

Exercise walk-through

Simple Circuits ■ 11.2

eXercise

You must be able to

- identify the parts of a **circuit** 电路 — source, wires, resistor, switch — and their symbols
- describe how a **battery** 电池 maintains a potential difference that drives the current
- trace a complete conducting loop and explain why a break stops the current

Method — Circuit parts

A simple circuit has a **source** (cell or battery), **wires**, a **resistor** or bulb, and often a **switch** — each with its own symbol.

Method — What the battery does

The battery maintains a **potential difference** across the circuit, which drives the current around the loop.

Method — A complete loop

Current flows only around an **unbroken** conducting loop. An open switch (a break) stops the current everywhere.

Practice 2.1 ■ 1 mark

Name the component that drives the current around a circuit.

Solution 2.1

Method: What the battery does

Worked steps

the battery (or cell) **B1**.

Practice 2.2 ■ 1 mark

State what happens to the current when the switch is opened.

Solution 2.2

Method: A complete loop

Worked steps

the current stops (the loop is broken) **B1**.

Practice 2.3 ■ 2 marks

Describe a simple series circuit containing a battery, a switch, and a resistor.

Solution 2.3

Method: Circuit parts

Worked steps

the battery, switch, and resistor are connected in one loop by wires, so the same current flows through each in turn **B1** **B1**.

Exam-style 3.1 ■ 1 mark

A battery in a circuit provides

- A** resistance
- B** a potential difference
- C** a store of current
- D** a magnetic field

Solution 3.1

- A** resistance
- B** a potential difference 
- C** a store of current
- D** a magnetic field

Worked steps

B.

Exam-style 3.2 ■ 1 mark

Current flows in a circuit only when the loop is

A broken

B complete

C very long

D at high temperature

Solution 3.2

Method: A complete loop

A broken

B complete



C very long

D at high temperature

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A torch contains a cell, a switch, and a bulb.

- (a) State what the cell does in the circuit.
- (b) Explain why the bulb goes out when the switch is opened.

Solution 3.3

Method: Circuit parts

Worked steps

(a) it maintains a potential difference that drives the current **B1**. (b) opening the switch breaks the loop **B1**, so no current can flow and the bulb goes out **B1**.