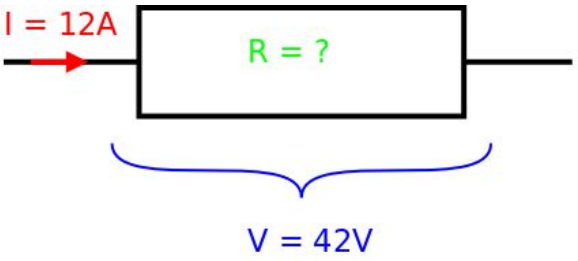
Resistance Exercises

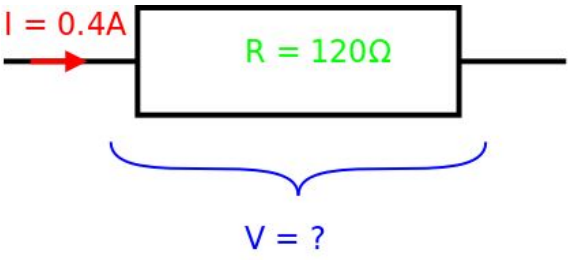
Question 1



A current of 12 amps flows through a resistor. The potential difference across the resistor is 42 volts.

What is the value of the resistor?

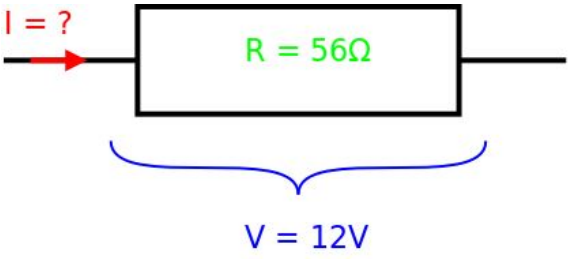
Question 2



A current of 0.4 A flows through a 120 Ω resistor.

What is the potential difference across the resistor?

Question 3



There is a potential difference of 12 V across a 56 Ω resistor.

What current flows through the resistor?

Question 4

A current of 4 mA flows through a 12 kΩ resistor.

What is the potential difference across the resistor?

Question 5

A current of 200 mA flows through a resistor when there is a potential difference of 10 V across the resistor.

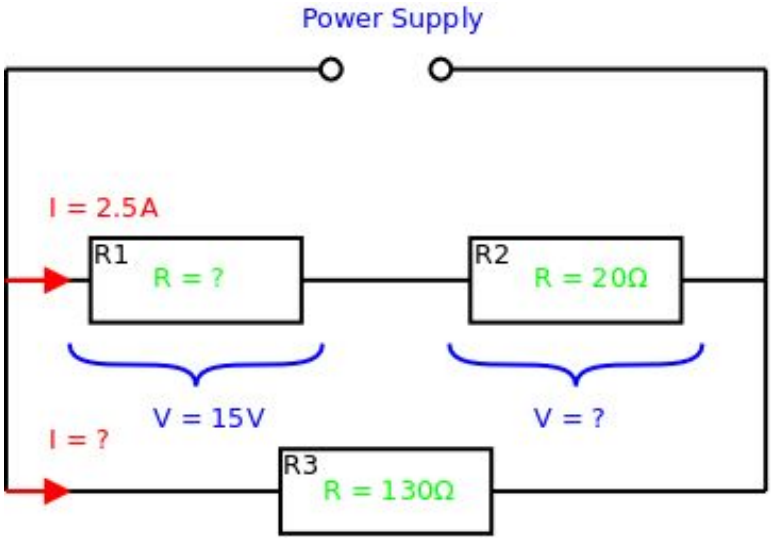
What is the value of the resistor?

Question 6

A student uses a voltmeter to measure the potential difference across a 220 Ω resistor. The reading on the voltmeter is 4.2 V.

What current is flowing through the resistor?

Question 7



For the circuit shown:

a) What is the value of the resistor R1?

b) What is the potential difference across resistor R2?

c) What is the current through resistor R3?

d) What is the EMF of the power supply?

Answers

Question 1

R = V / I therefore R = 42 / 12 = 3.5 Ω

Question 2

V = I x R therefore V = 0.4 x 120 = 48 V

Question 3

I = V / R therefore I = 12 / 56 = 0.21 A Note: Only 2 sig fig. Not I = 0.214 A

Question 4

V = I x R, 4 mA = 4 x 10^{-3}A and 12 kΩ = 12 x 10^{3}Ω therefore V = 4 x 10^{-3} x 12 x 10^{3} = 48 V

Question 5

R = V / I, 200 mA = 0.2 A therefore R = 10 / 0.2 = 50 Ω

Question 6

I = V / R therefore I = 4.2 / 220 = 0.019 A or I = 19 mA Note: Answer is to 2 sig. Fig.

Question 7

a) R = V / I therefore R = 15 / 2.5 = 6 Ω

b) V = I x R and I = 2.5 A because R1 and R2 are in series. V = 2.5 x 20 = 50 V

c) I = V / R and V = 65 V because R3 is in parallel with R1 and R2. I = 65 / 130 = 0.5 A

d) The EMF of the power supply is 65 V because it is in parallel with R3