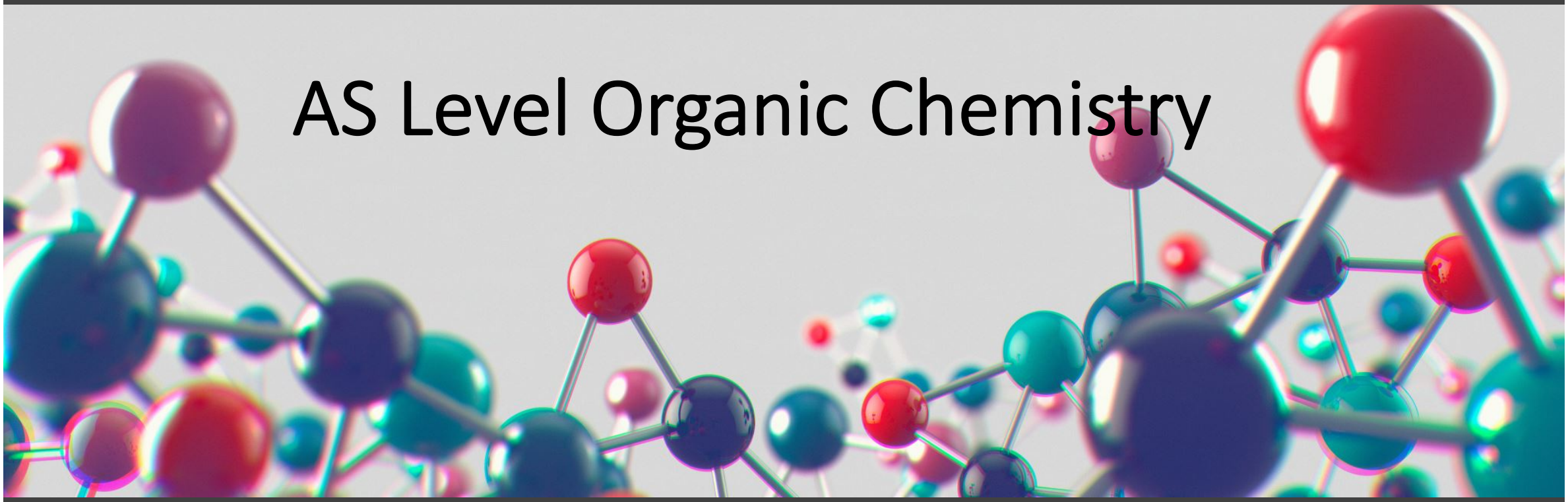


AS Level Organic Chemistry

Balancing Redox Equations using oxidation states

Download slides at ChemistryTuition.Net

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 1

$MnO_4^- + H^+ + Fe^{2+} \rightarrow Mn^{2+} + H_2O + Fe^{3+}$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 1

$MnO_4^- + 8H^+ + Fe^{2+} \rightarrow Mn^{2+} + 4H_2O + Fe^{3+}$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 1

$MnO_4^- + 4H^+ + Fe^{2+} \rightarrow Mn^{2+} + 8H_2O + Fe^{3+}$

+7 +2 +2 +3

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 1

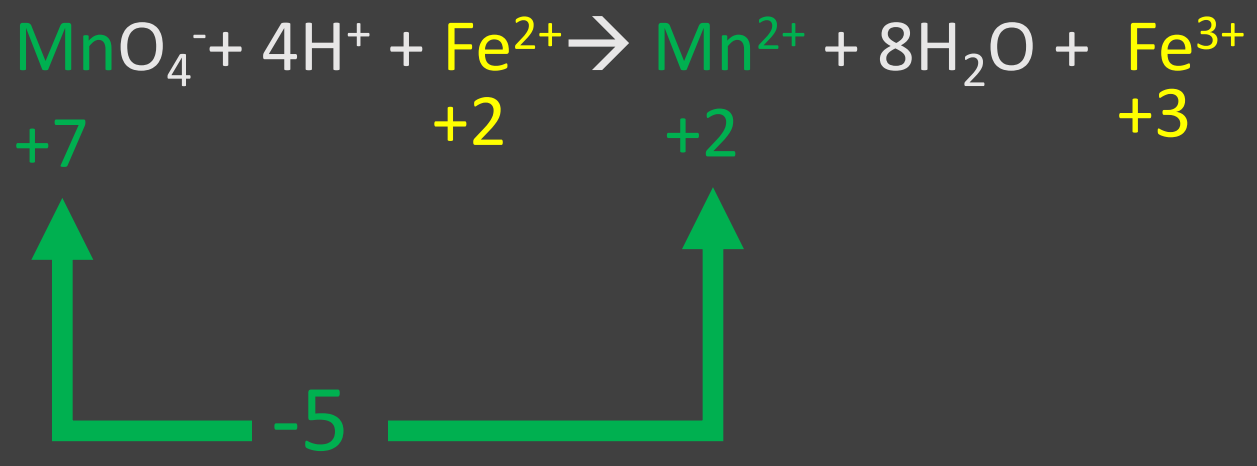
$MnO_4^- + 4H^+ + Fe^{2+} \rightarrow Mn^{2+} + 8H_2O + Fe^{3+}$

+7 +2 +2 +3

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

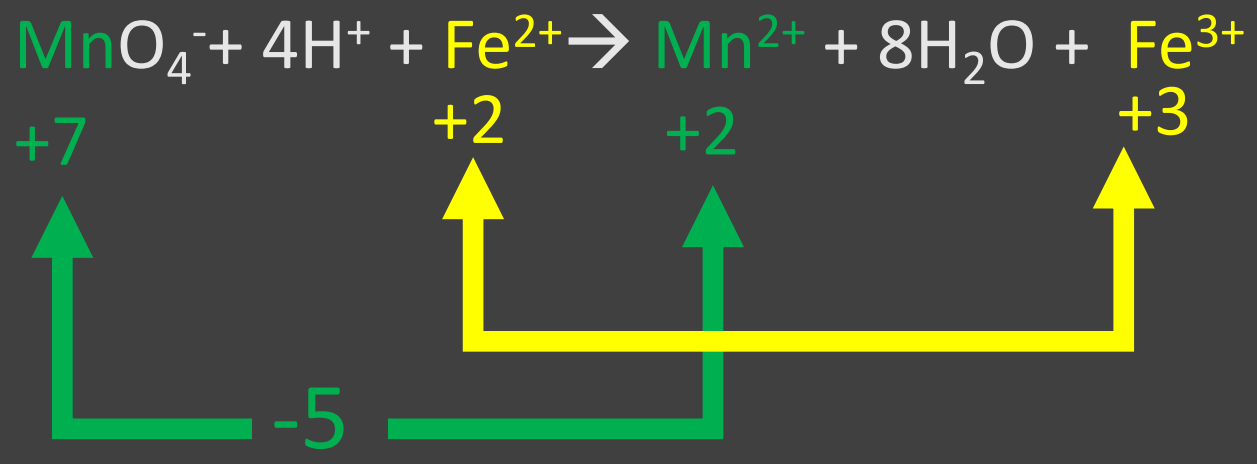
Example 1



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

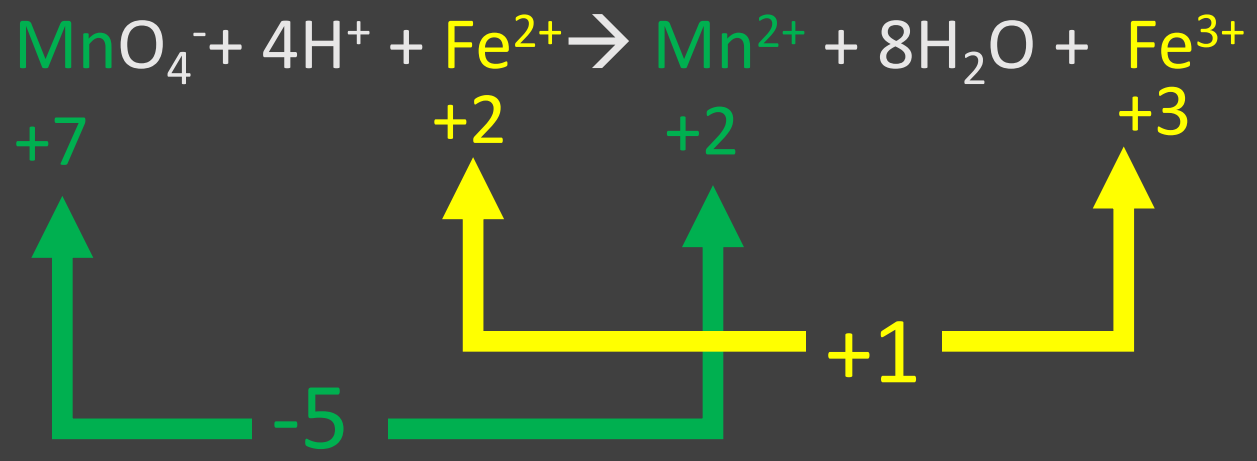
Example 1



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

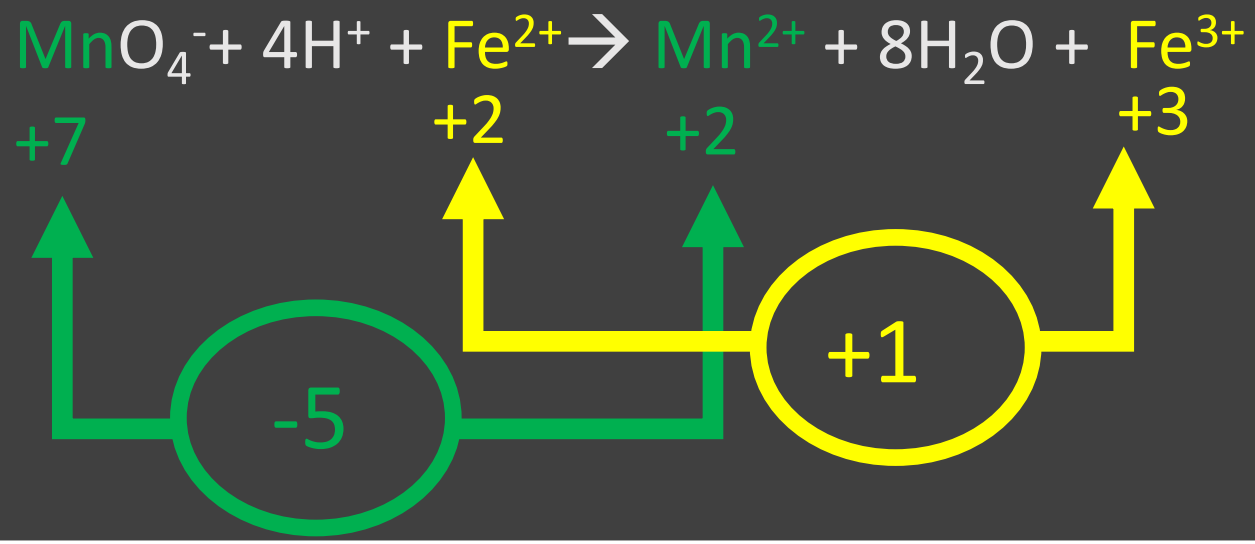
Example 1



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

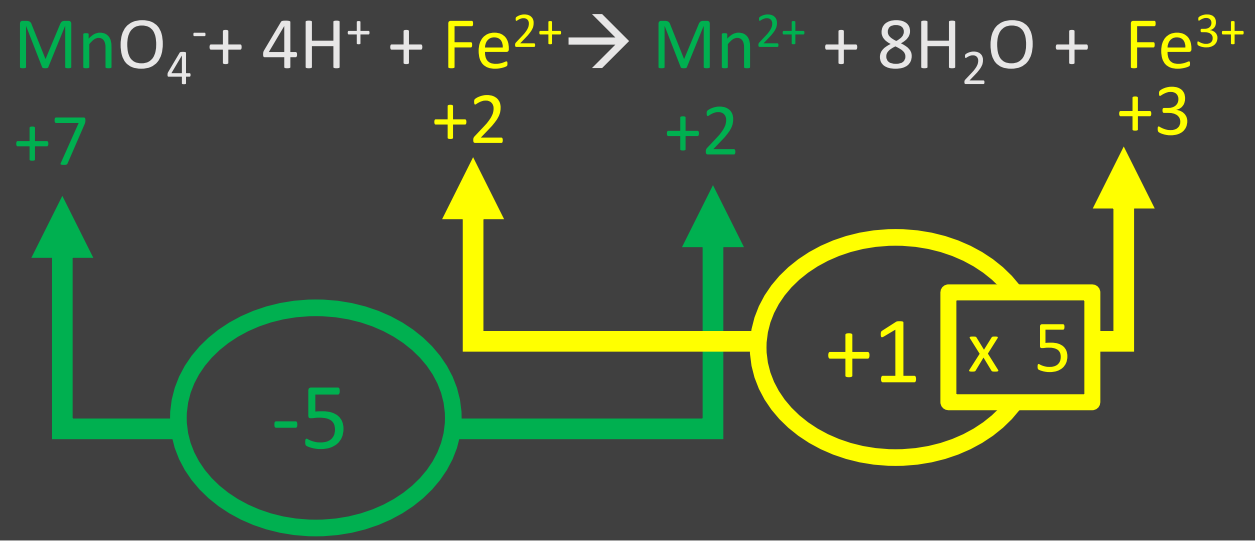
Example 1



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

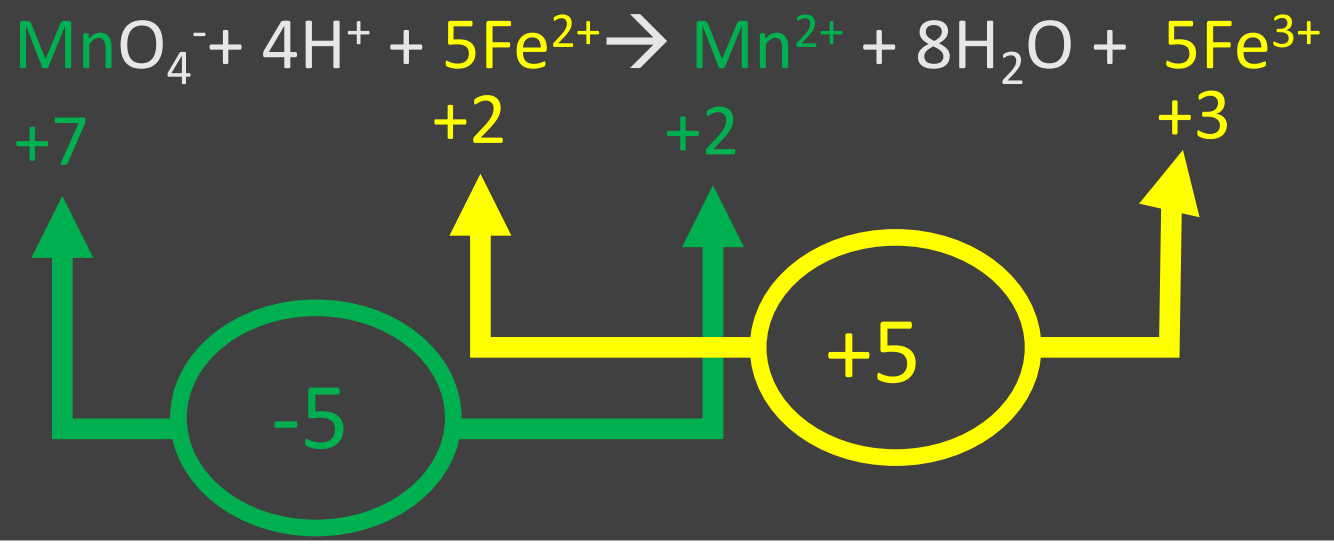
Example 1



Using oxidation states to balance redox equations

1. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
2. Balance with respect to change in oxidation states.
3. Balance with respect to change in oxidation states.

Example 1



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 1 – Answer:

$$MnO_4^- + 4H^+ + 5Fe^{2+} \rightarrow Mn^{2+} + 8H_2O + 5Fe^{3+}$$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + H^+(aq) \rightarrow Cr^{3+}(aq) + Sn^{4+}(aq) + H_2O(l)$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

+6 +2 +3 +4

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

+6 +2 +3 +4

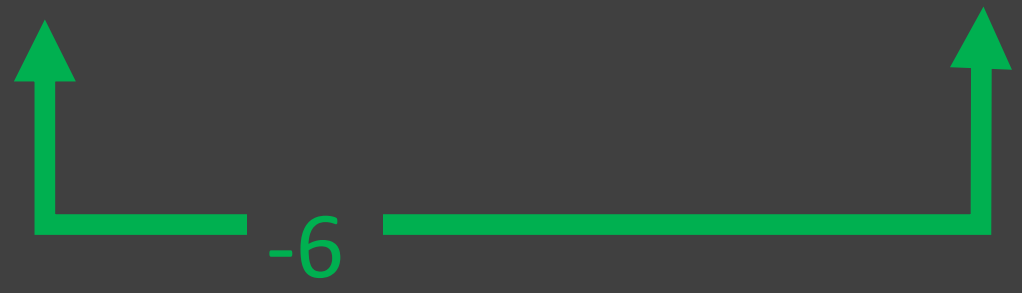
Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

+6 +2 +3 +4



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

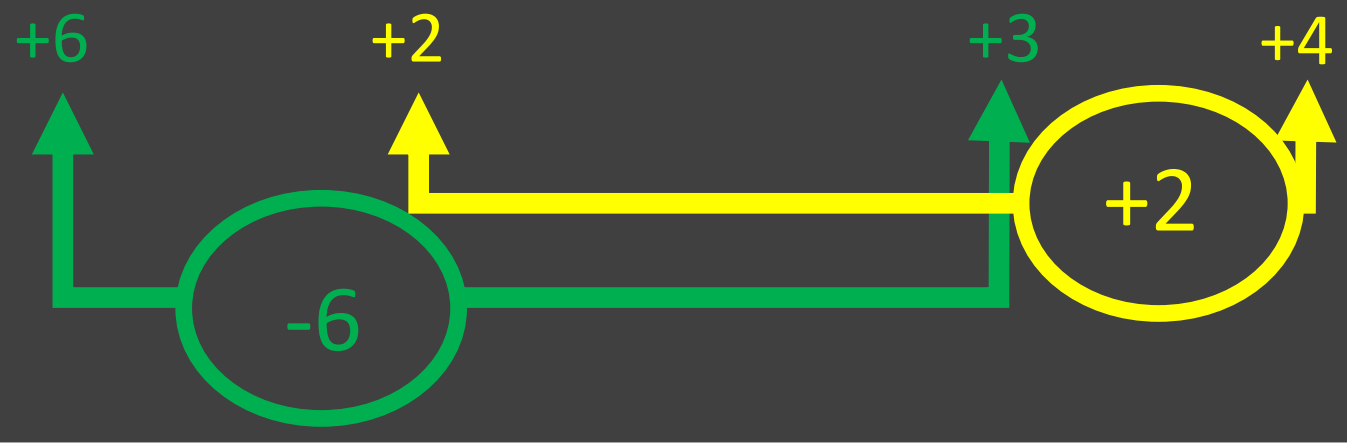
$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

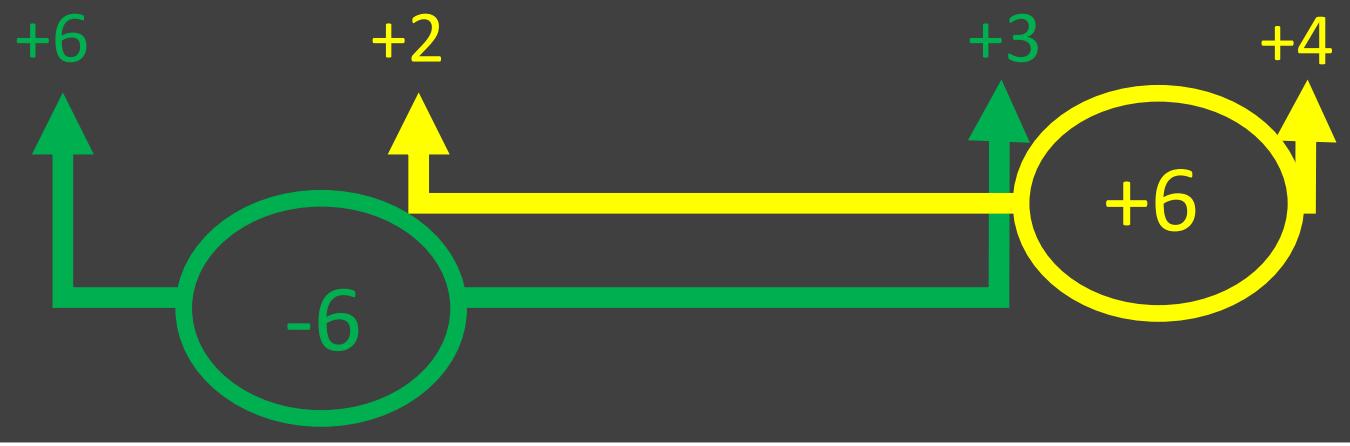
$Cr_2O_7^{2-}(aq) + Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + Sn^{4+}(aq) + 7H_2O(l)$

Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$Cr_2O_7^{2-}(aq) + 3Sn^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + 3Sn^{4+}(aq) + 7H_2O(l)$



Using oxidation states to balance redox equations

1. Write the equation and balance it with respect to atoms.
2. Write oxidation numbers down of the atoms that are oxidised or reduced so you can see clearly the numerical change.
3. Balance with respect to change in oxidation states.

Example 2

$$Cr_2O_7^{2-}(aq) + 3Sn^{2+}(aq) + 14H^{+}(aq) \rightarrow 2Cr^{3+}(aq) + 3Sn^{4+}(aq) + 7H_2O(l)$$

Online Teaching and Learning Resources for Chemistry Students

ChemistryTuition.Net