Foxford Learning Plan

Year 9

Summer 2

P1 Energy

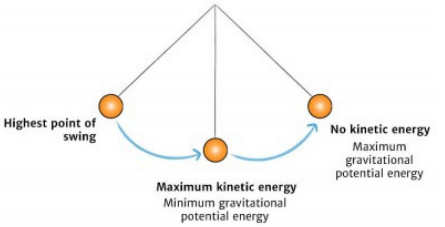
Key Vocabulary

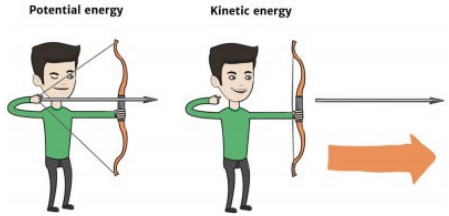
System	An object or group of objects considered together.
Energy store	A way energy is stored in a system; energy is measured in joules (J).
Kinetic energy	Energy stored by a moving object.
Gravitational potential	Energy stored when an object is raised in a gravitational field.
Elastic potential	Energy stored when an elastic object is stretched or compressed.
Specific heat capacity	Energy needed to raise the temperature of 1 kg of a substance by 1 °C; unit J/(kg °C).
Power	The rate of energy transfer or work done; 1 watt (W) = 1 joule per second.
Conservation of energy	Energy cannot be created or destroyed, only transferred between stores.
Dissipation	Energy spreading into less useful stores, often heating the surroundings.
Efficiency	Useful output energy ÷ total input energy, or useful output power ÷ total input power.
Thermal conductivity	How readily a material transfers energy by conduction.
Renewable resource	An energy resource that is replenished as it is used.

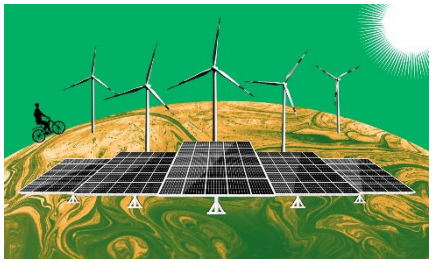
Over this course I will be able to

Key Skills

- Describe energy stores and transfers in changing systems, using diagrams and examples such as falling objects, braking and kettles.
- Calculate kinetic, elastic, gravitational and thermal energy changes; rearrange equations and use appropriate units.
- Calculate power and efficiency using energy or work done, time and useful output; compare devices quantitatively.
- Determine specific heat capacity by measuring mass, energy input and temperature change; evaluate heat losses (required practical 14).
- Interpret national and global energy-use data; compare resources for heating, transport and electricity, using evidence to justify choices.







I will understand

How energy is stored kinetically, thermally, chemically, gravitationally, elastically, magnetically, electrostatically and nuclearly, and transferred by work, heating or radiation.
How mass, speed, height, spring extension and temperature change affect stored energy; and how power describes the rate of transfer.
Why total energy is conserved in a closed system, while dissipation spreads energy into less useful stores in the surroundings.
How lubrication and insulation reduce unwanted transfers; how wall thickness and thermal conductivity affect cooling; and how efficiency can be improved.
How renewable and non-renewable resources differ in reliability, uses and environmental impacts, and how economic, social, ethical and political factors affect choices.