Waves and optics: written practice

Teacher / technician

YEAR 10 / LESSON 57 / 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 3.2–3.7, 3.14–3.16.

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 each	30
Ruler, protractor and calculator	1 set per pair	15 sets

Immediate safety

Paper-based written practice. Do not set up optical apparatus for the diagram questions.

Preparation and delivery

Read alongside the student method

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1. Give fifteen minutes for independent work, then guided corrections. Accept equivalent accurate explanations.

2. Use the answers as scientific guidance, not as an official mark scheme or grade boundary.

Close of lesson

• Keep the original attempts alongside corrections for later revision.

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}.
- 0.20 s.
- Oscillations are perpendicular to propagation for transverse waves and parallel for longitudinal waves.
- i = r = 60°.
- Reflected rays only appear to originate behind the mirror; they do not converge there.
- Refraction at the two parallel boundaries gives equal and opposite changes of direction.

References and provenance

Pearson Physics specification

IOP: reflection and refraction

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.