Resistance from voltage and current

Teacher / technician

YEAR 10 / LESSON 44 / 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: 2.10, 2.13. V = IR.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, ten groups of three

Item	Per pair / setup	Class total
Source, switch and two meters	1 set per group	10 sets
100 Ω and 220 Ω resistors, ≥0.5 W	1 each per group	10 of each
Leads	7 per group	70
Booklets and calculators	3 booklets and 1 calculator per group	30 booklets; 10 calculators

Immediate safety

Keep the source at or below 3.0 V with a 0.05 A current limit. Disconnect before changing resistors or meter connections. Never connect an ammeter across the source. Stop if components warm unexpectedly.

Preparation and delivery

Read alongside the student method

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1. Prepare ten groups of three and verify component ratings. Check meter ranges and inspect circuits before use.

2. Demonstrate unit conversion and resistor tolerance. Use the actual voltage across the resistor, not the source setting.

Close of lesson

- Switch off and disconnect all sources; return resistors and meters.

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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- R = V/I.
- 120 Ω.
- 1.5 V.
- The equation uses amperes with volts and ohms.
- It is undefined and may reflect an open circuit or insufficient resolution.
- Temperature or other operating conditions may change.

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.