

Careless Mistakes:

- 1 mole of calcium chloride contains:
[1 mole of calcium chloride molecules] $[6.02 \times 10^{23}$ calcium atoms and $2 \times 6.02 \times 10^{23}$ chlorine atoms.]
[$1/2 \times 6.02 \times 10^{23}$ calcium ions and 6.02×10^{23} chloride ions.] $[6.02 \times 10^{23}$ calcium ions and $2 \times 6.02 \times 10^{23}$ chloride ions.]
 Reminder: **Always not only look at the number & also the unit of the no**
- What is the molar mass of the tetrachloromethane
[1.0 mol] [1.0 g mol⁻¹] [154.0 mol] [154.0 g mol⁻¹]
 Reminder: **Always look at the Unit !!**
- Which of the following statements is correct?
[One mole of oxygen gas contains the same number of atoms as there are in one mole of neon gas at room conditions.]

The Oxygen gas is in diatomic structure but Neon is in mono atomic structure

[One mole of magnesium contains the same number of atoms as there are in one mole of iodine at room conditions.]

The magnesium is form with metal atom but iodine is form with 2 iodine atom at the room teamperature

[One mole of chlorine gas and one mole of bromine gas have the same number of molecules and atoms.]
[One mole of sodium has the same mass as there are in one mole of potassium.]
 Reminder: **Always think about the atomic structure before making comparison**
- How many moles of aluminium ions are present in 17.12 g of aluminium sulphate?
[0.005 mol] [0.01 mol] [0.05 mol] [0.1 mol]
 Reminder: **Need to look at the question more carefully. Clear in mind : what is the question need us to find.**

Misconception:

- Which of the following statement is INCORRECT?
[One mole of carbon has a mass of 12.0 g]
[The mass of one mole of chlorine gas equals to the relative atomic mass of chlorine in grams]
[One mole of sodium chloride contains two moles of ions]
[1 dm⁻³ of a 1.0 mol dm⁻³ bromine liquid has one mole of bromine molecules.]
 Ans: The mass of **ONE MOLE OF CHLORINE GAS** equals to the relative atomic mass of chlorine in grams
 | Chlorine Gas is in **Diatomic Structure** [Cl-Cl]
 ∴ The mass of **ONE MOLE OF CHLORINE GAS** equals to the **2** relative atomic mass of chlorine in grams
- The formula mass of a compound:
 [is measured in grams]
[has a unit of g mol⁻¹.]
 [is always a whole number]
[is the mass of one formula unit of the compound on the ¹²C = 12 scale]
| The unit of formula mass IS NOT g mol⁻¹ | The unit is (amu) can be omitted

Special Question:

- Complete combustion of 1.86 g of an organic compound *Y* gave 2.64 g of carbon dioxide and 1.62 g of water as the only products. If the relative molecular mass of *Y* is equal to 62, what is its molecular formula?

[C₂H₆O₂] [CH₃O] [CHO] [C₃H₉O₃]

Since all the C in CO₂ and H in H₂O came from the compound *Y*,

mass of C in the compound = $2.64 \times [12/(12+16 \times 2)] \text{ g} = 0.72 \text{ g}$,

mass of H in the compound = $1.62 \times [2/(16+2)] \text{ g} = 0.18 \text{ g}$,

the rest of the compound must be oxygen.

| So, mass of O in the compound = $(1.86 - 0.72 - 0.18) \text{ g} = 0.96 \text{ g}$

Incorrect : { $2.64 \text{ g} \times [16/(12+16 \times 2)] + 1.62 \text{ g} \times [16/(16+2)] \}$

Finally, Calculate the mole for each element.