Constant-acceleration equations: choosing a model

Teacher / technician

YEAR 10 / LESSON 16 / 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: 1.6, 1.10. Acceleration and $v^2 = u^2 + 2as$.

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
Booklet/graph paper/ruler	1 set per learner	30 sets
Calculators	1 per pair	15

Immediate safety

Written modelling only. No ball drops, raised platforms or moving-vehicle experiments are needed.

Preparation and delivery

Read alongside the student method

YEAR 10 / LESSON 16 / PHYSICS + SCIENCE (DOUBLE AWARD)

1. Prepare 30 booklets and graph sheets. Focus on the two specified relationships; additional SUVAT equations are optional teaching extensions.

2. Require a labelled direction and an assumption statement. Do not label idealised practice values as class results.

Close of lesson

- Keep corrected calculations and return rulers.

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 10 / LESSON 16 / PHYSICS + SCIENCE (DOUBLE AWARD)

- 2 m s^{-2}.
- 8 m s^{-1}, since $v^2 = 64\ m^2\ s^{-2}$.
- 24 m.
- It is opposite to the chosen positive velocity.
- No; drag can cause changing acceleration.
- Check the model assumptions, known quantities, signs and units.

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.