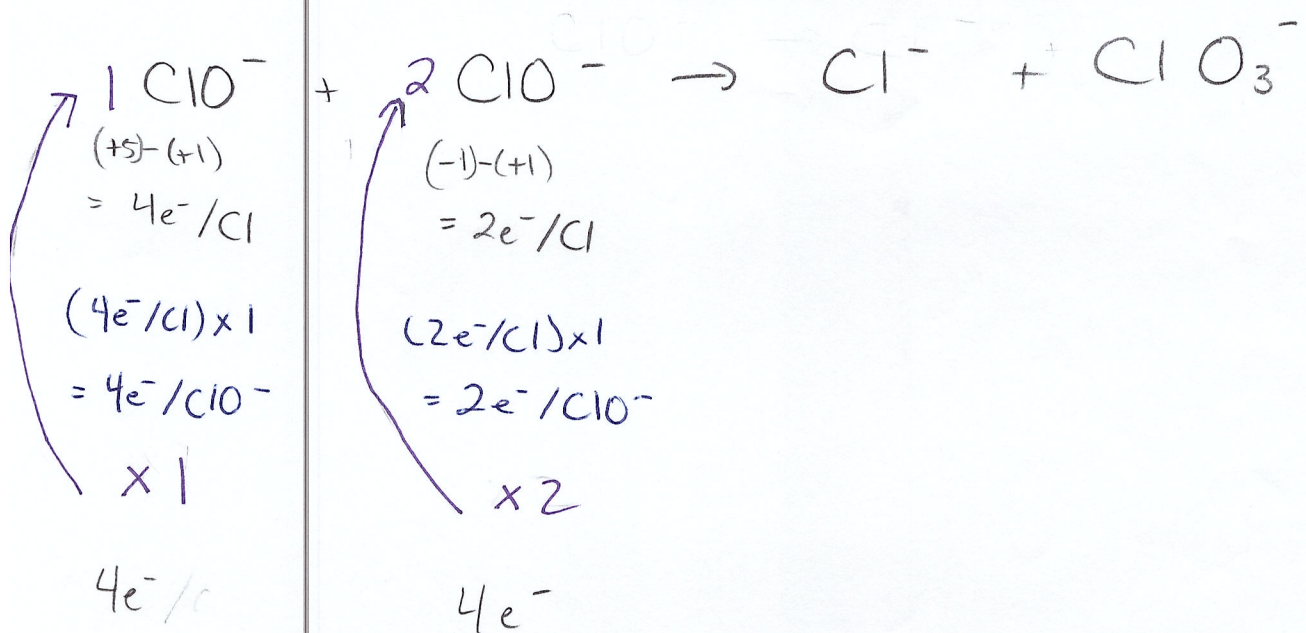
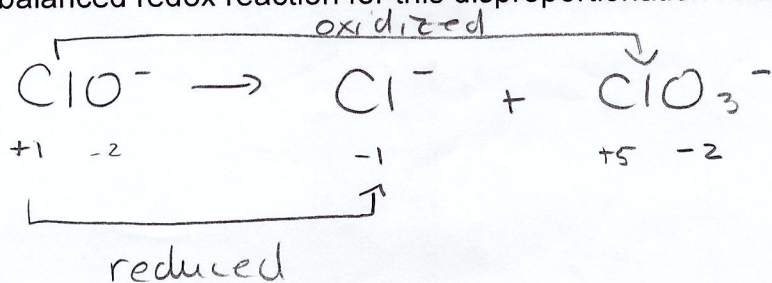


use half-rxn method

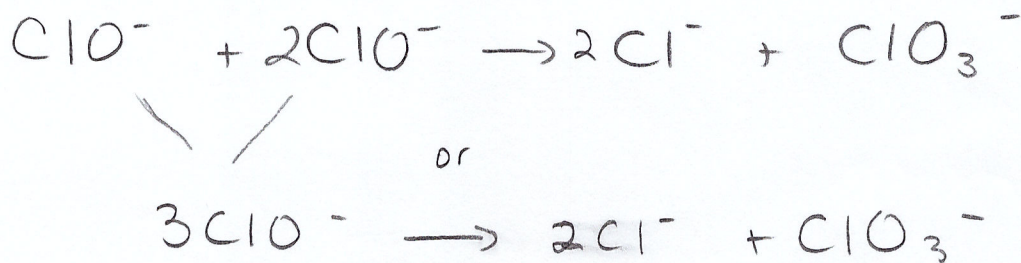


2.) Hypochlorite ions (ClO^-) disproportionate to produce chlorine ions and chlorate ions. Write a balanced redox reaction for this disproportionation reaction.

use oxidation number method



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Now try pg. 452 #3-6, pg. 454 #3, & pg. 461 #11

↳ omit #5

Section 12.2 Review (Solutions)
pg. 454

#3

