

10 Ramped Calculation Questions using $E = VQ$

These questions are designed to help you practise using the equation $E = VQ$. The questions become progressively more difficult and may require you to rearrange the equation and convert units before calculating your answer.

1. A toy car uses a 1.5 V battery. If 40 C of charge passes through the motor, calculate the energy transferred.
2. A torch bulb transfers 180 J of energy when 60 C of charge flows through it. Calculate the potential difference across the bulb.
3. A bicycle light operates at 6.0 V. During a ride, 150 C of charge passes through the lamp. Calculate the energy transferred.
4. A rechargeable phone battery transfers 1.2 kJ of energy while moving 300 C of charge. Calculate the potential difference.
5. A laptop charger operates at 20 V and transfers 4.0 kJ of energy. Calculate the charge transferred.
6. An electric scooter battery transfers 36 kJ of energy while 750 C of charge passes through the motor. Calculate the potential difference.
7. A train door motor operates at 24 V. During one day it transfers 72 kJ of energy. Calculate the charge transferred.
8. A small electronic device transfers 500 mJ of energy while 25 mC of charge passes through it. Calculate the potential difference.
9. An electric vehicle battery transfers 2.4 MJ of energy during a short journey. The battery operates at 400 V. Calculate the charge transferred.
10. A battery storage system transfers 3.6 MJ of energy while moving 6000 C of charge. Calculate the potential difference.

Useful conversions:

- 1 kJ = 1000 J
- 1 MJ = 1 000 000 J
- 1000 mJ = 1 J

- $1000 \text{ mC} = 1 \text{ C}$