

Biology

Monomer

 A small molecule that can join to form a polymer (a single unit). *Mono = one*

Polymer

 A long chain of repeating units called monomers. *Poly = many*

Enzymes are biological catalysts that break down polymers into monomers

Polymer	Enzyme	Monomer	Use of
Carbohydrates	Carbohydrase	Glucose	Energy
Proteins	Protease	Amino Acids	Growth and Repair
Lipids (fats)	Lipase	Glycerol and Fatty Acid	Long term energy and insulation

The Digestive System

Stomach	Where ingested food is stored and broken down.
Small intestine	Where food molecules are absorbed into the blood.
Large intestine	Where water molecules are absorbed into the blood.

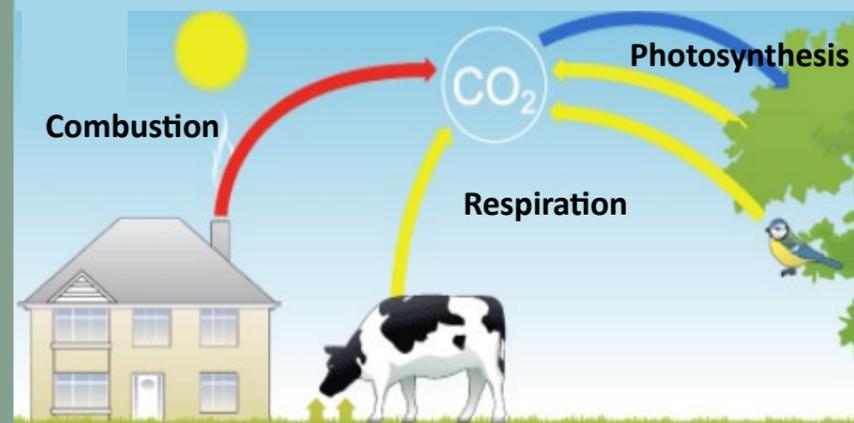
Plants synthesise their own food using energy from the sun in **photosynthesis**.

This allows them to make carbohydrates such as **sucrose**, **starch** and **cellulose**.

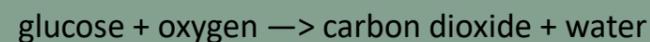
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Chemistry

The atmosphere contains: **Nitrogen 78%, Oxygen 21%, Carbon dioxide 0.035% and other gases < 1 %**



Respiration (causes an increase of CO₂)



Complete combustion (causes an increase of CO₂)



Photosynthesis (causes a decrease of CO₂)



Climate change is caused by increased CO₂ in the atmosphere.

This can be caused by:

- Deforestation
- Farming
- Decomposition
- Combustion of fossil fuels
- Respiration

Physics

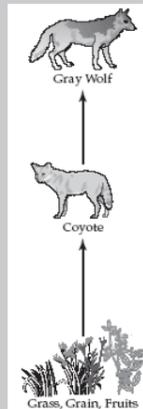
Energy store	Description	Example
Thermal	Hot objects	Hot coffee
Kinetic	All moving objects	Planets, buses
Electrostatic	Charged objects	Thunder clouds
Gravitational potential	An object high up	Aeroplanes, kites, a book on a shelf.
Chemical	Energy stored in chemical	Food, fuel, batteries.
Elastic potential	Stretched or squashed materials.	Catapults, springs, balloons.
Magnetic	Caused by the attraction or repulsion between magnets	Fridge magnets, compasses, maglev trains
Nuclear	The energy stored in an	Uranium.

Key Definitions:

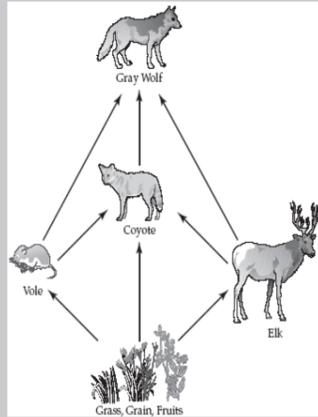
Conduction	The transfer of energy by vibrations.
Radiation	Energy transferred as a wave.
Convection	The transfer of energy by movement of particles. Only occurs in fluids.
Insulation	A material that does not allow thermal energy to pass through easily.
Law of conservation of energy	Energy cannot be created or destroyed. It can only be stored or transferred between stores.
Transfer of energy	The movement of energy from one store to another.
Dissipate	Lost to the surroundings.
Efficacy	How effective something is.

Biology

Food chain



Food Web

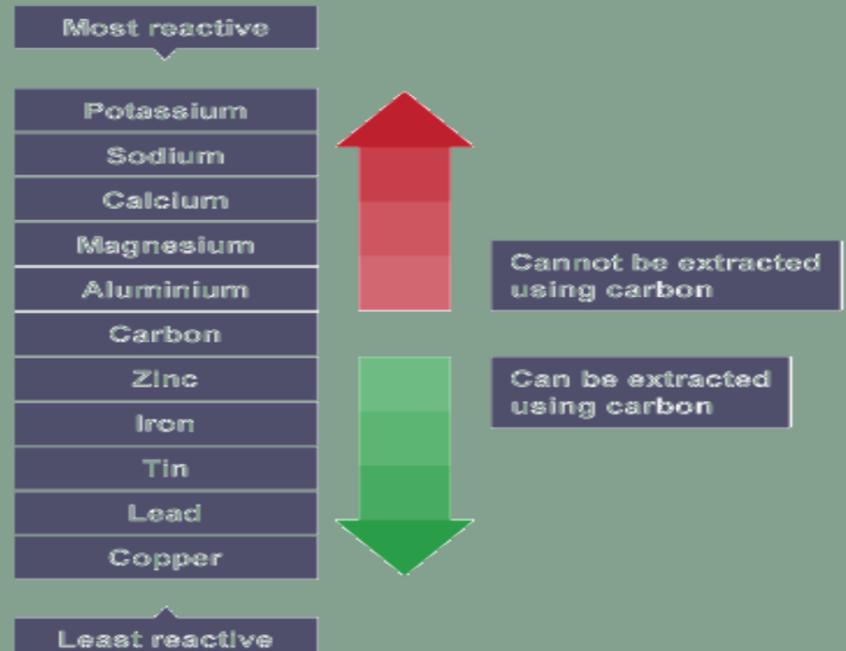


Shows direction of energy transfer

If **toxins or pollutants** are taken in by an organism at the start of a food chain this causes **bioaccumulation** meaning that animals at the top of the food chain are affected.

Food Chain	Shows the transfer of energy through different trophic levels .
Food web	Shows the interaction of different food chains in an ecosystem .
Producer	An organism that produces its own food (plant.)
Primary consumer	An organism that eats a producer.
Secondary consumer	An organism that eats a primary
Tertiary consumer	An organism that eats a secondary consumer.
Trophic level	A level in a food chain.
Carnivore	An organism that only eats animals.
Herbivore	An organism that only eats plants.
Omnivore	An organism that eats both plants and animals.
Predator	An animal that hunts, kills and eats other animals for food.
Prey	Organisms that predators kill for food.
Interdependence	When one organism depends on another organism for survival.
Ecosystem	Where organisms interact with their physical surroundings.
Habitat	Where an organism lives.
Population	The number of one species of organism.
Community	The number of all species in an area.

Chemistry



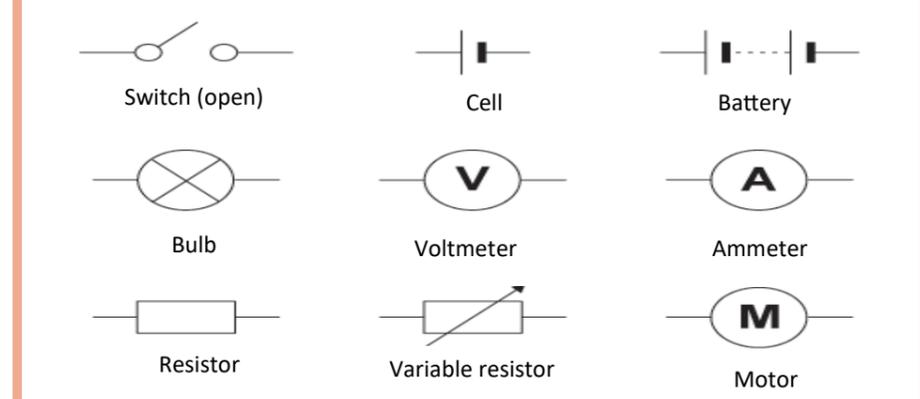
Metals **less reactive** than carbon can be extracted from their **ores** by **heating them with carbon**. The general equation for this reaction is:



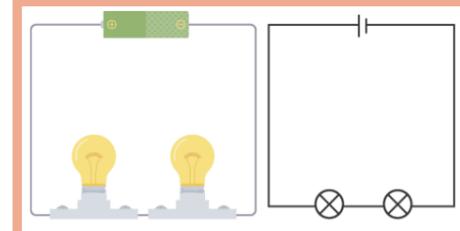
Metal extraction from an ore can be very expensive, sometimes this means it's not done.

Reactive	Easily takes part in chemical reactions.
Unreactive	Does not easily take part in chemical reactions.
Reactivity series	A list of elements in order of reactivity from most reactive to least reactive.
Displacement reaction	When a more reactive element takes the places of a less reactive element in a compound.
Ceramics	Solid, tough materials made by baking a starting material in a hot oven or kiln e.g. bricks and pottery.
Polymers	A long chained molecule made from monomers e.g. plastics.
Composites	Made from two or more different types of materials e.g. MDF, fibreglass and nylon.
Recycling	Converting waste materials into usable products.

Physics



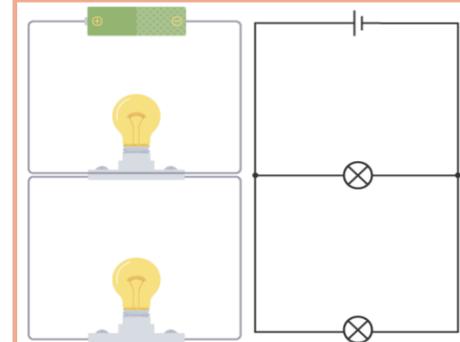
Series circuit



Current is the same at all points in the circuit.

Potential difference is shared between components.

Parallel circuit



Current is shared across the branches.

Potential difference is the same at all points in the circuit.

Potential difference (V)	Difference in energy between two points in a circuit.
Resistance (Ω)	Difficulty of current flow.
Current (A)	Rate of flow of electric charge.

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