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Energy Transfers

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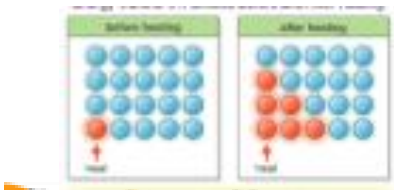
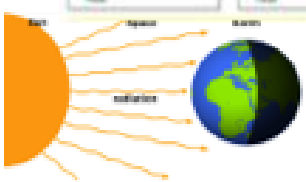
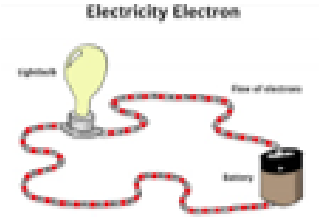
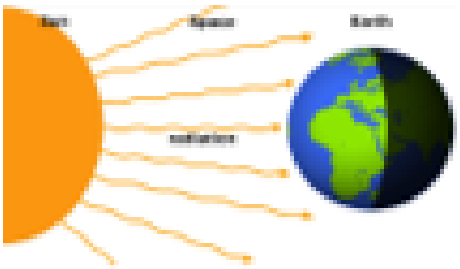
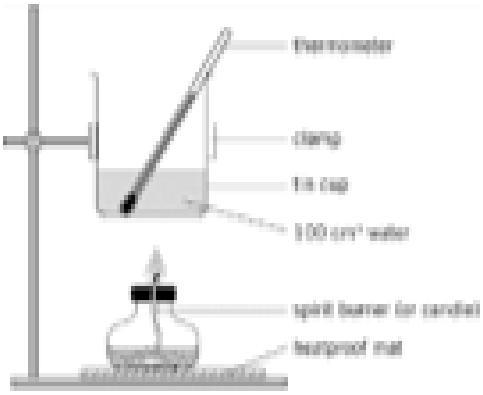
Rationale

The concept of energy emerged in the 19th century. The idea was used to explain the work output of steam engines and then generalised to understand other heat engines. It also became a key tool for understanding chemical reactions and biological systems. Limits to the use of fossil fuels and global warming are critical problems for this century. Physicists and engineers are working hard to identify ways to reduce our energy usage.

Diagrams	Keywords	Definitions
      	Chemical Gravitational Kinetic Thermal Elastic Nuclear Electrostatic Magnetic	Anything with stored energy which can be released by a chemical reaction. Anything above the ground. Anything that moves. Anything with a temperature above absolute zero. Anything stretched or compressed and can go back to its original shape. Nuclear energy stores are those in the nuclei (middle) of atoms. The attraction between two charged (positive and negative) particles. Energy stored between two/more magnetic materials
  	Heating by particles Heating by radiation Mechanical working Electrical working	Energy is transferred by particles colliding with their neighbouring particles (solid) during conduction or by taking their energy with them by becoming less dense (liquids and gasses) by convection. Energy transferred by waves such as light and infrared (we feel this as heat) When a force is applied e.g. moving parts of an engine/car Energy is transferred by an electrical current.

Diagrams	Keywords	Definitions
	Conduction Convection	Energy transfer by collisions between particles. Occurs in solids. The transfer of heat by the circulation or movement of the heated parts of a liquid or gas.
	Radiation	Transfer of energy in the form of waves. No particles required.
	**Joules** **Calories**	**The unit of work or energy.** **the energy needed to raise the temperature of 1 gram of water through 1 °C**