**Physics lesson 2 (Year 7)**

**Energy Stores.**

**https://www.bbc.co.uk/bitesize/articles/zh68wty**

**Home learning focus**

Learn about energy stores, useful and wasted energy in energy transfers. How Sankey diagrams can be used to represent energy transfers.

**Learn**

**Conservation of energy**

**Energy cannot be either created or destroyed.**

This law of energy means that energy is eternal and is all around us. It also means that when it is not being used, then it must be **stored** somewhere, ready to be **transferred** somewhere else.

Energy that is stored or waiting to be transferred is called an **energy store.**

A waterfall is a great example of how potential energy is stored and then transferred to movement, sound and heat when the water falls.

There are different forms of energy store, including:

**kinetic energy, internal energy, elastic potential energy, gravitational potential energy, electrical energy, magnetic energy, chemical energy**

**Kinetic energy**

All moving things have **kinetic energy** , even very large things like planets, and very small ones like atoms.

The amount of kinetic energy an object has depends upon:

**the mass of the object AND the speed of the object**

**Internal energy -** All objects have **internal energy** . This includes:

Energy caused by the movement of particles, sometimes called **thermal energy**

Energy due to the bonds between particles, sometimes called **chemical energy**

**Elastic potential energy-** is stored in squashed or stretched objects

Some objects can change shape reversibly. Rubber balls, springs and elastic bands are like this.

When a rubber ball is stretched or squashed, it can regain its shape again.

**Magnetic energy**

Some objects can be magnetised and create magnetic fields.

They can exert forces on other magnetised objects, or on magnetic materials.

**Gravitational potential energy**

When an object is moved higher, it gains **gravitational potential energy.**

The amount of gravitational potential energy it gains depends upon:

The **mass** of an object, The extra **height** it gains AND The **gravitational field strength**

**Electrical energy**

Some objects carry electrical charges and create electric fields.

These charged objects can exert forces on each other.

You get an electric current when charged particles move through a wire.

**Chemical energy**

Energy stored in fuel or a battery is called **chemical energy.**

Energy is stored in the chemicals ready to be transferred to other energy types like electrical or heat.

**Sankey Diagrams**

We use **Sankey diagrams** to represent energy transfer.

The thicker the line or arrow, the greater the amount of energy involved. The length of the arrow doesn't matter.

**Example: a light bulb**

**E**nergy in a light bulb will be stored as **electrical** energy

**E**nergy will be transferred into **heat** and **light** when it is switched on

Energy is conserved: 

1. **= 90 J + 10 J**

In this transfer: -light energy is considered **useful** because we need light to be able to see. Heat energy is **wasted** as it just heats up the surroundings and is lost

**Practise**

**Activity 1**

Complete the worksheet titled “What is energy KS3”

**Activity 2**

Complete the worksheet titled “Sankey Diagrams KS3”

**Extension-** Walk around your house and find 5 electrical appliances such as mobile phones, TV, hairdryer. Can you state the- 1. Type of input energy (battery is chemical, if it is plugged in it’s electrical. 2. The useful output energy (such as light and sound in a TV) 3. The wasted energy (this is often as Heat or Sound).