

Year Group: KS4 (Year A)

Term: Summer 2

Science: Energy

Key Concepts	SMSC & British Values	Lesson Objectives	Key Vocabulary
<p>Energy as a measurable quantity Different forms of energy storage (chemical, thermal, kinetic, gravitational, elastic, nuclear, electromagnetic) Energy transfers (heating, doing work, radiation) Conservation and dissipation of energy Efficiency of energy transfers Simple energy calculations (work done, power) Energy resources (renewable and non-renewable) Environmental impact of energy use</p> <p>Prior Knowledge</p> <p>Everyday experiences of movement, heat, and light Basic understanding of cause and effect (e.g., pushing objects, feeling warmth) Simple mathematical skills (addition, subtraction, multiplication) Awareness of electricity and fuels in daily life Understanding of basic environmental issues (e.g., pollution, recycling)</p> <p>Cross-Curricular Links</p> <p>Mathematics: Calculations involving multiplication, division, and units (Joules, Watts) Geography: Environmental impact of energy resources, renewable vs non-renewable English: Use of scientific vocabulary, explanation writing PSHE: Responsible energy use, sustainability</p>	<p>Assessment</p> <p>Low-stakes quizzes on key vocabulary and concepts Oral questioning and discussion to check understanding Completion of scaffolded energy calculations Sorting and matching activities (e.g., types of energy, resources) End-of-unit assessment covering all key concepts and vocabulary Use of visual organisers (e.g., diagrams, tables) to demonstrate understanding</p> <p>Adaptations</p> <p>Use of simplified language and sentence starters Visual supports (diagrams, word banks, dual coding) Scaffolded calculations with step-by-step guidance Practical demonstrations and hands-on resources Chunked tasks and frequent repetition Alternative recording methods Additional support for reading and writing tasks</p>	<ol style="list-style-type: none"> Recognise that energy is a quantity that can be measured and calculated Identify different ways energy can be stored Describe how energy can be transferred by heating, doing work, and by radiation Understand the principle of conservation of energy Explain what is meant by dissipation of energy and why energy becomes less useful Understand and use the concept of efficiency in energy transfers Carry out simple calculations of energy changes using the formula for work done (force x distance) Carry out simple calculations of power (energy transferred / time) Identify different energy resources (fossil fuels and renewables) Describe the impact of energy use on the environment Apply scientific vocabulary, notation, and units in explanations and calculations Review and consolidate understanding of energy concepts, transfers, and calculations <p>Links to Future Learning</p> <p>KS4 Physics: Advanced energy calculations, Sankey diagrams, quantitative efficiency Electricity and circuits (energy in electrical systems) Forces and motion (work done, kinetic energy) Environmental science (sustainable energy, climate change) Chemistry (chemical energy, fuels and combustion) GCSE Science: Application of energy concepts to real-world and examination contexts</p>	<p>Energy Joule (J) Store Transfer Conservation Dissipation Efficiency Work done Force Distance Power Watt (W) Renewable Non-renewable Fossil fuel Solar Wind Environmental impact</p>

Possible Enrichment:

Visit to a local energy facility (e.g., wind farm); Practical investigation: Measuring temperature changes in materials (heating/cooling); Building simple models (e.g., elastic band cars, solar ovens).