$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

Step 4 : Check that all the atoms balance

When you look at the equation again, you will see that all the atoms are now balanced.

Step 5 : Ensure all details (e.g. state symbols) are added

$Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$

Question 6: balance the equation below:

$P4(s) + O_2(g) \rightarrow P_2O_5(s)$

(a) Balance the chemical equation.

(b) Prove that the law of conservation of mass is obeyed during this chemical reaction.

Step 1 Identify the reactants and the products

Reactants: P =4 O = 2

Products: P =2 O = 5

Step 2 : Balance the equation

We must increase the atoms of O on the left-hand side and that of P on the right-hand side for the equation to balance, by increasing the molecules of the right-hand side by 2, and that of O on the left-hand side by 5.

$P4(s) + 5O_2(g) \rightarrow 2P_2O_5(s)$

Step 3 : Check that the atoms are balanced

The equation is now balanced, as the sum of the atoms of the left-hand side equation is equal to that of the right-hand of the equation.

(b) The law of conservation of mass is obeyed during this chemical reaction, because the total number of atoms of the reactants is equal to that of the product.