Radioactivity: evidence and explanation review

Teacher / technician

YEAR 11 / LESSON 100 / 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 7.2–7.16: nuclear structure, decay, detection, half-life and applications.

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 review only. No sources, detectors or exposure demonstrations are needed.

Preparation and delivery

Read alongside the student method

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1. Require both mass-number and charge-number checks in equations.

2. Check background subtraction before half-life calculations and preserve the original attempt during feedback.

Close of lesson

• Retain corrected work for 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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- 11 protons, 12 neutrons and 11 electrons.
- Electrons emitted in a nuclear transformation.
- A = 234, Z = 90.
- A = 14, Z = 7.
- 20 and 30 counts min^{-1} respectively.
- One involves radioactive material transfer; the other is radiation exposure and requires different controls.

References and provenance

Pearson Physics specification

IOP: teaching radioactivity

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.