Ultraviolet, X-rays and gamma rays

Teacher / technician

YEAR 10 / LESSON 63 / PHYSICS + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. This replaces the former UV-lamp and radioactive-object demonstrations with original desk-based evidence tasks.

Coverage and delivery

Shared Physics / Double Award: 3.10–3.13. Short-wavelength electromagnetic uses and hazards.

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
Application cards and data sheets	1 set per pair	15 sets
Booklets and calculators	1 each per learner	30 of each

Immediate safety

Desk-based analysis only. Do not use UV lamps, security lamps, radioactive rocks, gas mantles or sealed radioactive sources. No sunscreen is applied to pupils and no skin or eye exposure test is performed.

Preparation and delivery

Read alongside the student method

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1. Prepare original application diagrams and the exact invented detector data. Label all data as practice, not a laboratory or product test.

2. Ensure the lesson covers UV, X-ray and gamma-ray uses and hazards rather than repeating the previous long-wavelength list.

Close of lesson

• Return cards and retain the background correction and limitations.

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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- Ultraviolet.
- Visible light emitted after ultraviolet absorption.
- 100 arbitrary units.
- 20%.
- The simplified detector comparison does not follow the defined biological and spectral SPF test.
- It can damage tissue; the useful effect does not remove that risk.

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.