

PHYSICS TRILOGY HIGHER – YEAR 9 – ENERGY

A ENERGY		
1	Energy stores	Thermal (heat) Kinetic (moving) Electrostatic Gravitational potential (GPE) Elastic potential Chemical (e.g. food, fuel), Magnetic Nuclear
2	Energy transfers	Waves electric current heating, Mechanically (with a force).
3	Conservation of energy	Energy can be transferred usefully, stored or dissipated, but never created or destroyed.
4	Joules (J)	The unit of energy; 1kJ = 1000J
5	Dissipated	When energy is transferred in a way that is not useful, e.g. to the thermal energy store of the surrounding air particles.

B ENERGY TRANSFERS		
1	Falling objects	GPE store decreases, kinetic energy increases.
2	Objects Colliding	Kinetic energy decreases and internal energy store of the surroundings increases.
3	Energy transfer in bungee jumping	When the cord tightens, kinetic energy decreases and the elastic potential energy of the rope increases.
4	Increasing Efficiency	Lubrication (movement) Insulation (heating)

C ENERGY EQUATIONS		
1	Work Done	Force × distance (in that direction)
2	Efficiency (no unit)	$\frac{\text{Useful output}}{\text{Total input}}$
3	Power (W)	$\frac{\text{Energy Transferred}}{\text{Time taken}}$