Series circuits: current and voltage sharing

Teacher / technician

YEAR 10 / LESSON 47 / 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: 2.7–2.9, 2.13, 2.19. Series circuits.

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 resistors	2 per group	20
220 Ω resistors	1 per group	10
Leads	8 per group	80
Booklets	1 per learner	30

Immediate safety

Keep the source at or below 3.0 V and current limit at 0.05 A. Disconnect before moving meters or changing resistors. Never put the ammeter across the source. Use only the specified low-voltage components.

Preparation and delivery

Read alongside the student method

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1. Prepare ten groups of three and verify resistor ratings and meter ranges.

2. Make the practice values distinct from the experimental 220 Ω component. Check circuit connections at each alteration.

Close of lesson

- Switch off, disconnect and return components.

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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- They add.
- It is the same at all points.
- Their sum equals the source voltage, allowing for other circuit drops.
- The greater resistance.
- Current stops throughout that series loop.
- 300 Ω.

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.