3.11 Circuits, Resistance and Components: 10-minute Pack

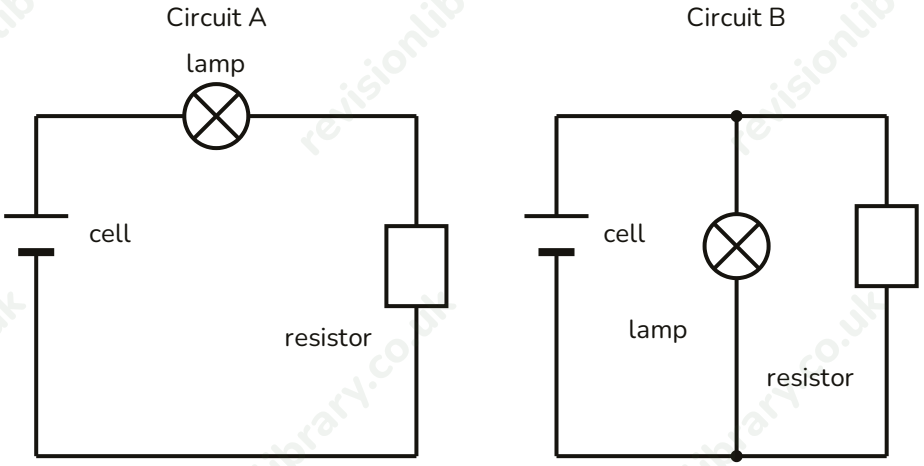
Total Marks

AQA 8464 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The diagram shows two circuits, A and B, each containing a cell, a lamp and a resistor.



(a) State whether circuit A is a series circuit or a parallel circuit. **(1)**

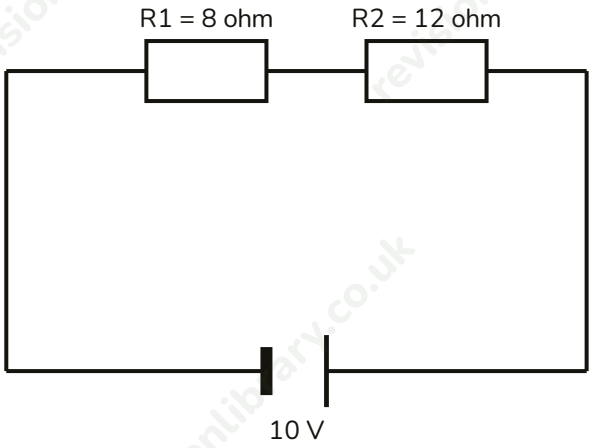
(b) State whether circuit B is a series circuit or a parallel circuit. **(1)**

(c) In circuit B, state how the potential difference across the lamp compares with the potential difference across the resistor, and explain why. **(1)**

(Total for Question 1 is 3 marks)

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2 Figure 1 shows two resistors, R1 (8 ohm) and R2 (12 ohm), connected in series with a 10 V cell.



(a) In a series circuit, total resistance = R1 + R2. Calculate the total resistance of the circuit. **(1)**

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(b) Use V = I x R and your answer to part (a) to calculate the current supplied by the cell. **(2)**

.....

(c) State the current through R2, giving a reason for your answer. **(2)**

(Total for Question 2 is 5 marks)

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Mark scheme · 3.11 Circuits, Resistance and Components: 10-minute Pack

Question 1

(a) series **B1**

(a) Answer: Series

(b) parallel **B1**

(b) Answer: Parallel

(c) they are the same (equal), because components connected in parallel are connected across the same two points, so share the same potential difference, oe **B1**

(c) Answer: They are the same, because the lamp and resistor are connected across the same two points.

Question 2

(a) 20 ohm (8 + 12) **B1**

(a) Answer: 20 ohm

(b) ft rearranges and substitutes: I = 10 / 20 **M1**

(b) 0.50 A cao (ft from (a)) **A1**

(b) Answer: 0.50 A

(c) 0.50 A ft from (b) **B1**

(c) reason: current is the same at every point in a series circuit, because there is only one path for charge to flow, oe **B1**

(c) Answer: 0.50 A, because there is only one loop, so the current is the same everywhere in a series circuit.

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