The H–R diagram: temperature and brightness

Teacher / technician

YEAR 11 / LESSON 109 / PHYSICS ONLY

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

Coverage and delivery

Physics only: 8.11P–8.12P. Absolute magnitude and main regions of the H–R diagram.

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 and graph paper	1 each per learner	30 of each
Rulers and data tables	1 set per pair	15 sets

Immediate safety

Desk-based graphing. No lamps, lasers or brightness tests directed at people are used.

Preparation and delivery

Read alongside the student method

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1. Prepare axes with hotter left and brighter toward the top. Use a consistent magnitude band and label all data schematic.

2. Check the distinction between white dwarfs, giants and the main sequence without treating the diagram as a universal chronological sequence.

Close of lesson

• Retain labelled plots and collect rulers.

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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- 10 parsecs.
- Toward the left.
- −2.
- E.
- It has a large emitting surface area.
- No.

References and provenance

Pearson Physics specification

University of Iowa: H–R diagrams

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.