

Solutions

Each answer shows the steps, then the **result**.

2.1

- $M_r(\text{CO}_2) = 12 + (2 \times 16)$
- 44

2.2

- relative atomic mass is the **average mass of an atom** compared with $\frac{1}{12}$ the mass of a carbon-12 atom

3.1 C

- $M_r(\text{CaCO}_3) = 40 + 12 + (3 \times 16) = \mathbf{100}$
- A and B miss oxygen atoms; D overcounts

3.2

- $M_r(\text{NH}_4\text{NO}_3) = (2 \times 14) + (4 \times 1) + (3 \times 16)$
- $28 + 4 + 48 = \mathbf{80}$

3.3

(a)

- 12 g is $\frac{1}{4}$ of 48 g

$$m(\text{MgO}) = \frac{1}{4} \times 80 \text{ g} = \mathbf{20 \text{ g}}$$

(b)

- mass of oxygen = $80 \text{ g} - 48 \text{ g} = \mathbf{32 \text{ g}}$