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Year 10–11 • GCSE & IGCSE Physics

Energy Stores & Transfers



Exam-Style Worksheet

Exam-style questions on energy stores, energy calculations, efficiency and energy resources. AQA 4.1 and IGCSE 0625 1.7.

Energy stores | Transfers | KE & GPE | Power | Efficiency | Resources

KEY IDEAS IN THIS WORKSHEET | TAKE g = 10 N/kg | YEAR 10–11

Name: _____ Class: _____

Date set: _____ Date due: _____

What's inside

Section A	Energy stores and transfers	13 marks
Section B	Energy calculations	16 marks
Section C	Efficiency and energy resources	22 marks

Instructions

- Answer all questions in the spaces provided.
- Show your working in calculations.
- Marks for each question are shown in [ ].
- Use the word and equation boxes to help you.

Total score

/ 51

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Energy Stores and Transfers Worksheet

Year 10–11 • GCSE (AQA 4.1) and Cambridge IGCSE 0625 topic 1.7 • Exam-style questions. Show your working in all calculations.

Section A — Energy stores and transfers [13 marks]

Word box

kinetic | gravitational potential | elastic potential | thermal | chemical | nuclear | conservation of energy | dissipated

1 Use words from the box to complete the sentences. You may use a word once, more than once or not at all.

(a) Energy cannot be created or destroyed, only transferred. This is the principle of ..... [1]

(b) Energy that spreads out into the surroundings and is not useful is said to be ..... It is usually stored as ..... energy. [2]

(c) A moving object has ..... energy. An object lifted above the ground has ..... energy. [2]

2 Name the main useful energy transfer in each device. [4]

Device	Useful energy transfer
Electric kettle	
Loudspeaker	
Solar cell	
Wind turbine	

3 Describe the energy transfers when a ball is thrown upwards and then falls back down. [4]

Section B — Energy calculations [16 marks]

Equations kinetic energy = ½ m v^2 | GPE = m g h | elastic energy = ½ k e^2 | work done = force × distance | power = energy ÷ time | efficiency = useful output ÷ total input

4 Calculate the kinetic energy of a 1200 kg car travelling at 15 m/s. **[3]**

.....

.....

kinetic energy = ... J

5 Calculate the gravitational potential energy gained by a 60 kg climber who climbs 25 m. (g = 10 N/kg) **[2]**

.....

.....

GPE = ... J

6 A 0.5 kg ball is dropped from a height of 20 m. Calculate its speed just before hitting the ground, ignoring air resistance. (g = 10 N/kg) **[4]**

.....

.....

.....

speed = ... m/s

7 A spring with spring constant 200 N/m is stretched by 0.10 m. Calculate the elastic energy stored. **[3]**

.....

.....

elastic energy = ... J

8 A motor lifts a 20 kg load through 3.0 m in 6.0 s. Calculate the useful power output. (g = 10 N/kg) **[4]**

.....

.....

.....

power = ... W

Section C Efficiency and energy resources [22 marks]

9 A light bulb transfers 100 J of electrical energy and gives out 8 J of light. Calculate the efficiency, and state what happens to the other energy. **[3]**

.....

.....

.....

efficiency = ... %

10 Explain **two** ways to reduce unwanted energy transfers in a house. **[4]**

.....

.....

.....

.....

11 Complete the table about energy resources. **[8]**

Resource	Renewable or non-renewable	One advantage or problem
Coal		
Wind		
Solar		
Nuclear		

12 Explain why the efficiency of any device can never be 100%. **[2]**

13 Describe an experiment to measure the specific heat capacity of water or a metal block. **[5]**

END OF WORKSHEET **Total: _____ / 51**