# Half-life: correcting and interpreting data

Teacher / technician

YEAR 11 / LESSON 96 / 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: 7.12–7.13. Half-life definition, calculations and graphical estimates.

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 and graph paper | 1 each per learner | 30 of each |
| Ruler and calculator | 1 set per pair | 15 sets |

## Immediate safety

Paper-based data analysis only. No radioactive source, detector or exposure activity is used.

# Preparation and delivery

Read alongside the student method

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**1.** Prepare the six data pairs and clearly label the constant background.

**2.** Check that pupils graph corrected counts and use equal halving intervals, not half of the raw initial count.

## Close of lesson

• Retain the graph and calculation checks.

## 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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- It is the constant model background contribution.
- 320 counts $min^{-1}$.
- 2 minutes.
- 40 counts $min^{-1}$.
- 15 counts $min^{-1}$.
- No; each nucleus decays randomly and roughly half a large population remains after one half-life.

## 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.