

What is Ohm's Law?

Worksheet

Ohm's law states that voltage equals current times resistance: $V = I \times R$, where V is in volts, I is in amperes, and R is in ohms (Ω).

$$V = IR$$

V = Voltage (V)

I = Current (A)

R = Resistance (Ω)

Questions

1. Ohm's law is written as:

- A) $V = I/R$
- B) $V = I \times R$
- C) $V = R/I$
- D) $V = I + R$

2. A 3 A current flows through a 15 Ω resistor. What is the voltage?

- A) 5 V
- B) 18 V
- C) 45 V
- D) 12 V

3. If resistance doubles while voltage stays the same, current:

- A) Doubles
- B) Halves
- C) Stays the same
- D) Quadruples

4. What is the SI unit of resistance?

- A) Volt
- B) Ampere
- C) Ohm
- D) Watt

5. A resistor of 20 Ω has a current of 0.5 A flowing through it. Find the voltage across it.

6. A 12 V battery is connected to a 4 Ω resistor. Find the current.

7. A lamp draws 0.25 A when connected to a 6 V source. Find its resistance.

8. Define: State Ohm's law.

9. Define: What is the unit of resistance?

10. Define: How do you find current from Ohm's law?

Answer Key

1. B) $V = I \times R$ — Ohm's law: $V = I \times R$.
2. C) 45 V — $V = I \times R = 3 \times 15 = 45$ V.
3. B) Halves — $I = V/R$, so doubling R halves I when V is fixed.
4. C) Ohm — Resistance is measured in ohms (Ω).
5. $V = I \times R$ $V = 0.5 \times 20 = 10$ V
6. $V = I \times R \rightarrow I = V / R$ $I = 12 / 4 = 3$ A
7. $V = I \times R \rightarrow R = V / I$ $R = 6 / 0.25 = 24$ Ω
8. $V = I \times R$ — voltage equals current multiplied by resistance.
9. The ohm (Ω).
10. $I = V / R$.

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