# Equilibrium: temperature and pressure

Teacher / technician

YEAR 11 / LESSON 89 / CHEMISTRY ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Written and model-based lesson; no laboratory procedure is implied.

## Coverage and delivery

Chemistry only: 3.22C, changes in equilibrium position. Paper models only.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

## Requisition • class of 30, working in 15 pairs

| Item | Per pair / setup | Class total |
|---|---|---|
| Booklet / writing tools | 1 per learner | 30 sets |
| Model kit / periodic table | 1 set per pair | 15 sets |

## Immediate safety

Desk activity only; keep small model pieces away from mouths.

# Preparation and delivery

Read alongside the student method

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**1.** Provide 30 booklets and 15 model kits or reusable atom counters; no chemicals are needed.

**2.** Use 10 minutes retrieval, 25 independent/pair tasks, 15 explanation and 10 corrections. Keep first attempts visible.

**3.** Require both a direction and a reason; a memorised higher-pressure rule needs gas counting.

**4.** Do not treat equilibrium as equal concentrations or a stopped reaction.

**5.** Check all carbon valencies, formula subscripts and equation coefficients. Label any supplied numbers as practice data, not class observations.

## Close of lesson

- Return shared equipment and retain corrected reasoning.

## Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

# Answers and teaching notes

Expected explanations • do not give as experimental observations

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- Heating favours endothermic reverse reaction, lowering equilibrium ammonia yield.
- Cooling favours exothermic forward reaction, raising equilibrium yield.
- Higher pressure favours the side with fewer gas molecules: ammonia.
- Two gaseous amounts on each side; neither side reduces total gas amount.
- No. Cooling usually slows reaction even if final yield increases.
- Matter must not escape; forward and reverse reactions persist with equal rates at equilibrium.

## References and provenance

Pearson Chemistry specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.