Induction: independent written practice

Teacher / technician

YEAR 11 / LESSON 90 / 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: Shared induction and generation review; labelled Physics-only transformer practice.

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

Paper-based independent work. No electrical apparatus is connected.

Preparation and delivery

Read alongside the student method

YEAR 11 / LESSON 90 / PHYSICS + SCIENCE (DOUBLE AWARD)

1. Separate the Physics-only extension from shared-course questions.

2. Allow independent work before feedback and preserve first attempts for comparison.

Close of lesson

• Keep corrected work 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

YEAR 11 / LESSON 90 / PHYSICS + SCIENCE (DOUBLE AWARD)

- Changing magnetic field linkage through the coil.
- No sustained induced voltage in the stationary arrangement.
- The field linkage changes in the opposite sense.
- For example faster relative motion, stronger field, or more linked coil turns with other conditions controlled.
- Motor: electrical to mechanical; generator: mechanical to electrical, both with losses.
- 2.0 V and 0.080 A; shared alternative: faster generator rotation increases peak voltage and frequency.

References and provenance

Pearson Physics specification

IOP: electromagnetism

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.