# Year 8 Autumn Term 1:

## Interdependence, Biodiversity and the History of Earth

**GLOSSARY:**

**Interdependence and Biodiversity:**

*FOOD CHAIN*: **A food chain** shows what an organism eats and the transfer of energy between organisms.

*FOOD WEB*: A **food web** is a set of linked food chains.

*PREY*: **Prey** are organisms eaten by another organism.

*PREDATORS*: **Predators** are organisms that eat other animals.

*HABITAT*: The area an organism lives in is called its **habitat.**

*ECOSYSTEM*: An **ecosystem** is the name of the plants, animals, and the location that they live in.

*POPULATION*: The number of plants or animals of the same type that live in the same area is called a **population.**

*NICHE*: An organism in an ecosystem has its own **niche**.

**History of the Earth:**

*Weathering*: he process of **wearing** or being worn by long **exposure** to the atmosphere.

*Sedimentary*: A **rock** that that has formed from **sediment deposited** by water or air.

*Igneous*: A type of **rock** that has been formed having **solidified** from lava or magma.

*Metamorphic*: Rock that has undergone **transformation** by heat, pressure, or other natural **agencies**

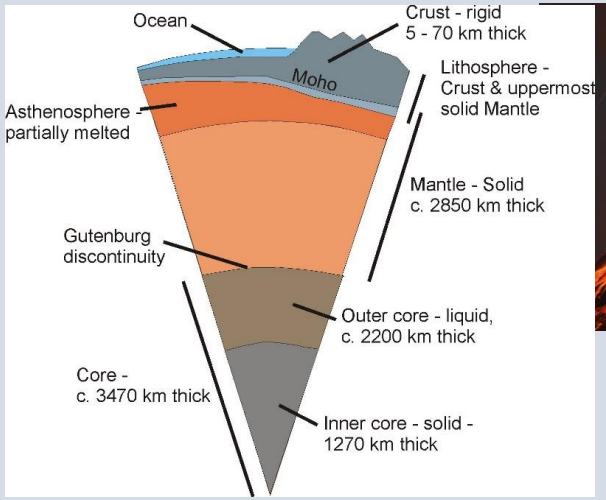
*Volcanoes*: A mountain or hill, typically conical, having a crater or vent through which lava, rock fragments, hot vapour, and gas are or have been erupted from the earth's crust.

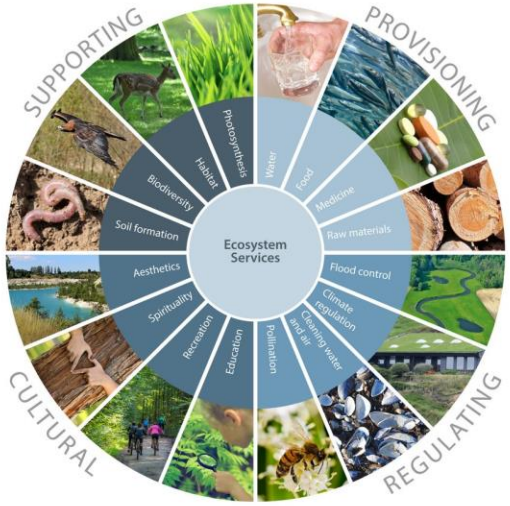
*Magma*: hot **fluid** or semi-fluid material below or **within** the earth's crust.

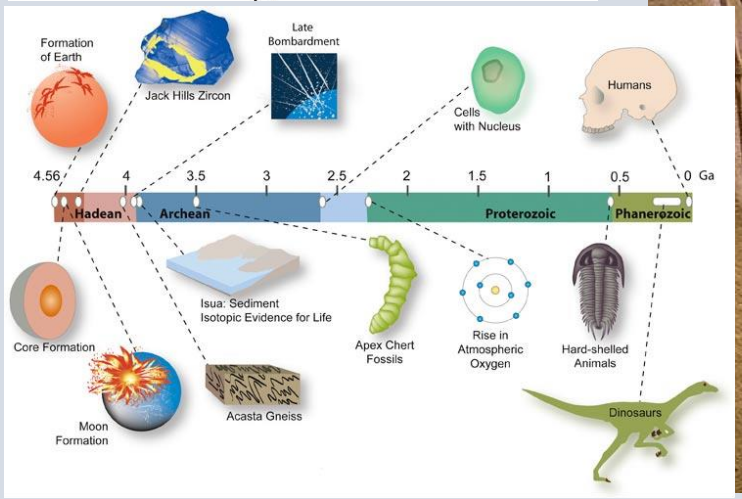
*Lava*: hot molten or semi-fluid rock **erupted** from a **volcano**.

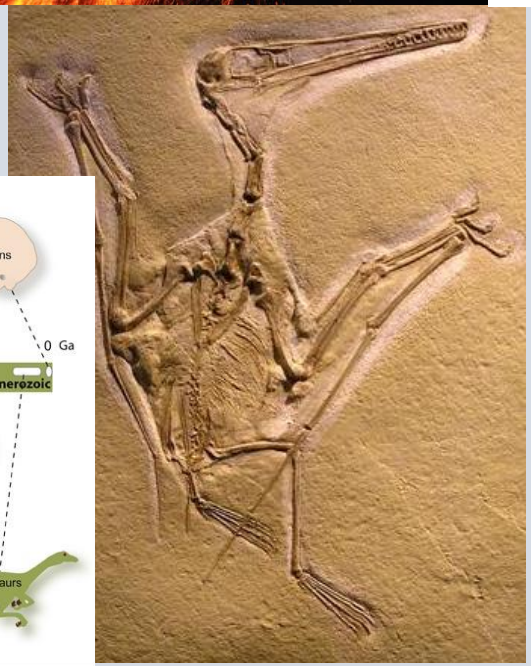
***Did you know?***

Seeds are distributed by wind, explosion, water, by being eaten by animals and by being carried on the outside or animals. Toxic chemicals can pass through a food chain and accumulate, eventually causing organisms to be ill or die. The animal at the top of the food chain will be most affected. This is one of the most important things to consider when looking at biodiversity as food chains and humans alike can be affected.



***Did you know?***

The formation of clastic and organic rocks begins with the weathering, or breaking down, of the exposed rock into small fragments.

Through the process of erosion, these fragments are removed from their source and transported by wind, water, ice, or biological activity to a new location.

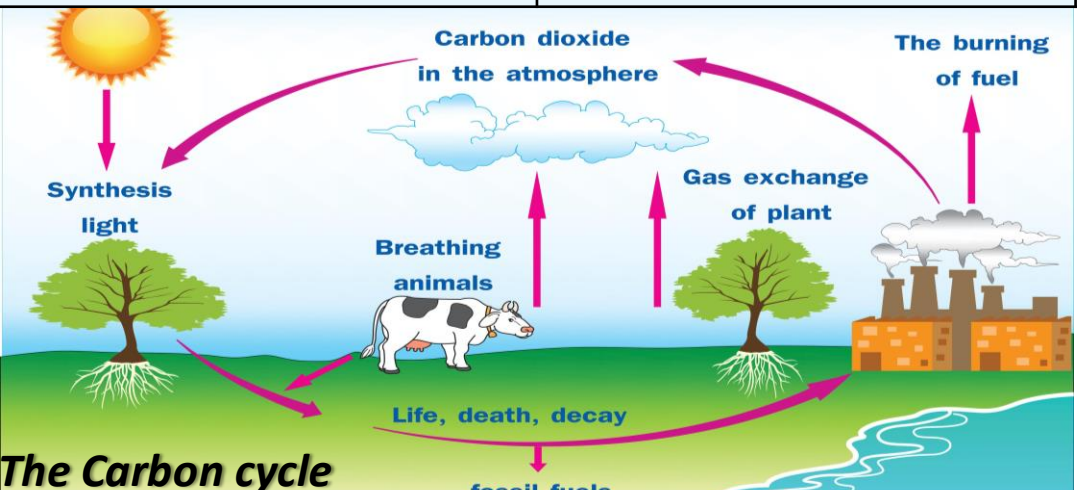
Once the sediment settles somewhere, and enough of it collects, the lowest layers become compacted so tightly that they form solid rock.

# Year 8 Autumn Term 2:
## Climate change and moving around

## Climate change

Glossary

| | |
|---|---|
| **Atmosphere** –the envelope of gases surrounding the earth or another planet | **Greenhouse effect** – a natural process that keeps the Earth warm |
| **Acid rain** - rain water that has reacted with acidic pollutants | **Pollutants** – substances that harm the environment. |
| **Greenhouse gases** - gases which cause the greenhouse effect | **Reduce** – using less of a resource or material |
| **Carbon dioxide** – A greenhouse gas produced when things are burned. This is taken in by plants and used during the process of photosynthesis. | **Reuse** – an item that can be used again as its useful life has not been finished. |
| **Recycle** – Any item that has no longer any use and cannot be reused is recycled. | **Catalysts** – A substance that speeds up a chemical reaction without being used up itself. |




***The Carbon cycle***

## Moving around

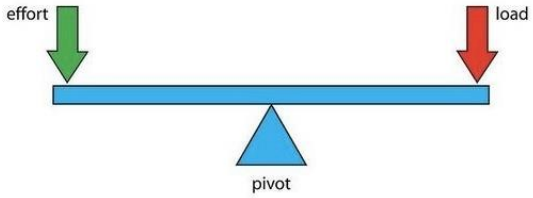
Glossary

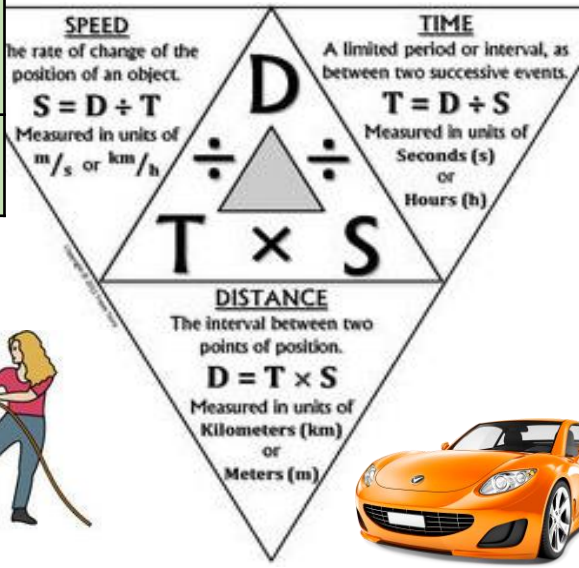
| | |
|---|---|
| **Air pressure** | **force on an area caused by air particles bouncing off a surface** |
| **Air resistance** | **the force that air exerts on objects moving through it.** |
| **Levers** | **is a tool that allows movement. Including the effort, pivot and load.** |
| **Pressure** | is a measure of how much force is acting on an area. |
| **Moments** | a turning effect produced by a force acting at a distance on an object. |
| **Weight** | **the vertical force exerted by a mass as a result of gravity.** |

## Moment

Moment (Nm) = force (N) x distance from pivot (m)

Moment = F x d

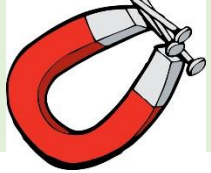



PULL

# Year 8 Spring Term 1:
## Metal reactions





Most reactive
- potassium
- sodium
- calcium
- magnesium
- aluminium
- zinc
- iron
- tin
- lead
- copper
- silver
- gold
- platinum

Least reactive

*Reactivity series of metals*

### REACTIONS FORMING RUST

**Word equation:**
Iron + water + steam → Iron oxide (rust)

### REACTIONS WITH OXYGEN

**Word equation:**
Potassium + Oxygen → Potassium oxide
**Symbol equation:**
$K_{(s)} + O_{2\,(g)} \rightarrow 2KO_{(s)}$

### REACTIVITY OF HALOGENS

Reactivity increases as you go down the group

- F
- Cl
- Br
- I
- At

### REACTIONS WITH ACIDS

**Word equation:**
Metals + Acids → Salt + Hydrogen
**e.g. Symbol equation:**
$K_{(s)} + HCl_{(l)} \rightarrow KCl_{(s)} + H_{2\,(g)}$


### REACTIONS OF Noble gases

Group 0 known as noble gases are inert as they are stable. This means they have a full outer shell of electrons.

| | |
|---|---|
| He | Helium |
| Ne | Neon |
| Ar | Argon |
| Kr | Krypton |
| Xe | Xenon |
| Rn | Radon |

**Glossary**

| | |
|---|---|
| Reactants | force on an area caused by air particles bouncing off a surface |
| Products | the force that air exerts on objects moving through it. |
| Properties | is a tool that allows movement. Including the effort, pivot and load. |
| Reactivity | is a measure of how much force is acting on an area. |
| Displacement | a turning effect produced by a force acting at a distance on an object. |
| Alloys | An alloy is a mixture of elements and a metal in order to strengthen the structure of it |
| Inert | A chemical that is unreactive. |

## Properties of metals:

| Metals | Non-metals |
|---|---|
| Solid at room temperature | Solids, liquids and gases at room temperature |
| Shiny ( if polished) | Not Shiny |
| Conducts electricity and heat | Does not conduct electricity or heat (except graphite) |
| Malleable - Bend without breaking | Brittle – Breaks easily |
| Ductile – Can stretch into wires | Cannot stretch easily |
| Only some metals are magnetic (iron, nickel and Cobalt) | Non –magnetic |
| Sonorous (makes a ringing sound) | Not sonorous |

# Year 8 Spring Term 2: Health & Disease, Sound & Light

| Health & Disease | Sound & Light |
|---|---|
| **Pathogen** – Organism which causes disease | **Waves** – Vibrations that transfer energy not matter |
| **Bacteria** – Microorganisms that can cause disease | **Amplitude** – Distance from the middle to the top of a wave |
| **Virus** - Microorganisms that can cause disease | **Wavelength** – Distance from peak to peak |
| **Fungi** - Microorganisms that can cause disease | **Frequency** – Number of waves that pass a point per second (Hz) |
| **Transmission** – The act of passing something on | **Translucent** – Scatters visible light as it passes through |
| **Infection** - When the body is attacked by microorganisms | **Transparent** – Visible light passes through without scattering |
| **White Blood Cell** – Cells which defend against infection | **Opaque** – Does not allow light to pass through |
| **Vaccine** – Substance given to make you immune to microbes | **Refraction** – Bending of light as it travels from one medium to another |
| **Immune** - Resistant to a particular infection | **Reflection** – Light bouncing off a surface |
| **Immunisation** - The action of making someone immune to infection | **Echo** – Sound reflected off a surface |
| **Antibiotic** – A substance used to treat bacterial infections | **Ultrasound** – Sounds above 20,000Hz |

## Spreading Pathogens

Pathogens are spread via coughs, water, animals, sexually transmitted, food or touch.

## Defence against Pathogens

The following help defend against infection.

- Scabs
- Tears and Eye-Lashes
- Stomach Acid
- Hairs in our nose
- Skin
- Cilia in the trachea

## Vaccines and Antibiotics

Antibiotics can kill off bacteria and vaccines trigger the immune response to make you immune to that pathogen.

For more information on Vaccines and Antibiotics, follow this link.

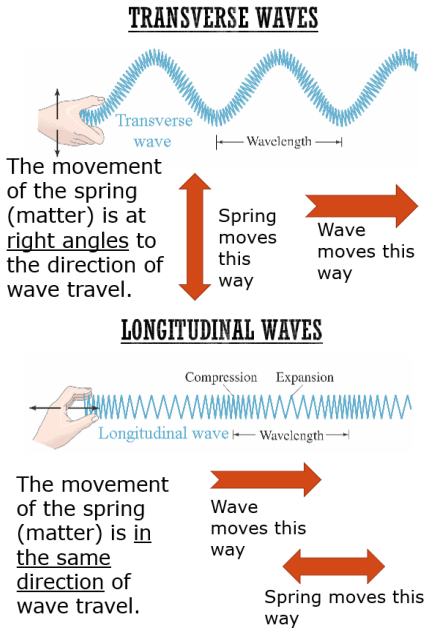
## Defence against Pathogens

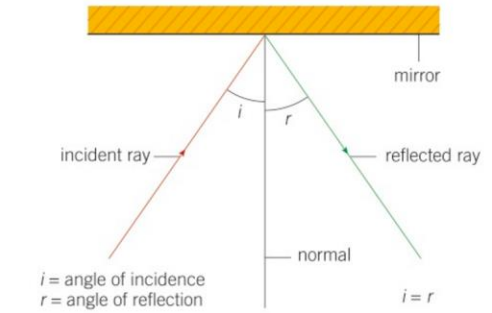
White blood cells help defend against pathogens by either:

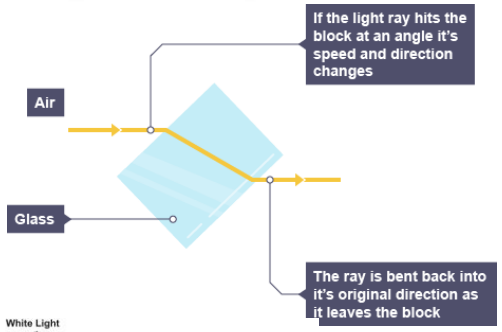
- Producing antitoxins to neutralise the effect of any toxins from a pathogen.
- Engulfing the pathogen and then digesting it. (breaking it down)
- Release Antibodies – the shape of an antibody is important as it fits exactly onto a site on the pathogen.

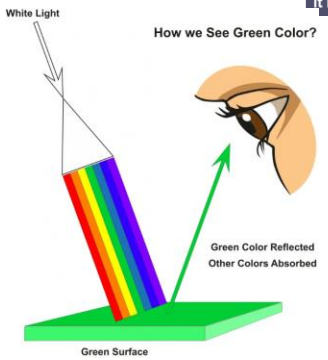
## Waves

A vibration that transfers energy and information




For more information about the features of a wave, follow this link.

# Year 8 Summer Term 1: Life Support

## Glossary

**Combustion –** The burning of a fuel to release energy.

**Respiration –** A chemical reaction that releases energy.

**Aerobic –** A type of respiration that requires oxygen.

**Anaerobic –** A type of respiration used when oxygen is not available.

**Breathing –** A muscular contraction drawing air into and out of the lungs.

**Alveoli –** The structure in the lungs where gas exchange occurs.

**Circulation –** Movement of blood around the body.

**Heart –** The organ that pumps blood around the body.

**Artery –** The type of blood vessel that take blood away from the heart.

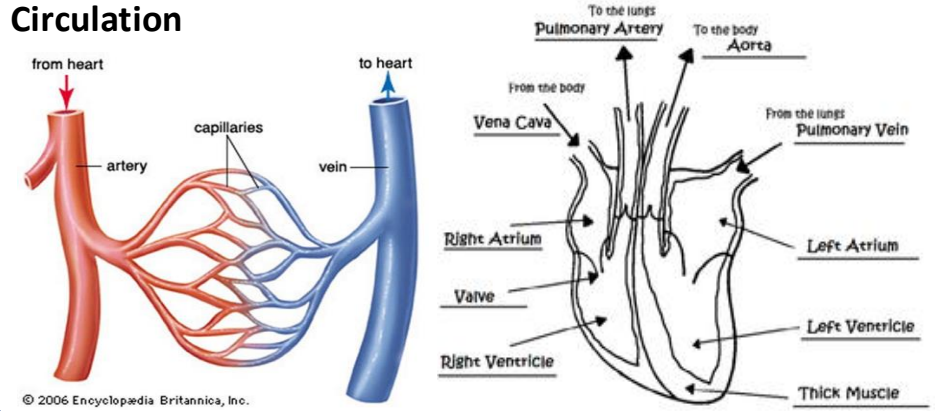
**Vein –** The type of blood vessel that take blood back to the heart.

**Capillary –** The type of blood vessel that exchanges substances with cells.

**Digestion –** The break down of large insoluble molecules into small soluble molecules so that they can be absorbed into the bloodstream.

**Deficiency –** When a certain food group is not eaten in high enough amounts.

## Circulation




## Combustion

Fuel + Oxygen → Carbon dioxide + Water + Energy

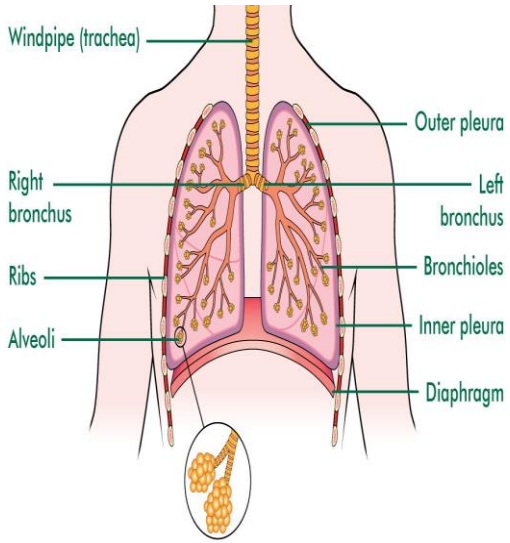
## Aerobic respiration

Glucose + Oxygen → Carbon dioxide + Water + Energy

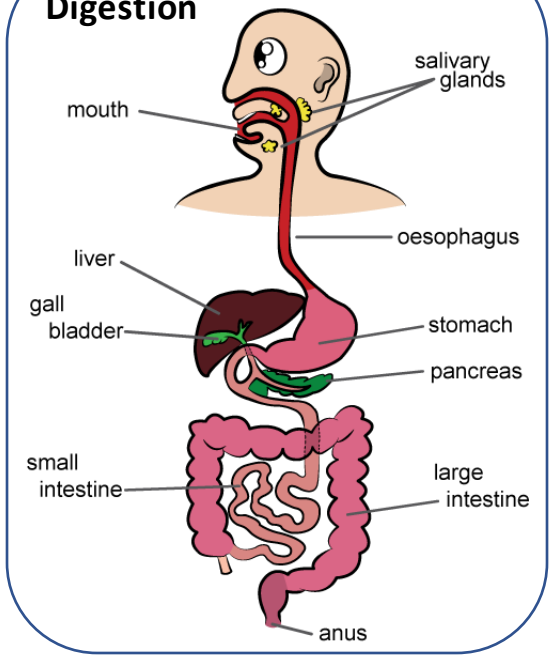
## Anaerobic respiration

Glucose → Lactic acid + Energy

## Breathing




## Digestion




## Key points

- There are two types of respiration – aerobic (with oxygen) and anaerobic (without oxygen).
- Breathing and respiration are different – breathing is a muscular contraction whereas respiration is a chemical reaction.
- The alveoli are where gas exchange occurs.
- Combustion is the process of a fuel burning.
- The heart contains three types of blood vessels called arteries, veins and capillaries.

http://digestivesystemforkids.com

# Year 8 Summer term 2: Changes in systems

## GLOSSARY

Reactants

The substances that react together.

Product

The chemicals produced in the reaction.

Irreversible

A change that cannot be reversed.

Physical change

A change of state e.g. melting

Precipitate

An insoluble solid that is formed in a reaction.

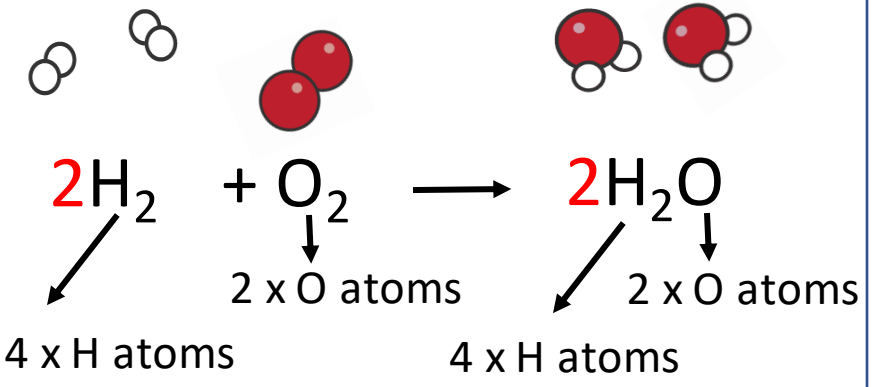
Conservation of mass

Mass stays the same during a chemical reaction.

## Key ideas: Conservation of mass

Since no atoms are created or destroyed, the mass must always be conserved in a chemical reaction. This means that the total mass of the reactants is the same as the total mass of the products (remember mass measures the amount of matter).

This is why we have to balance chemical equations:




This equation is balanced as there are the same number of atoms on the left (reactants) as the right (products). The BIG two means 2 times each of the molecules or atoms so $2H_2$ = 4x H atoms.

## Key ideas: Physical & chemical change

Physical changes do not make new products or chemicals and are easy to reverse such as changes of state like boiling, dissolving and crystallisation. In a chemical reaction bonds between atoms are broken and made, this means chemical reactions result in new products being made and are difficult to reverse.

You can tell a chemical change has occurred because you may see a change in colour, fizzing (gas produced), a change in temperature on a thermometer or a precipitate my be produced.