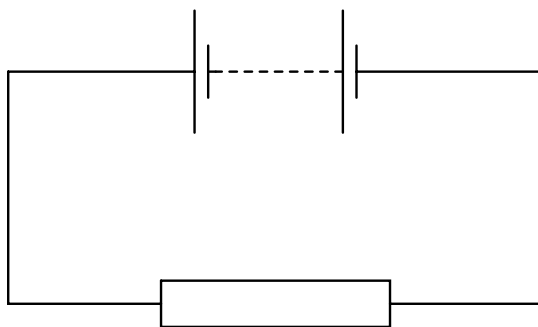


- 31 In the circuit below, the battery converts an amount E of chemical energy to electrical energy when charge Q passes through the resistor in time t .



Which expressions give the e.m.f. of the battery and the current in the resistor?

	e.m.f.	current
A	EQ	Q/t
B	EQ	Qt
C	E/Q	Q/t
D	E/Q	Qt

- 32 The filament of a 240 V, 100 W electric lamp heats up from room temperature to its operating temperature. As it heats up, its resistance increases by a factor of 16.

What is the resistance of this lamp at room temperature?

- A** $36\ \Omega$ **B** $580\ \Omega$ **C** $1.5\ \text{k}\Omega$ **D** $9.2\ \text{k}\Omega$

- 33 The diagrams show connected wires which carry currents I_1 , I_2 , I_3 and I_4 .

The currents are related by the equation $I_1 + I_2 = I_3 + I_4$.

To which diagram does this equation apply?

