OHM'S LAW

Ohm's law states that the current **I** flowing in the circuit is proportional to the applied potential difference **V**. The constant of proportionality is defined as the resistance **R**. If **V** and **I** are measured in volts and amperes, respectively, **R** is measured in ohms. Microscopically resistance is associated with the impedance to flow of charge carries offered by the material. For example, in metallic conductor the charge carries are electrons moving in a polycrystalline material in which their journey is impeded by collisions with imperfections in the local crystal lattice, such as impurity atoms, vacancies, and dislocations. In these collisions the carries lose energy to the crystal lattice, and thus Joule heat is liberated in the conductor, which rises in temperature.

One of Ohm's major contributions was the establishment of a definite relationship between voltage, resistance and current in a closed circuit. A circuit consists of a voltage source and a complete path for current. Ohm stated this relationship as follows: Current is directly proportional to voltage and inversely proportional to resistance.

As a formula, it appeals like this:

Voltage (in volts)

Current (in amperes)

Resistance (in ohms)

This formula is commonly known as Ohm's Law.

About 1817 Ohm discovered that a simple correlation exists between resistance, current and voltage. That is: the current that flows in the circuit is directly proportional to the voltage and inversely proportional to the resistance. A current is measured in amperes, a voltage, or potential difference is measured in volts. A resistance is measured in ohms.

OHM'S LAW AND RESISTANCE TEST QUESTIONS

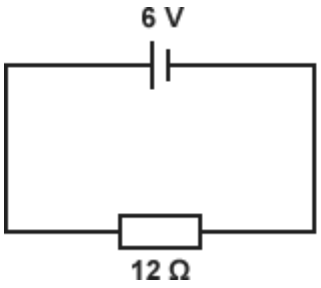
1. ***As the voltage across a resistor is increased, what happens to the resistance of the resistor?***

It decreases

It remains constant

It increases

2. ***What is the current in this circuit?***

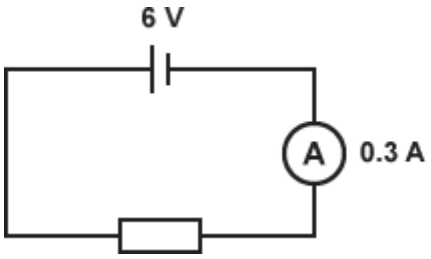


6A

2A

0.5A

3. What is the resistance of the resistor in this circuit?

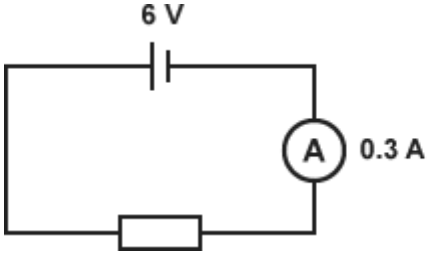


20Ω

1.8Ω

0.05Ω

4.If the resistance in this circuit is halved, what will the current be?

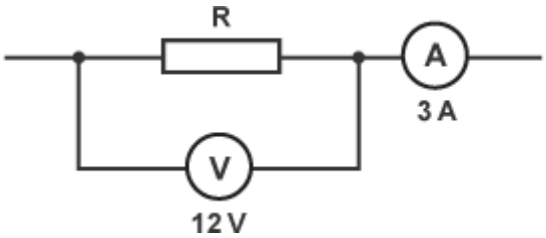


0.3A

0.6A

0.15A

5. The diagram shows part of a circuit. What is the resistance of the resistor shown?



9Ω

4Ω

0.25Ω

Допоміжні матеріали до теми.

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