

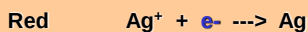
Balancing REDOX Equations

Step 1: Divide the reaction into half-reactions, one for oxidation and the other for reduction.



Step 2: Balance each for mass. Already done in this case.

Step 3: Balance each half-reaction for charge by adding electrons.



Balancing Equations

Step 4: Multiply each half-reaction by a factor so that the reducing agent supplies as many electrons as the oxidizing agent requires.



Step 5: Add half-reactions to give the overall equation. Cancel out identical species.



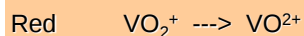
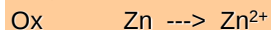
The equation is now balanced for both charge and mass.

Balancing Equations in an Acidic Solution

Balance the following in acid solution—



Step 1: Write the half-reactions



Step 2: Balance each half-reaction for mass.

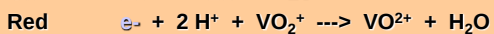


Add H_2O on O-deficient side and add H^+ on other side for H-balance.

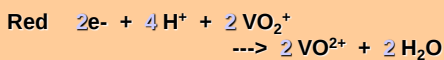


Balancing Equations in an Acidic Solution

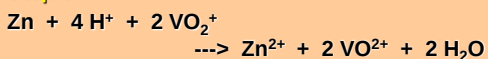
Step 3: Balance half-reactions for charge.



Step 4: Multiply by an appropriate factor.



Step 5: Add balanced half-reactions



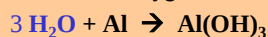


1. Write the half-reactions

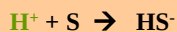


2. Balance other elements than H and O

3. Add water to oxygen deficit side...



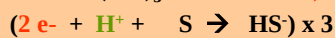
4. Add hydrogen to hydrogen deficit side...



5. Now calculate the electrons needed and add them to the correct side.

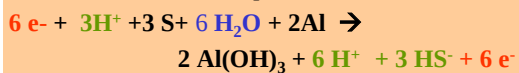


6. Find the LCM and multiply the equations to cancel the electrons

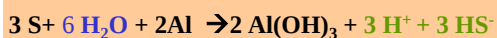


NOW TO FINISH...

- Write out the whole equation...



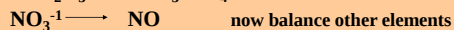
NOW CROSS OUT identical species and combine like ones...



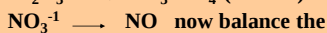
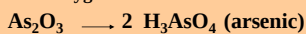


Let's Try One...

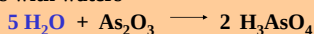
- $As_2O_3 + NO_3^{-1} \rightarrow H_3AsO_4 + NO$ first split it up



Other than H^+ and Oxygen



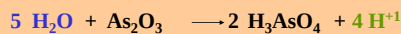
oxygens with waters



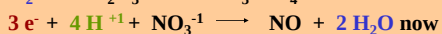
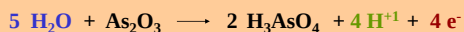
balance the hydrogens with H^{+1} 's



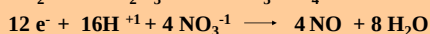
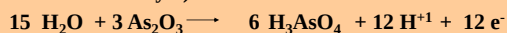
Finishing



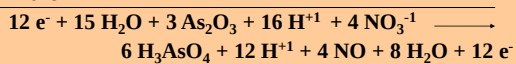
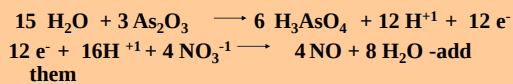
now balance the electrons



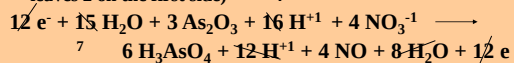
multiply to get electrons to cancel (top reaction by 3 and bottom by 4)



All Done



cancel out everything in common on both sides and subtract out(like 12 of one on one side and 10 on the other, leaves 2 on the first side) 4



Final answer

