

Solutions

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

2.1

- $8.0 \div 16 = 0.50 \text{ mol}$

2.2

- ratio $\text{N}_2 : \text{NH}_3 = 1 : 2$, so $2 \times 2 = 4 \text{ mol NH}_3$

2.3

- The reactant that runs out first, limiting how much product forms

3.1 B

- the balanced-equation coefficients

3.2

(a)

- ratio $\text{Al} : \text{AlCl}_3 = 2 : 2$, so 4.0 mol AlCl_3

(b)

- ratio $\text{Al} : \text{Cl}_2 = 2 : 3$, so $4.0 \times \frac{3}{2} = 6.0 \text{ mol Cl}_2$

3.3

(a)

- H_2 needs $3 \times 3.0 = 9.0 \text{ mol}$ but only 6.0 present, so H_2 is limiting

(b)

- $6.0 \text{ mol H}_2 \times \frac{2}{3} = 4.0 \text{ mol NH}_3$