

Physics 1: Energy				Section 3: Energy Resources				
Section 1: Energy stores and methods of transfer				Resource	Renewable?	Uses	Advantages	Disadvantages
1 Chemical store	Energy stored as chemicals waiting to react .			19 Fossil Fuels	Non-Renewable	Electricity, transport, heating	Reliable – electricity can be generated all of the time. Relatively cheap way of generating electricity.	Produces carbon dioxide , a greenhouse gas that causes global warming . Can produce sulphur dioxide , a gas that causes acid rain .
2 Kinetic store	Energy stored in objects that move .							
3 Gravitational Potential store	Energy stored in objects raised up against the force of gravity .							
4 Elastic Potential store	Energy stored in an object that have been stretched .							
5 Internal store	Energy stored in the movement of particles. It is a combination of the kinetic energy of the particles and the potential energy of particles that are apart from each other. Can be modified by heating or cooling .			20 Nuclear Fuel	Non-Renewable	Electricity	Produces no carbon dioxide when generating electricity. Reliable – electricity can be generated all of the time.	Produces nuclear waste that remains radioactive for thousands of years. Expensive to build and decommission power stations.
6 Nuclear store	Energy stored in the nuclei of atoms that can fuse (nuclear fusion) or split (nuclear fission).			21 Bio Fuel	Renewable	Heating, electricity	Carbon neutral . Reliable – electricity can be generated all of the time.	Production of fuel may damage ecosystems and create a monoculture .
7 Magnetic store	Energy stored in magnets that are attracting or repelling .			22 Wind	Renewable	Electricity	No CO₂ produced while generating electricity.	Unreliable – may not produce electricity during low wind . Expensive to construct.
8 Electrostatic store	Energy stored in electric charges that are attracting or repelling .			23 Hydroelectricity	Renewable	Electricity	No CO₂ produced while generating electricity.	Blocks rivers stopping fish migration . Unreliable – may not produce electricity during droughts .
9 Mechanical transfer	Energy transferred when a force moves through a distance .							
10 Electrical transfer	Energy transferred when a charge moves .			24 Geothermal	Renewable	Electricity, heating	Does not damage ecosystems . Reliable source of electricity generation.	Fluids drawn from ground may contain greenhouse gases such as CO₂ and methane . These contribute to global warming .
11 Radiation transfer	Energy transferred by electromagnetic radiation .			25 Tidal	Renewable	Electricity	No CO₂ produced while generating electricity.	Unreliable – tides vary . May damage tidal ecosystem e.g. mudflats.
12 Heat transfer	Energy transferred when an object is heated .			26 Waves	Renewable	Electricity	No CO₂ produced while generating electricity.	Unreliable – may not produce electricity during calm seas.
Section 2: Equations to learn				27 Solar	Renewable	Electricity, heating	No CO₂ produced while generating electricity.	Unreliable – does not produce electricity at night . Limited production on cloudy days. Expensive to construct.
Calculation	Equation	Symbol equation	Units	Section 4: Key terms				
13 Kinetic energy store	Kinetic energy = 0.5 x mass x velocity ²	E _k = 0.5 m v ²	Energy – Joules (J) Mass – kilograms (kg) Velocity – metres per second (m/s)	28 Dissipation	Energy becoming spread out instead of in a concentrated store. “Wasted” energy.			
14 Gravitational potential energy store	Gravitational potential energy = mass x gravitational field strength x height	E _p = m g h	Energy – Joules (J) Mass – kilograms (kg) Gravitational field strength – Newtons per kilogram (N/kg) Height – metres (m)	29 Lubrication	A method of reducing unwanted energy transfers by application of a lubricant (e.g. oil) to reduce friction . Occurs in machines.			
15 Power	Power =energy transferred ÷ time	P = $\frac{E}{t}$	Power – Watts (W) Energy transferred – Joules (J) Time – seconds (s)	30 Insulation	A method of reducing energy transfers by the use of insulators (non-conductive material). Occurs in buildings.			
16 Power	Power = work done ÷ time	P = $\frac{W}{t}$	Power – Watts (W) Work done – Joules (J) Time – seconds (s)	31 Conservation of energy	The law that states that energy cannot be created or destroyed .			
17 Efficiency	Efficiency = $\frac{\text{useful energy output}}{\text{total energy input}}$		Energy – Joules (J)	32 Specific heat capacity	The energy needed to raise 1kg of a material by 1°C .			
18 Efficiency	Efficiency = $\frac{\text{useful power output}}{\text{total power input}}$		Power – Watts (W)					