

GCSE Physics $V=IR$ Calculations

These questions become progressively more challenging. Read each question carefully and decide whether you need to calculate voltage, current or resistance. Remember to rearrange the equation when necessary.

1. A torch bulb has a resistance of $4\ \Omega$ and a current of $2\ \text{A}$ flows through it. Calculate the voltage across the bulb.
2. A bicycle light operates at $6\ \text{V}$ and draws a current of $0.5\ \text{A}$. Calculate the resistance of the light.
3. A phone charger supplies $12\ \text{V}$ to a device that draws a current of $2\ \text{A}$. Calculate the resistance.
4. An electric fan has a resistance of $40\ \Omega$ and is connected to a $240\ \text{V}$ supply. Calculate the current flowing through the fan.
5. A bedside lamp operates at $12\ \text{V}$ and has a resistance of $24\ \Omega$. Calculate the current.
6. An electric toy car motor draws $3\ \text{A}$ from a $9\ \text{V}$ battery. Calculate the resistance of the motor.
7. A car headlight has a resistance of $8\ \Omega$ and a current of $1.5\ \text{A}$ flows through it. Calculate the voltage across the headlight.
8. An electric heater is connected to a $240\ \text{V}$ mains supply and has a resistance of $30\ \Omega$. Calculate the current flowing through the heater.
9. A portable speaker operates at $18\ \text{V}$ and draws a current of $0.75\ \text{A}$. Calculate the resistance of the speaker.
10. An electric scooter motor has a resistance of $2.5\ \Omega$ and draws a current of $12\ \text{A}$.
 - a) Calculate the voltage across the motor.
 - b) If the current increased to $16\ \text{A}$ while the resistance remained the same, calculate the new voltage.