

Modelling with Number — Problem Cards & Planning Sheet

Part A — Solving real-world problems with the modelling cycle

Mathematical **modelling** turns a real-world situation into maths, solves it, then checks the answer back **in context**. Follow the four stages every time.

 A circular four-stage modelling cycle: Analyse, Represent, Solve, Interpret and communicate.

Analyse, represent, solve, then interpret and communicate.

Worked example. "36 students go on a bus trip. Each bus seats 16. How many buses?"

- **Analyse** — find the number of buses.
- **Represent** — $36 \div 16$.
- **Solve** — 2.25.
- **Interpret** — you cannot have a quarter-bus and everyone needs a seat, so round **up to 3 buses**.

Work through each problem using the **four stages**. Show your thinking at each stage, not just the answer.

Problem 1 – The class party. A class of 28 students is sharing pizzas. Each pizza is cut into 8 slices, and each student should get 2 slices.

- **Analyse:** What do we need to find? What information matters?
- **Represent:** Write an expression for the number of slices needed and the number of pizzas.
- **Solve:** How many pizzas must be ordered?
- **Interpret:** Pizzas are sold whole — does your answer need rounding? Explain.

Problem 2 – Order of operations. A shop sells pencils in packs of 6. Mr Lee buys 4 packs and 5 loose pencils, then gives 3 away. Write **one number sentence** (using brackets/order of operations) for how many pencils he has left, then solve it.

Problem 3 – Fractions, same denominator. A water tank is $\frac{3}{8}$ full in the morning and $\frac{2}{8}$ more is added at noon. Represent the situation, solve for the fraction full, and interpret: is the tank more or less than half full?
