MR SULLY UNFOLDS PHYSICS

Mains electricity and safety

AQA 4.2.3
Electricity · Paper 1
Foundation & Higher

Name _____ Class _____ Date _____

The electricity supply in our homes is very different from a battery, and it can be dangerous.

KEY IDEAS

- Cells and batteries supply **direct current (d.c.)**: it flows in one direction only.
- Mains electricity is **alternating current (a.c.)**. In the UK it is about **230 V** at **50 Hz**.
- Three-core cable: **live** (brown), **neutral** (blue), **earth** (green and yellow stripes).

Section A · Recall

Grade 4–5

1 What is the difference between direct current and alternating current? [2]

2 State the frequency and p.d. of UK mains electricity. [2]

3 Complete the table. [6]

Wire	Colour	Job
Live		
Neutral		
Earth		

Section B · Explain

Grade 5–6

4 State the p.d. between: (a) the live wire and earth; (b) the neutral wire and earth. [2]

5 A metal kettle develops a fault so that the live wire touches the metal case. Explain how the earth wire protects the user. [3]

Section C · Stretch

Grade 7+

6 Explain why touching the live wire is dangerous even when the appliance's switch is off. [3]

Exam-style question

AQA style

7 A hairdryer has a plastic case and is connected using a two-core cable with no earth wire.

a Explain why the hairdryer is still safe to use without an earth wire. [2]

b The hairdryer draws a current of 7 A. Choose the best fuse from 3 A, 5 A and 13 A. Explain your choice. [2]

Total: _____ / 22

How confident am I?	Not yet	Nearly	Got it
I can describe a.c. and d.c.	☐	☐	☐
I can name the three wires in a cable and their jobs	☐	☐	☐
I can explain why the live wire is dangerous	☐	☐	☐