

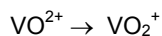
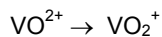


WRITING HALF EQUATIONS

STEP

1. Calculate oxidation states on each side of the equation.
2. Balance the element changing oxidation state.
3. Sort out electrons. If the oxidation state becomes more negative then it gains electrons. If the oxidation state becomes more positive then electrons are lost.
4. Sort out Os. For every O gained/lost, add/remove one H₂O molecule.
5. Sort out Hs. For every H gained/lost, add/remove one H⁺ ion.
6. Check – if the total electric charge on the left equals that on the right then it is probably correct. If it is not then you know you have gone wrong!

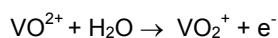
EXAMPLE 1



V already balanced



V becomes 1 more positive so 1 electron lost



1 less O on left so add 1 H₂O on the left

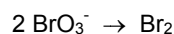
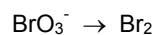


2 less H on right so add 2 H⁺ to right

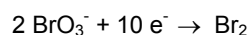
Left = 2+, 0 = 2+

Right = 1+, 1-, 2+ = 2+

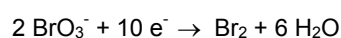
EXAMPLE 2



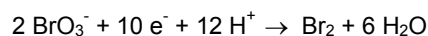
2 Br on right so need 2 BrO₃⁻ on left



2x Br become 5 more negative so 10 electrons gained



6 more O on left so need 6 H₂O on the right



12 less H on left so add 12 H⁺ to left

Left = 2-, 10-, 12+ = 0

Right = 0, 0 = 0



