GenChemDrill / Formula Pack

General Chemistry I & II | 32 worked concepts

01 MEASUREMENTS AND MOLES

Density

$$\rho = \frac{m}{V}$$

WHEN TO USE:

Keep mass and volume units consistent.

TRY IT:

$m = 18\,\text{g}, \quad V = 6\,\text{mL}$

WORK:

$\rho = 18/6 = 3\,\text{g/mL}$

ANSWER:

3 g/mL

Moles from mass

$$n = \frac{m}{M}$$

WHEN TO USE:

Molar mass converts grams to moles.

TRY IT:

$m = 18\,\text{g}, \quad M = 18\,\text{g/mol}$

WORK:

$n = 18/18 = 1\,\text{mol}$

ANSWER:

1 mol

Particles from moles

$$N = nN_A$$

WHEN TO USE:

Use Avogadro's constant per mole.

TRY IT:

$n = 2\,\text{mol}, \; N_A = 6.022 \times 10^{23}\,\text{mol}^{-1}$

WORK:

$N = 2(6.022 \times 10^{23}) = 1.2044 \times 10^{24}$

ANSWER:

1.2044 × 10²⁴ particles

Percent composition

$$\%m = \frac{m_{\text{part}}}{m_{\text{total}}} \times 100$$

WHEN TO USE:

Mass fraction of one element or component.

TRY IT:

$m_{\text{part}} = 4\,\text{g}, \; m_{\text{total}} = 10\,\text{g}$

WORK:

$\%m = (4/10)100 = 40\%$

ANSWER:

40%

SAMPLE

Watermarked sample - full pack: 8 pages / 32 concepts