The Mole and Equation

Using Moles to Balance Equations

- One of the useful things about moles is that we can use them to help us balance an equation. If we know how many grams of two substances react, and their molecular masses, we can calculate the ratio of moles in the reaction.

- **Example:**

Mg + 2HCL —> Mgcl2 +H2

- In this reaction, 1 mole of Mg and 2 moles of HCl react together and form 1 mole of MgCl2 and 1 mole of H2 gas

How to balanced equation

- **Calculating mass**

Being able to calculate masses based on balanced equations is very important. Moles can be compared but masses cannot so the following equation is used to help convert between moles and mass

- **Steps:**

1. Find no of moles by **mole = mass / relative formula mass**
2. Divide no of moles of each substance by the **smallest** no of moles
3. If any of them is **not whole number,** multiply all the number by the same amount to become whole number
4. Write a balanced symbol equation for the reaction

Q: 81 g f zinc oxide reacts with 0.60 g of carbon to form 2.2 g of carbon dioxide and 6.5g of Zinc. Write the balanced equation for this reaction.

Solution :

1. find the Mr of each substance

I. ZnO = 65+ 16 = 81

II. C. = 12

III. CO2. =. 12+ (2*16) = 44

IV. Zn. = 65

2. Find No of mole by this formula :

No of moles = mass / Mr

I. ZnO = 8.1/ 81 = 0.10 mol

II. C. = 0.60/ 12 = 0.050 mol

III. CO2 =. 2.2/ 44 =. 0.050 mol

IV. Zn. = 6.5/65 = 0.10mol

3. Divide the smallest No of moles which is 0.050

I. ZnO = 0.10/ 0.050 = 2

II. C. = 0.050/ 0.050= 1

III. CO2. = 0.050/ 0.050 = 1

IV. Zn = 0.10/ 0.050 = 2

4. Write all these whole number with their respective substance and write a balanced equation

2ZnO +. C —>. CO2+ 2Zn