



Welcome to this GCSEbox Resource  
Please Feel Free to re-distribute this resource

## Physics: Energy I

This will cover:

Energy Transfer  
Conservation of energy  
Efficiency of Machines

### The Ten Types of Energy:

1. **Electrical Energy** - whenever a current flows
2. **Light Energy** - from light sources eg the sun
3. **Sound Energy** - from noise sources eg speakers
4. **Kinetic Energy** - movement energy
5. **Nuclear Energy** - from nuclear reactions
6. **Thermal Energy** - heat energy from hot objects to cooler objects
7. **Radiant Heat Energy** - Infra Red energy given out as EM radiation by hot objects
8. **Gravitational Potential Energy** - possessed by anything that can fall
9. **Elastic Energy** - stretched by springs, elastic etc.
10. **Chemical Energy** - possessed by fuels, foods and batteries etc.

Remember all kinds of energy are measured in joules...

### Conservation of Energy:

There are two types of energy conservation:

1. Energy Conservation is about **using less energy**
2. Principle of conservation of energy is a principle that governs the workings of the entire universe.

Principles of conservation of energy are:

ENERGY can **never be CREATED or DESTROYED** but in fact **CONVERTED from one form to another**.

Also:

Energy is **only useful when converting from one form to another**.

Most energy transfers involve losses such as heat.

- Useful energy is **only useful as it has converted from one form to another.**
- **Some of the original input energy is then lost in transfer usually as heat.**
- **More energy wasted the less efficient a device is.**

No device is **100% efficient** and the **waste energy is always dissipated as sound and heat.**

### **Efficiency of Machines:**

**Efficiency = Useful energy output/ total energy Input**

To find out the efficiency of a machine:

- Find out **how much energy is supplied to the machine** (ie the total energy input)
- Find out **how much useful energy the machine produces** (ie the total energy output)
- From the two numbers divide the smallest one by the biggest one to get a value of **efficiency between 0 and 1** (0 being least efficient and 1 being most)

The formula is:

**USEFUL ENERGY OUTPUT = Efficiency X Total Energy Input**

This page is copyright to GCSEbox.com but may be freely re-distributed and presented. Information on this page has been provided to the greatest of accuracy but the reader must use this information at their own discretion.

Visit [www.gamesfridge.com](http://www.gamesfridge.com) for over 500 free online games  
In association with GCSEbox.com