Chemistry — Worksheet 5: Stoichiometry

Show all working. Molar masses: H = 1, C = 12, O = 16 g/mol.

Exercise 1

10 points

Balance the following combustion reaction:

$$\mathrm{C_3H_8 + O_2 \longrightarrow CO_2 + H_2O}$$

Part A

4 points

How many moles of $\mathrm{O_2}$ are needed to fully combust 2 mol of $\mathrm{C_3H_8}$?

Part B

4 points

What mass of $\mathrm{CO_2}$ is produced from that same 2 mol of $\mathrm{C_3H_8}$?

Common error: forgetting to balance oxygen last, after carbon and hydrogen are already fixed.

Exercise 2

15 points

A solution is made by dissolving 5.85 g of NaCl (molar mass 58.5 g/mol) in enough water to make 500 mL of solution.

Part A

5 points

Calculate the number of moles of NaCl dissolved.

Part B

5 points

Calculate the molarity of the solution.

Part C

5 points

If the solution is diluted to 2 L, what is the new molarity?

ANNEX

This worksheet assumes familiarity with balancing chemical equations and basic mole-ratio stoichiometry from Chapter 4.