

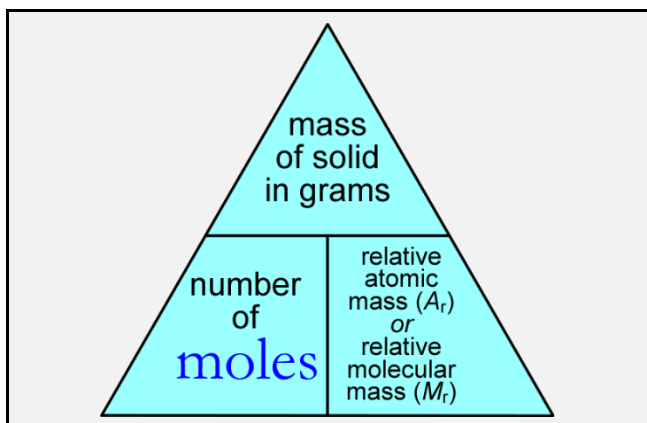


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Summary of Formulae used for Mole Calculations

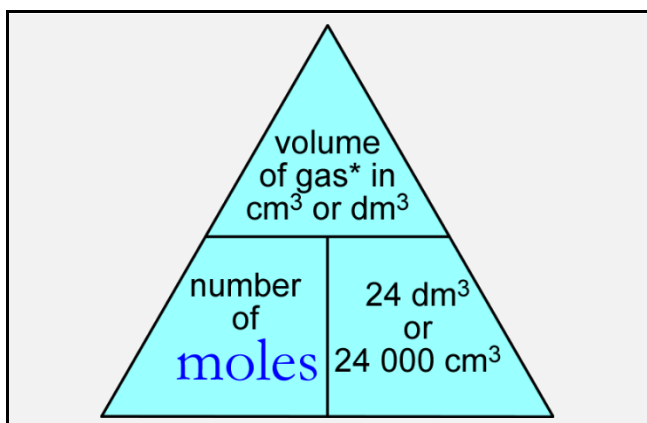


Mole Calculations for Solids

- moles = mass of solid in grams \div A_r or M_r
- mass of solid in grams = moles \times A_r or M_r
- A_r or M_r = mass of solid in grams \div moles

Note:

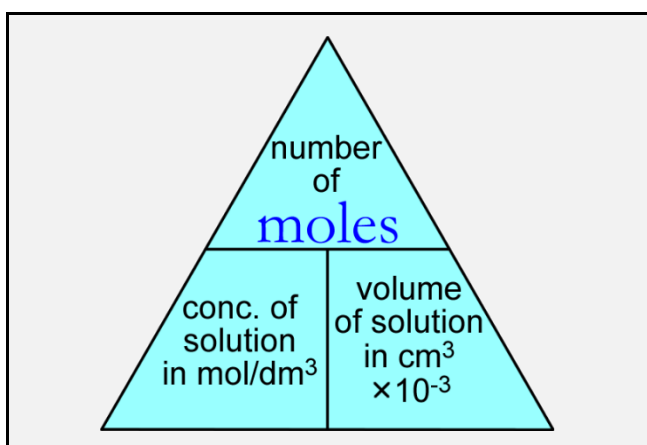
A_r = relative atomic mass.
 M_r = relative molecular mass (for covalent compounds) or relative formula mass (for ionic compounds).



Mole Calculations for Gases

- moles = volume of gas* in dm^3 \div 24
- moles = volume of gas* in cm^3 \div 24 000
- volume of gas* in dm^3 = moles \times 24
- volume of gas* in cm^3 = moles \times 24 000

***Note:** Applies to the volume of a gas measured at room temperature and pressure (r.t.p.). For the volume (V) of a gas at another temperature (T) and pressure (P), convert using $(P_1 \times V_1) \div T_1 = (P_2 \times V_2) \div T_2$



Mole Calculations for Solutions

- moles = concentration \times (volume $\times 10^{-3}$)
- concentration = moles \div (volume $\times 10^{-3}$)
- volume = moles \div (concentration $\times 10^{-3}$)

Note: The mole concentration of a solution (c) is measured in mol/dm^3 . The volume of a solution (v) is measured in cm^3 .

Note: mass concentration (g/dm^3) = mass of solute (g) \div volume of solution (dm^3)
Note: mole conc. = mass conc. \div M_r of solute

- The mole is an SI unit that represents the amount of a substance. One mole of a substance contains 6.022×10^{23} particles of that substance. 6.022×10^{23} is known as *Avogadro's Constant*.

- number of particles = moles \times (6.022×10^{23})
- moles = number of particles \div (6.022×10^{23})

Mole Concept

