

Keyword	Definition
<b>Energy Transfer</b>	Changes from one form of energy to another form of energy.
<b>Conservation of Energy</b>	Energy cannot be created or destroyed It can be stored, dissipated or transferred from one form into another.
<b>Internal Energy</b>	Energy stored in all materials, including energy due to the motion of particles and the forces between them.
<b>Kinetic Energy</b>	Energy which an object possesses by being in motion.
<b>Elastic Potential Energy</b>	Energy stored in squashed, stretched or twisted materials.
<b>Gravitational Potential Energy</b>	The energy stored by an object lifted up against the force of gravity. Also known as GPE.
<b>Thermal Energy Store</b>	Energy store filled when an object is warmed up.
<b>Work done</b>	Work is done when a force makes an object move a distance, energy is transferred
<b>Power</b>	The rate of work done. Or The energy transferred per second.
<b>Fossil Fuel</b>	Natural, finite fuel formed from the remains of living organisms, e.g. oil, coal and natural gas.
<b>Non-Renewable</b>	A resource that cannot be replaced when it is used up, such as natural gas or coal.
<b>Renewable</b>	An energy resource that will not run out, e.g. solar energy and wind energy

Type of energy	Description	Type of energy	Description
<b>Kinetic</b> 	The energy in moving objects	<b>Thermal (Internal)</b> 	The heat stored in an object
<b>Chemical</b> 	When a substance undergoes a chemical reaction	<b>Gravitational potential</b> 	When an object is raised to a height
<b>Magnetic</b> 	When 2 objects attract or repel	<b>Electrostatic (electrical)</b> 	Allows an electric current to flow
<b>Elastic potential</b> 	When an object is stretched or squashed	<b>Nuclear</b> 	Energy stored in an atom(not needed till GCSE)
<b>Light</b> 	From a bright object (not stored)	<b>Sound</b> 	From a vibrating object (not stored)

### Calculating Kinetic Energy

$$E_K = \frac{1}{2}mv^2$$

$E_K$  = Kinetic Energy  
 $m$  = Mass  
 $v$  = velocity

### Calculating GPE

$$GPE = \text{mass} \times \text{gravitational field strength} \times \text{height}$$

- Mass is measured in kilograms (kg).
- Gravitational field strength is measured in newtons per kilogram (N/kg), usually taken as 10N/kg on Earth.
- Height is measured in metres (m).
- GPE is measured in joules (j).

### Calculating Power

Word Equation

$$\text{Power} = \frac{\text{Work Done}}{\text{Time Taken}}$$

Dimensions

$$P = W / t$$

Units

$$\text{Watt} = \text{Joule} / \text{second}$$

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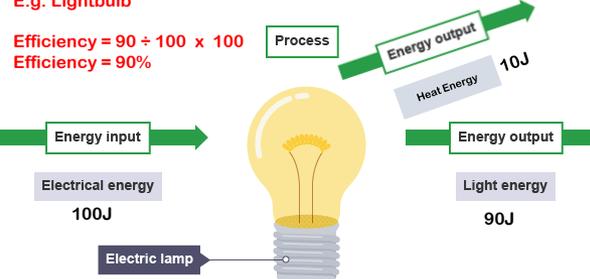


### Calculating Efficiency.

$$\text{Efficiency} = \frac{\text{useful energy out}}{\text{total energy in}} \times 100$$

E.g. Lightbulb

$$\text{Efficiency} = 90 \div 100 \times 100$$

$$\text{Efficiency} = 90\%$$


Process: Energy input (100J) → Process (Electric lamp) → Energy output (90J Light energy, 10J Heat Energy)

