Kelvin temperature and molecular motion

Teacher / technician

YEAR 11 / LESSON 76 / PHYSICS + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Shared Physics / Double Award: 5.16–5.19. Absolute zero, kelvin and average molecular kinetic energy.

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
Booklets	1 per learner	30
Ruler and calculator	1 set per pair	15 sets

Immediate safety

Desk-based models and calculations only. No cryogenic liquids, dry ice or heated gas vessels are used.

Preparation and delivery

Read alongside the student method

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1. State the chosen 273 approximation and accept internally consistent use of 273.15 where appropriate.

2. Keep temperature change, absolute temperature and speed distinct. Use varied arrows in every particle model.

Close of lesson

• Retain conversions and return calculators.

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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- 300 K.
- 400 K.
- −273 °C.
- It is twice as large.
- No; compare 293 K and 283 K.
- No; there is a distribution of speeds.

References and provenance

Pearson Physics 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.