

GCSE Physics Energy Transfers Using $E = Pt$ Ramped Questions

These questions are designed to build your GCSE Physics calculation skills step by step. You will need to use the equation $E = Pt$, convert between different units of time, rearrange the equation, and sometimes combine information from more than one appliance. Remember that energy is measured in Joules (J), power in Watts (W), and time in seconds (s). Convert all times into seconds before calculating.

1. A 4 W LED keyring torch is switched on for 30 s. Calculate the energy transferred.
2. A 10 W bicycle light is used for 4 minutes. Calculate the energy transferred.
3. A phone charger transfers energy at a rate of 18 W for 20 minutes. Calculate the energy transferred.
4. A laptop charger has a power rating of 65 W and is used for 45 minutes. Calculate the energy transferred.
5. A 700 W microwave heats food for 150 s. Calculate the energy transferred.
6. A 1200 W hairdryer is used for 4 minutes. Calculate the energy transferred in kJ.
7. A 2000 W kettle transfers energy for 3 minutes. Calculate the energy transferred in kJ.
8. A television transfers 540000 J of energy in 3 hours. Calculate its power.
9. A games console transfers 432000 J of energy in 1 hour. Calculate its power.
10. An air fryer transfers energy at a rate of 1600 W for 25 minutes. Calculate the energy transferred in MJ.
11. A washing machine transfers 4860000 J of energy while operating at 1800 W. Calculate how long it was used for in minutes.
12. An electric shower transfers 2160000 J of energy. If its power is 3000 W, calculate how long it was used for in minutes.

13. A patio heater transfers energy at a rate of 2500 W for 2.5 hours. Calculate the energy transferred in MJ.
14. A floodlight transfers 7200000 J of energy in 4 hours. Calculate its power.
15. A factory machine transfers energy at a rate of 8000 W for 90 minutes. Calculate the energy transferred in MJ.
16. A rapid electric vehicle charger transfers 36000000 J of energy in 40 minutes. Calculate its power in kW.
17. A family uses a 2000 W kettle for 5 minutes, a 1500 W air fryer for 25 minutes and a 100 W television for 4 hours. Calculate the total energy transferred by all three appliances in MJ.