

OCR A Physics GCSE

7.1 - Work Done

Flashcards

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State the law of energy conservation.



State the law of energy conservation.

Energy cannot be created or destroyed
(it can only be transferred into different
forms).



What type of energy is stored when an object is lifted up?



What type of energy is stored when an object is lifted up?

Gravitational Potential Energy



What type of energy does a moving object have?



What type of energy does a moving object have?

Kinetic Energy



What type of energy does a stretched spring store?



What type of energy does a stretched spring store?

Elastic Potential Energy



Describe the energy changes involved when a ball is thrown upwards and then returns to its starting position. Ignore air resistance.



Describe the energy changes involved when a ball is thrown upwards and then returns to its starting position. Ignore air resistance.

- Upwards: KE is converted to GPE
- Peak: Maximum GPE, zero KE
- Downwards: GPE is converted to KE

KE (Kinetic Energy), GPE (Gravitational Potential Energy)



State any changes in the **total energy** of a ball that is kicked, assuming that no external forces act.



State any changes in the **total energy** of a ball that is kicked, assuming that no external forces act.

The total energy of the system remains constant due to the conservation of energy.



Describe the energy changes that occur in a filament light-bulb.



Describe the energy changes that occur in a filament light-bulb.

- Electrical energy is transferred into light and heat energy.
- Light is a useful energy form, heat is waste energy.



Describe the energy transfers for a bungee jumper.



Describe the energy transfers for a bungee jumper.

- When falling, the GPE is converted to KE of jumper.
- As the cord tightens, KE is converted and stored as Elastic Potential Energy (EPE).
- At lowest point, the jumper's initial GPE equals the EPE stored in the cord.



Explain why a bungee jumper slows down once the cord begins to stretch.



Explain why a bungee jumper slows down once the cord begins to stretch.

- Kinetic energy decreases since it is converted to elastic potential energy.
- Since KE is proportional to $(\text{velocity})^2$, as KE decreases, so does velocity.



What is the equation for kinetic energy?
Give SI units for all quantities involved.



What is the equation for kinetic energy? Give SI units for all quantities involved.

$$E = \frac{1}{2} m v^2$$

$$\text{Energy} = \frac{1}{2} \times \text{Mass} \times (\text{Velocity})^2$$

Energy (J), Mass(kg), Velocity(m/s)



What is the equation for elastic potential energy? Give SI units for all quantities involved.



What is the equation for elastic potential energy?
Give SI units for all quantities involved.

$$E = \frac{1}{2} k x^2$$

Energy = $\frac{1}{2}$ x Spring Constant x (Extension)²

Energy (J), Spring Constant (N/m), Extension(m)



What is the equation for gravitational potential energy? Give SI units for all quantities involved.



What is the equation for gravitational potential energy? Give SI units for all quantities involved.

$$mgh$$

Mass x Gravitational Field Strength x Height

Energy (J), Mass(kg), Gravitational Field Strength (N/kg),

Height (m)



What unit of power is normally used for domestic electricity?



What unit of power is normally used for domestic electricity?

The Kilowatt (kW)



What is the unit of energy associated with the kW?



What is the unit of energy associated with the kW?

The Kilowatt Hour, kWh.

