Waves: connecting models and evidence

Teacher / technician

YEAR 11 / LESSON 67 / 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: Review of shared wave, spectrum and optical concepts; separate-course extensions labelled.

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
Diagram cards, ruler and calculator	1 set per pair	15 sets

Immediate safety

Desk-based review. No sound generators, lasers, UV lamps or heating sources are used.

Preparation and delivery

Read alongside the student method

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1. Prepare original diagrams and separate the optional Physics-only microphone trace from shared prompts. The extension gives T = 4 ms and f = 250 Hz.

2. Ask for corrections with reasons rather than replacing an answer without explanation.

Close of lesson

- Retain corrected work and return cards and 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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- 4.0 m s^{-1}.
- 0.125 s.
- Radio.
- Frequency.
- Higher-to-lower refractive index and internal incidence greater than the critical angle.
- Wavefronts are closer together, so the observer receives more per second.

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.