Y7 Energy Knowledge Organiser

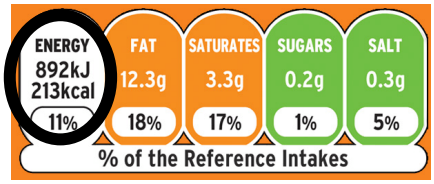
Energy Units

Energy changes are measured in joules (J) or kilojoules (kJ). **1000 J = 1kJ**

Energy in food – Food Labels

Energy stored in food can be released by combustion (burning) or by respiration in our cells. The labels on packets of food show how much energy is available from the food.

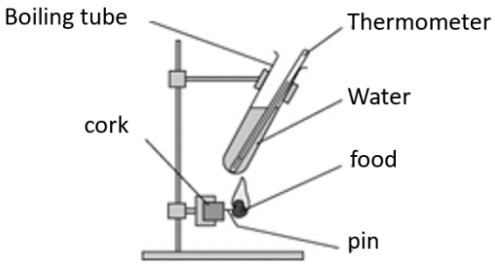
Energy in kJ



There is 892kJ of energy stored in this food

A lot of energy is stored in most foods, so food labels usually show kJ (kilojoules) instead of J.

Energy in food experiment



When the food is burned, the energy stored in it is transferred to the water and made it hotter.

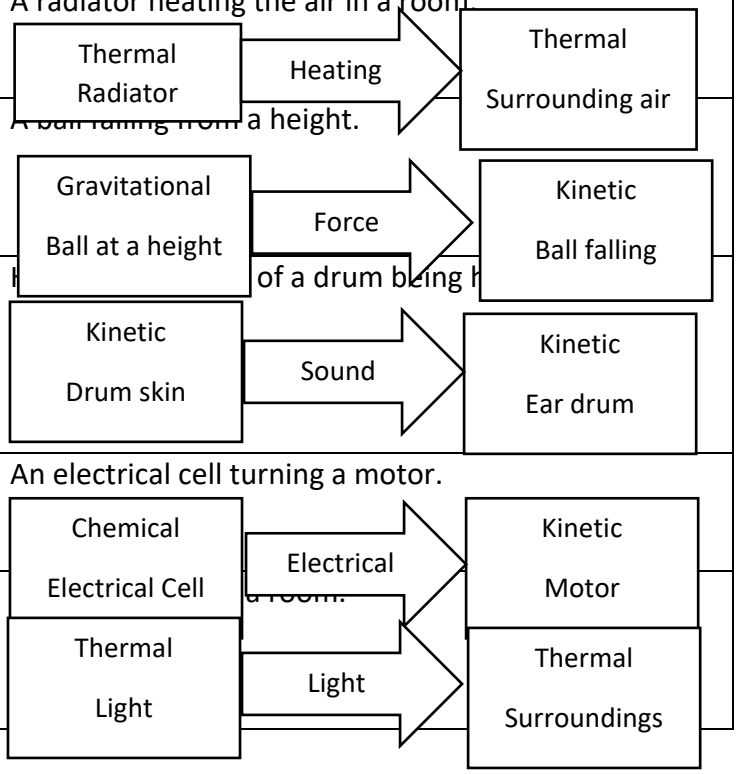
The food that gave the highest temperature stored the most chemical energy.

Energy Stores

Key word	Description	Examples
Magnetic	The energy stored in two separated magnets that are attracting, or repelling	Fridge magnets, compasses.
Thermal	The energy stored in a warm object.	Human bodies, hot coffees, stoves or hobs.
Chemical	The energy stored in chemical bonds, such as those between molecules.	Food, muscles, electrical cells.
Kinetic	The energy stored in a moving object	Runners, moving buses, moving cars.
Electrostatic	The energy stored in two separated electric charges that are attracting, or repelling.	Thunderclouds, Van De Graaff generators.
Elastic	The energy stored when an object is stretched or compressed.	Stretched elastic, compressed springs, inflated balloons.
Gravitational	The energy stored when an object is moved higher.	Aeroplanes, kites, mugs on a table.
Nuclear	The energy stored in atoms.	Nuclear fuel, radioactive material

Energy Transfers

	Definition	Examples
Heating	Energy is transferred from a hotter object to a cooler one.	A radiator heating the air in a room.
Force	Energy is transferred when a force moves through a distance.	A ball falling from a height.
Sound	Energy transferred by the vibration of particles.	[illegible] of a drum being h[illegible]
Electrical	Energy is transferred when moving charges in a wire.	An electrical cell turning a motor.
Light	Energy is transferred by light waves.	[illegible] a room.



Energy Conservation

Energy cannot be created or destroyed, just transferred from one store to another.

The total energy of a system stays the same. The idea that the total energy has the same value before and after a change is called conservation of energy.

Energy Dissipation

Any energy that is not transferred to useful energy stores is said to be dissipated (or wasted) because it is lost to the surroundings.

Once dissipated, energy can no longer be stored usefully as the energy has spread out.

Energy is usually lost by heating up the surroundings.

Energy Efficiency

How good a device is at transferring energy input to useful energy output is called efficiency.

$$\textit{Efficiency} = \frac{useful\ output\ energy}{total\ input\ energy}$$