Electricity exam practice: evidence and corrections

Student activity • observation and reasoning

YEAR 10 / LESSON 38 / PHYSICS + SCIENCE (DOUBLE AWARD)

The question

Can you make an electrical explanation precise enough to justify each claim?

Complete a short original written practice set, then improve each answer with a specific reason. These are not copied examination-board questions.

Equipment

- Booklet, pencil and ruler

Written practice only. Do not construct short circuits or connect ammeters across cells. No practical electrical equipment is needed.

Course coverage: Shared Physics / Double Award: Review of circuit concepts; electrostatic extension is Physics only.

Plan, model or apparatus sketch

Draw a labelled setup or force diagram; include the measured quantities.

Method and reasoning

Read the whole sequence before starting

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1. Work independently for ten minutes on the first four prompts. Use circuit symbols and complete explanations rather than memorised labels alone.

2. For a cell, lamp and open switch, draw the circuit and explain why the lamp is off. State that an unlit lamp can also result from other faults.

3. Explain the error in the claim that a lamp consumes current. Describe the distinction between charge flow and energy transfer.

4. Diagnose a diagram with an ammeter placed directly across a cell. Explain why it must not be connected that way.

5. Physics-only extension: explain why repulsion is stronger evidence of like charges than attraction is of unlike charges. Double Award alternative: describe how to check a lamp circuit safely while disconnected.

6. Mark with the staff guidance, identify the missing scientific idea in each weak answer and write an improved response. Finish with one fresh circuit diagram.

Cleanup

- Retain corrections and return rulers.

Record your evidence

Blank spaces are for your own work

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Reference and task data

This is an original practice activity, not an official paper or grade prediction. The electrostatics extension is outside the shared Double Award tasks. Do not construct the unsafe diagnostic circuits.

Prompt	Missing idea	Improved explanation
Open switch		
Current claim		
Ammeter fault		
Diagnosis / extension		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Draw a cell, lamp and open switch.

2. Explain why that lamp is off.

3. Correct “the lamp uses up current”.

4. Explain why an ammeter goes in series.

5. Give another possible reason a lamp is unlit.

6. Physics-only: why is repulsion a useful charge test?