## Science

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## **Question 1:**

Draw a schematic diagram of a circuit consisting of a battery of three cells of 2 V each, a 5  $\Omega$  resistor, an 8  $\Omega$  resistor, and a 12  $\Omega$  resistor, and a plug key, all connected in series.

## Answer 1:

The required schematic diagram is given below:



## **Question 2:**

Redraw the circuit of Question 1, putting in an ammeter to measure the current through the resistors and a voltmeter to measure the potential difference across the 12  $\Omega$  resistor. What would be the readings in the ammeter and the voltmeter?

## Answer 2:

Resisters are connected in series. So, the net resistance in the circuit = 5  $\Omega$  + 8  $\Omega$  + 12  $\Omega$  = 25  $\Omega$ 



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Net potential = 6 VUsing Ohm's law V = IR, we have

 $6 = I \times 25 \Longrightarrow I = \frac{6}{25} = 0.24$  Ampere

Now for the 12  $\Omega$  resistor, current = 0.24 A So, using Ohm's law V = 0.24 × 12 V = 2.88 V

Hence, the reading in the ammeter is 0.24 and voltmeter is 2.88.

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