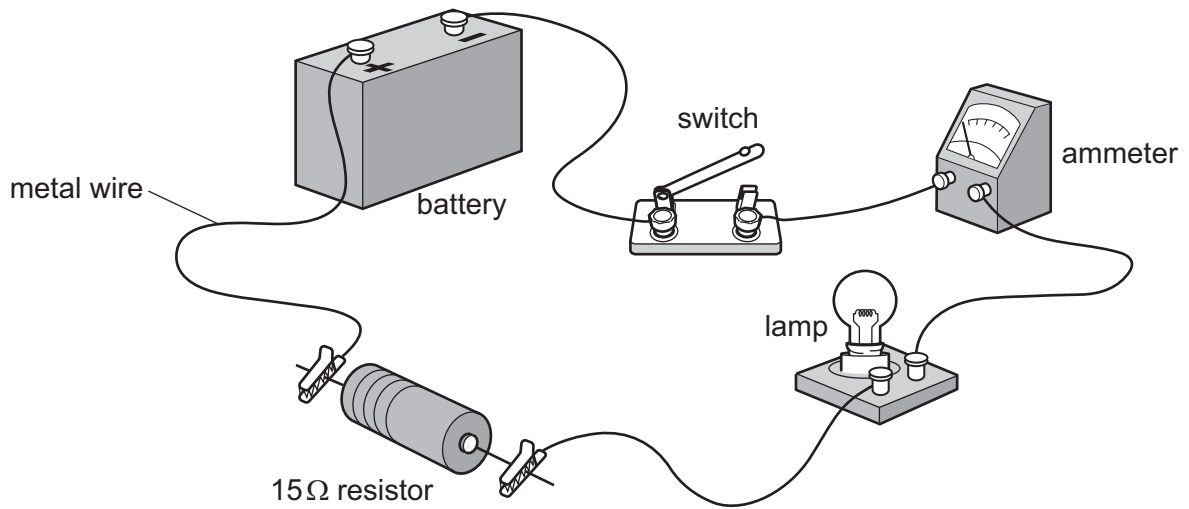**1** The diagram shows an electric circuit set up by a student.

When the switch is closed there is a current in the circuit.

State the name of the particles flowing in the metal wire.

.... [1]

[Total: 1]

2 The diagram shows an electric circuit set up by a student.

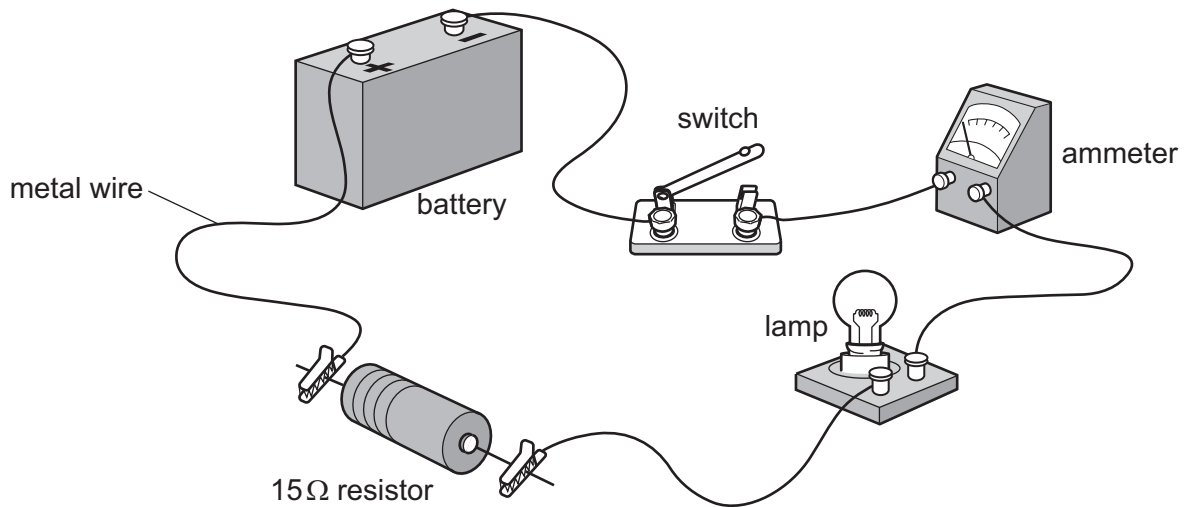
The current in the 15 Ω resistor in the diagram is 0.40 A when the switch is closed.

Calculate the potential difference (p.d.) across the 15 Ω resistor.
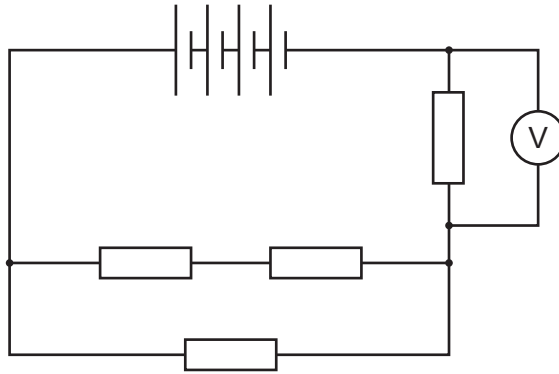
p.d. across resistor = ... V   [3]

[Total: 3]

3 A battery consists of four cells, each of e.m.f. 1.2 V, in series.

(a) Calculate the e.m.f. of the battery.

e.m.f. = ...   [1]

(b) The battery is connected in a circuit with four 12 Ω resistors as shown in the circuit diagram.

Calculate the total resistance of this arrangement of resistors.

resistance = ... [3]

(c) Calculate the reading on the voltmeter in the circuit diagram.

reading = ... [2]

[Total: 6]