

The Mole

Chemistry

The central quantity in chemistry, and the three conversions built on it.

One mole is Avogadro's number of particles: 6.022×10^{23} .

$$n = m/M \cdot n = N/N_a \cdot n = V/24 \text{ (dm}^3, \text{ RTP)}$$

18 g of water

$M = 18 \text{ g/mol}$.

1 mol

1 mol of any gas at RTP

Molar gas volume.

24 dm³

0.5 mol

3.011×10^{23} particles

THE COMMON MISTAKE

✗ **Using mass ratios directly from an equation**

✓ **Converting to moles first**

Equation coefficients are mole ratios, not mass ratios. Skipping the conversion gives the wrong answer every time.

Concentration: $c = n/V$, with V in dm³. $1 \text{ dm}^3 = 1 \text{ litre} = 1000 \text{ cm}^3$.