

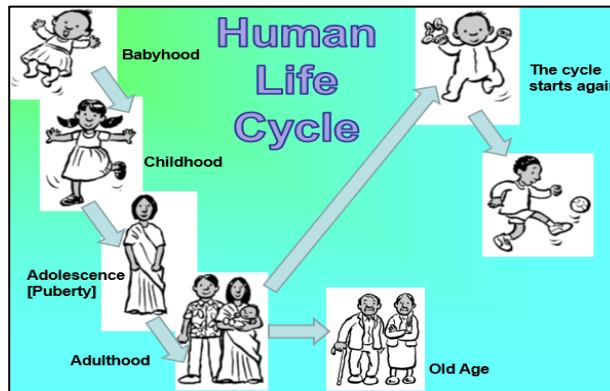
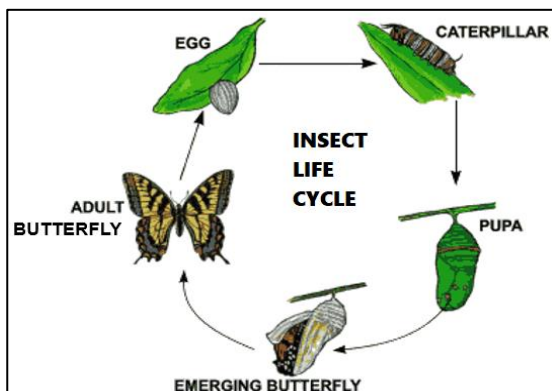
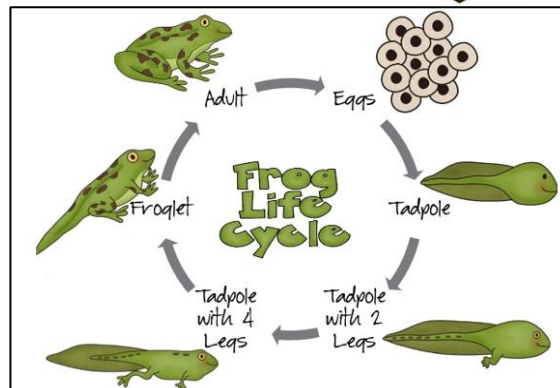
**SCIENCE
AUTUMN 2
KNOWLEDGE
ORGANISERS**

Y5 SCIENCE KNOWLEDGE ORGANISER

TOPIC: UNIT 2 [Autumn]



The 7 life processes MRS GREN	Movement 	Reproduce <p>Animals having babies or plants making seeds</p>	Senses <p>Knowing your environment</p>
	Growth 	Respire <p>Using Oxygen</p>	Excrete <p>Get rid of waste</p>



Sexual reproduction means that parts from a **male** and a **female** join together to make a new living thing [offspring] or they will go **extinct!**

They join together in a process called **fertilisation** and will form an **embryo**, which will eventually grow into a new **baby**

A female has to produce an **egg**

A male has to produce **sperm**

What changes occur during puberty?

Female changes Breasts develop Hips widen Thighs grow	Both sexes can get spots on their face Eggs are released Periods start Pubic and underarm hair grows	Male changes Voice deepens Testicles produce sperm Pubic and underarm hair grows Facial hairs grows Muscles develop Penis gets bigger
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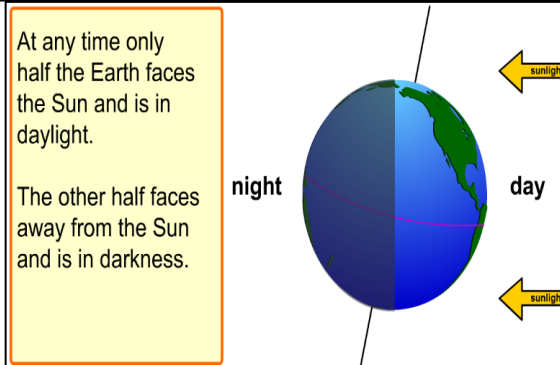
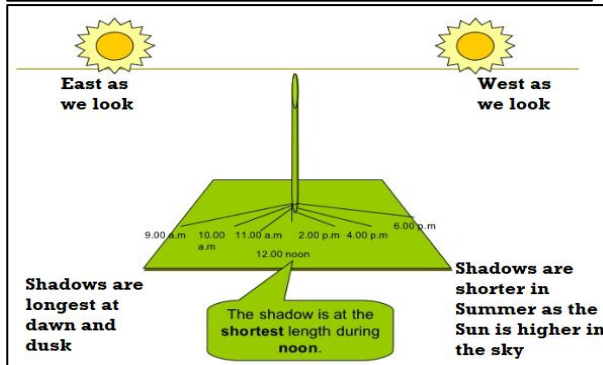
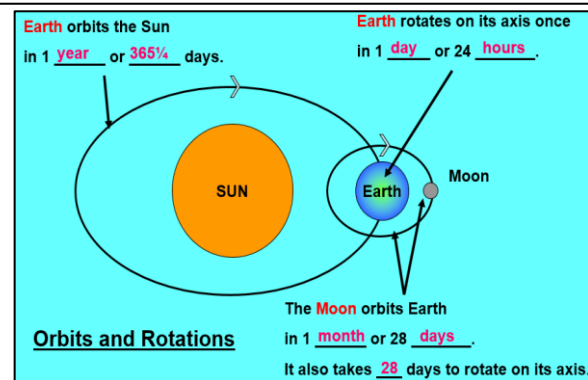
Space photographs also show us how the Earth, Moon and Sun are **spheres** and not flat.

Our Sun is a **star**, a giant ball of burning gas that Earth **orbits** [goes around].

Over 1 million Earths could fit into the Sun. It's **huge!**

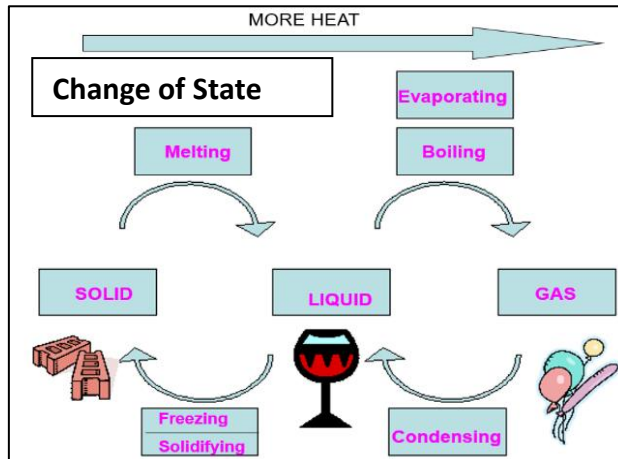
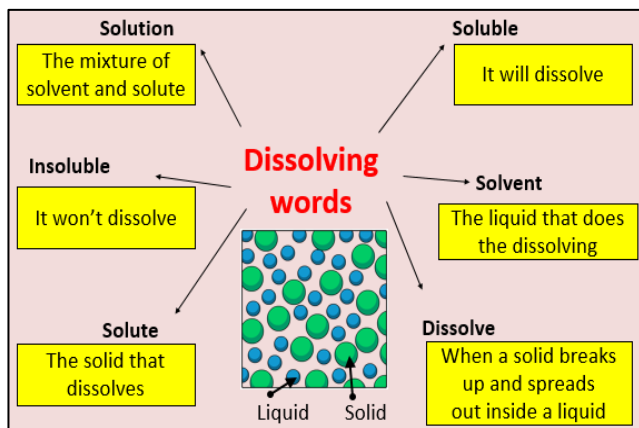
The Moon is a giant **rock** that **orbits** the Earth, and reflects light from the sun.

It looks big in our sky because it is much, much **closer** than the Sun (even though it is much smaller).



Y6 SCIENCE KNOWLEDGE ORGANISER

TOPIC: Unit 2 [Autumn]



Separation by size and material

We sieve flour or soil to remove the larger lumps or stones. The smaller pieces fall through the holes.

Recycling plants and scrapyards use magnets to sort steel and iron from other metals and rubbish

What are the properties of solids, liquids and gases?

	Solids	Liquids	Gases
Do they flow?	✗	✓	✓
Do they keep their shapes?	✓	✗	✗
Do they take up the shape of their containers?	✗	✓	✓
Can they be squashed into a smaller space?	✗	✗	✓
Do they easily escape from their containers?	✗	✗	✓

How are solids separated out of mixtures?

Separating an **insoluble solid** and a liquid:

- If a solid is insoluble (e.g. sand in water) then it is easy to separate it by **filtering** the mixture.
- The insoluble solid cannot pass through the filter paper but the water can.

Separating a **soluble solid** and a liquid:

- To separate a soluble solid from a liquid (e.g. salt and water), **evaporation** can be used.
- The solution is heated so that the water evaporates and leaves the dissolved solid behind.

Vocabulary	Definition
Human Impact	The activities by human beings can have a dramatic effect on the habitats of other living things. Pollution and global warming are destroying many natural habitats.
Nocturnal	Living things that are active at night. Many have special adaptations for this, such as bats. Opposite to diurnal [day time] living things
Deciduous	Plants that lose their leaves in the winter due to lack of light
Evergreen	Plants that keep their leaves all year around. They are often smaller, waxy or hairy.
Migrate	The movement of animals to a new location to find better conditions or more food.
Hibernate	When an animal goes into a winter-long deep sleep to avoid the harsh winter conditions.

All animals are adapted to their habitats.

This means they are suited to the conditions. They have special features called adaptations.

One common adaptation is camouflage colours to blend in.

Tiger

- Sharp claws and teeth
- Stripes to blend in
- Powerful legs
- Good senses

Giraffe

- Long neck
- Long tongue
- Long legs
- Colour to match the ground

A food chain shows what eats what in a habitat

Lettuce → **Slug** → **Blackbird**

- Food chains always start with a plant [producer]
- Next comes a herbivore [consumer]
- Next comes a carnivore [consumer]
- The arrows mean 'eaten by' or 'energy goes this way'
- They always finish with a predator eating its prey

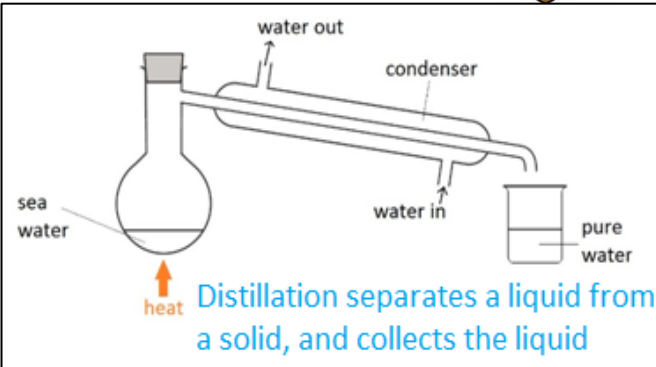
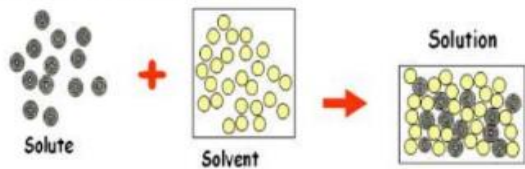
Y7 SCIENCE KNOWLEDGE ORGANISER

TOPIC: Unit 2 [Autumn]

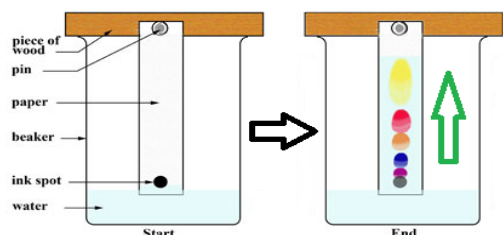


The particle theory for dissolving

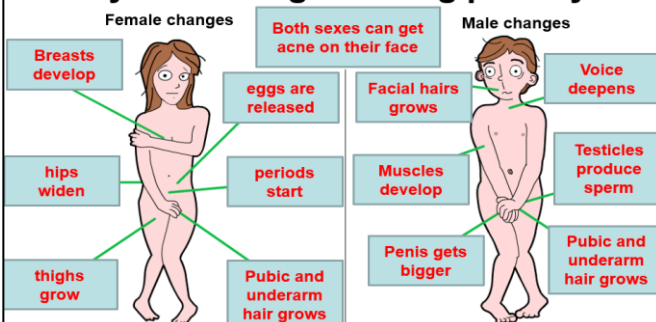
- There are small gaps between the particles in a liquid. When a substance dissolves in a liquid, its particles spread out and fill the gaps.



Chromatography separates different liquids dissolved together. Each liquid travels a different distance on absorbent paper. Useful with ink, which is a mixture of dyes.

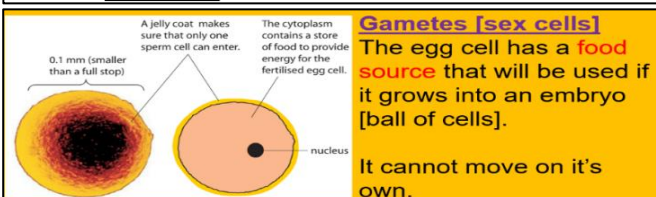


Physical changes during puberty



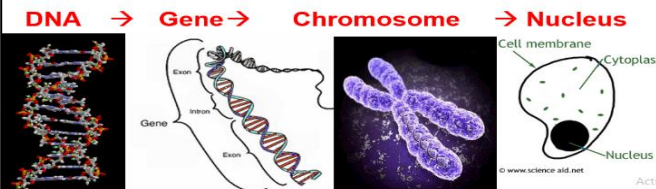
- **Adolescence** is the overall period of change from child to adult. It involve both physical and mental changes.
- These changes are controlled by chemical signals called **hormones**

Key Vocabulary	Definition
Inherit	Gain genes and features from the previous generation [the parents]
Purify	Remove all chemicals bar one from a mixture. Pure salt can be purified from rock salt using filtering and evaporation .
Solubility	The measure of how much solute [solid] can dissolve within a solvent [liquid]. The solution becomes saturated when there are no more gaps for the solid to go into.
Sound waves	Sound waves can only travel along colliding particles. Sound waves travel fastest through solids as the particles are closer together
Renewable Energy	Energy sources, such as wind power and solar power, that will not run out and create less pollution
Fossil Fuel	Fuels, such as coal, oil and natural gas, that are formed from the remains of dead living things underground over the course of millions of years

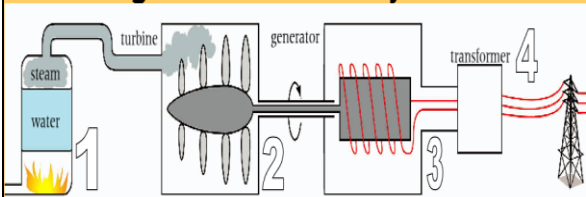


How does our genetic material build up in complexity?

- DNA – Genetic code
- Gene – Area of DNA that controls a certain feature
- Chromosome – Structure made of many genes [
- Nucleus – Cell part that houses all genetic information



How we generate electricity



1. Fuel is burned to heat water into steam.
2. Steam turns a turbine. The steam is cooled so it can be reused
3. In the generator, a magnet turns inside a wire coil. This generates an electric current.
4. A transformer increases the power of the electricity, which goes down the wires of the National Grid.

The 9 types of energy [s] = stored

Kinetic or Movement	Light	Heat or Thermal	Gravitational Potential [s]	Nuclear [s] [Atoms]
Sound	Chemical [s]	Elastic Potential or Strain [s]	Electrical	

Y8 SCIENCE KNOWLEDGE ORGANISER

TOPIC: Y8 Unit 2 [Autumn]



Word Equation Summaries

Aerobic Respiration in all living things

glucose + oxygen → carbon dioxide + water (+ lots of energy)

Anaerobic respiration in Animals [Fermentation]

glucose → **lactic acid** (+ a little bit of energy)

Anaerobic respiration in Microbes [Fermentation]

glucose → **ethanol** + carbon dioxide (+ a little bit of energy)

Neutralisation Chemical Equation

Acid + Alkali → Water + A Salt [Both Neutral]

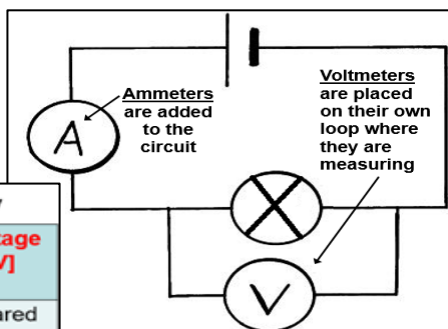
- There are two parts to a salt name:
- The first word is a **metal**, taken from the alkali.
- The second word ends in **-ide** or **-ate**, taken from the acid.

• These three acids use different words for the name of salts produced by them:

- A salt made from **hydrochloric acid** will end in **chloride**
- A salt made from **nitric acid** will end in **nitrate**
- A salt made from **sulphuric acid** will end in **sulphate**

- Eg. **Nitric Acid** + **Sodium Hydroxide** → **Sodium Nitrate** + **Water**
- Eg. **Sulphuric Acid** + **Zinc Oxide** → **Zinc Sulphate** + **Water**

Key Vocabulary	Definition
Hazard Symbol	A warning label found on a hazardous chemical
Corrosive	Means this causes chemical burns
Respiration	The process of releasing energy from food particles that occurs in all cells in structures called the mitochondria
Aerobic	This means 'with air or oxygen'. Anaerobic means 'without air or oxygen'.
Unicellular	An organism composed of only one cell, like an amoeba. Can have animal and plant cell parts.
Series Circuit	A circuit where the components are all on a single route.
Current	It is the flow of electricity [electrons] that carry electrical energy. It is measured in Amps [or amperes (symbol A)] using an ammeter
Voltage	It is the measurement of electrical energy that the electricity [electrons] carries. It is measured in Volts [symbol V] using a voltmeter



Circuit Summary		
	Current [A]	Voltage [V]
Series Circuit	Same at all points	Shared by outputs

The pH scale measure the strength of acids and alkalis

Acids react to cancel out Alkalis. This chemical reaction is called neutralisation

Acids are sour
Alkalis are bitter

Common Acids
Lemon Juice
Vinegar

Common Alkalis
Dishwasher powder
Drain Cleaner

Diluting with water makes them **weaker**

You test them with indicators like red cabbage or universal

Neutral means not acid or alkali

Acids are **opposite** to alkalis

Strong acids and alkalis can cause serious burns

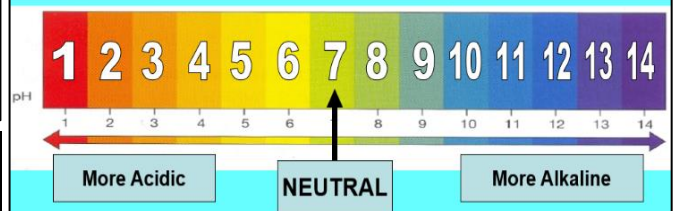
Wear gloves & goggles

Acids & Alkalis

How can we test how strong acids and alkalis are?

With **Universal Indicator!** [Universal means 'all']

This is then recorded using the **pH scale:**



Central heating model

Electricity in a circuit

How is a circuit like a central heating system?

Model Part	Circuit Part
Pipes	Wires
Heat Energy	Electrical Energy [V]
Water flow	Current [A]
Boiler / Pump	Cell
Radiator	Bulbs etc.

Lamp / bulb	Motor	Switch	Cell / battery
Buzzer	Ammeter	Wire	Voltmeter

Circuit Symbols