

Adaptations

How is each animal adapted to its environment?



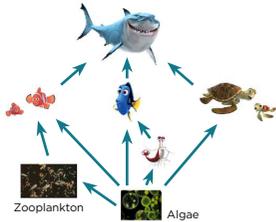
- **White appearance** camouflage.
- **Thick layers of fat and fur** for insulation.
- **A small surface area to volume ratio** to minimise heat loss.
- **A greasy coat** which sheds water.



- **Large, flat feet** to spread their weight.
- **Thick fur** on the top of the body for shade, and thin fur elsewhere to allow easy heat loss.
- **The ability to go for a long time without water.**
- **Thick long eyelashes** to help keep the sand out.

Food Webs

Label the food web (remember the arrows show energy transfer between organisms!).



Daily and Seasonal Changes



- Light/dark.
- Daily temperature.
- Daily weather.



- Seasonal weather.
- Seasonal temperature.

Environmental Impact

Key Term	Definition
Habitat	The place where an organism lives.
Environment	The surroundings or conditions in which a person, animal, or plant lives or operates.
Population	All the living things in a particular place.
Biotic	Biotic means the living or once living components of a community E.g. plants and animals.
Abiotic	Abiotic means the non living factors of the environment, E.g. light and temperature.

Pesticides and DDT

What is a pest?

Animals that harm plants we want to grow.

What is a pesticide?

Chemicals that kill pests.

What is a herbicide?

Chemical which kills weeds.

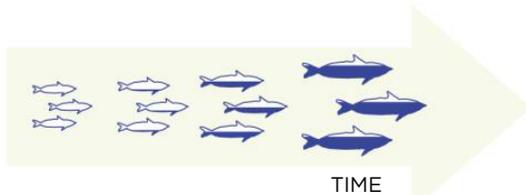
What is DDT and why is it no longer used?

Used to treat malaria and typhoid in WWII. Remained in the soil years later. Linked to cancer and harmful to animals.

How Could We Investigate Habitats?

1. Measure a 4m x 4m **area** of each field.
2. Randomly place the **quadrat** down in the area.
3. Record the number of each **species**.
4. Repeat for 4 different sections and take an **average** for each species.
5. Compare the **average** of each field.

What is Bioaccumulation?

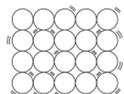


Chemical States



Liquid

Particles are free to move around the area they are in.



Solid

Particles are packed closely together and can only vibrate around a fixed spot.



Gas

Particles are spread apart and can move around the space they fill.

Variables

Variable	Definition	Example
Independent	The variable that you change.	Amount of solvent. Amount of solute.
Dependent	The variable that you measure.	Time taken to dissolve.
Control	The variables which need to be controlled as they may effect your experiment.	Temperature.

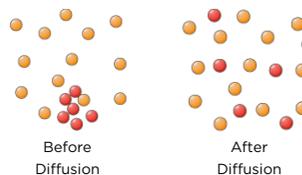
Dissolving

Key Term	Definition
Solvent	The liquid the substance dissolves in.
Solute	The substance which dissolves.
Solution	The mixture of substance and liquid.

Explain how salt dissolves in water

Salt is the solute, the water (solvent) surrounds the salt particles and the mixture becomes a solution as the particles move around each other.

Diffusion of Particles

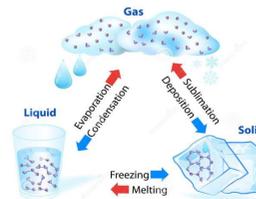


The particles have gained energy and are moving between each other.

What would happen if you increased the temperature of the solution?

The particles will have gained more energy from the heat, therefore move around each other faster.

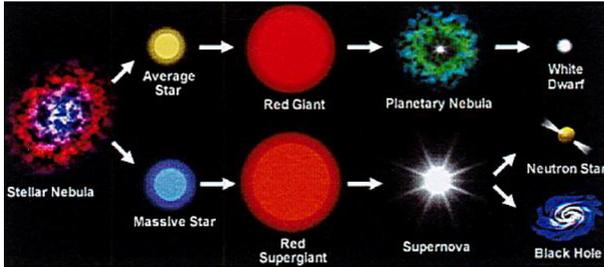
Change of State



Forces and Space

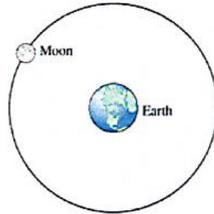
The planets in our Solar System are:

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.



Something that emits light is called 'luminous'. The moon is non-luminous. Non-luminous means **it reflects light**.

The moon is a satellite, a satellite is an object that is in orbit around a planet. Another use for satellites could be **sat-navs, weather, TV**.



Forces can make things move **faster** or **slower**.

Forces can change the **shape** of an object.

Forces are measured in **Newtons (N)**.

If forces on an object are balanced, that object will either **remain stationary** if it was still beforehand, or it will move at a **steady speed** if it was moving already.

We have day and night because the Earth **rotates** on its axis. During daylight, light from the **sun** shines on that side of the Earth.

The other side, that is pointing away from the sun, gets no light and so it is **dark** there.

The Earth completes one full rotation every **24** hours.

The Earth's **seasons**, summer, spring, autumn and winter are caused because the Earth is tilted on its axis.

When the Northern **Hemisphere** is tilted towards the sun, it is summer, and when it is tilted away from the sun, it is **winter**.

It takes **28** days for the moon to orbit the Earth.

As the moon moves, our view of it changes. These changes are called the **phases** of the moon.

When we see the moon as a circle, we call it a **full** moon.

A **lunar** eclipse occurs when the Earth passes between the moon and the sun, and the Earth's shadow blocks us from seeing the moon.



A **solar** eclipse occurs when the moon passes between the Earth and the sun, blocking us from seeing the sun.



Mass is measured in **grams (g)** or **kilograms (kg)**.

Weight is measured in **Newtons (N)**.

Gravity on Earth = 10N/Kg - it pulls you towards the Earth.

Weight (N) = **mass (kg) × gravitational field strength (N/kg)**

Hinduism and the River Ganges

Hinduism - Key Facts:

- Hinduism began in ancient India.
- There is no single founder in Hinduism.
- Hinduism is a **polytheistic** religion - 33 million Gods.
- All however worship one supreme being, Braham.
- Hindu's worship in the Mandir.
- The holy texts are called the Vedas.

River Ganges

The River is located between India and Bangladesh. It is over 2700km long.

Mother Ganga

Hindus regard the Ganges as not only a river but also a mother, a Goddess called Ganga.

Purification

In Hinduism it is considered holy to take a **pilgrimage** to the Ganges and bathe in it to purify a person's soul of all past sins, and cure illnesses.

Life and Death

Varanasi on the River Ganges is the most famous cremation site. Hindu's believe if you are cremated here, you will escape reincarnation (cycle of birth and rebirth) and achieve Moksha which is freedom and eternal peace.

Environment

Recently, the river has become polluted and raised lots of environmental concerns.

Buddhism and the Mahabodhi Temple

Buddhism - Key Facts:

- There are 376 million followers worldwide. Buddhist have no personal God, but follow the path of the Buddha (Siddhartha Gautama).
- The place of worship is called a temple.
- The holy book is called the Pāli Canon.

Siddhartha Gautama

The founder of Buddhism who eventually became known as the Buddha. He was once a prince, but gave this up to focus on his beliefs.

Dharmic Religions

Religions which originated in India are referred to as Dharmic.

Mahabodhi Temple

A site of pilgrimage for Buddhists. It houses a huge statue of the Buddha meditating in Gold. Buddhists believe that the Bodhi Tree there is a descendent of the tree under where the Buddha gained enlightenment - true knowledge.

Enlightenment

Freedom from the cycle of birth and rebirth which Buddhists associate with suffering.

Sikhism and the Golden Temple

Sikhism - Key Facts:

- There are 18 million Sikhs worldwide.
- Sikhism was founded by the Guru Nanak roughly hundred years ago.
- Sikhs worship in a Gurdwara.
- Sikhs call the one God the Waheguru. It is a Dharmic and monotheistic religion.

Golden Temple

Many Sikhs go on pilgrimage to here, although it is not obligatory as Sikh's believe the Waheguru (God) is everywhere.

People swim in the lake to heal illnesses.

- There are 4 doors, this represents **equality**; one on every side to show that people of all races and religions are equal.

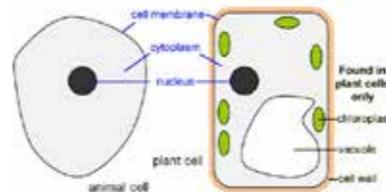
Langar

The Langar is a dining hall where volunteers prepare the food. The food is free, everyone sits on the floor to show they are equal. There is a langar in every temple in the world - as well as the Golden Temple.

Equality meaning

The state of being equal, especially in status, rights, or opportunities. One of the central beliefs in Sikhism is equality - that no one is more important than another.

7B1 Cells - Essential knowledge sheet



Organelle Function

Nucleus	Contains DNA
Cell membrane	Controls what moves in and out of the cell
Cytoplasm	Where most chemical reactions take place
Cell wall	Strengthens plant cells
Vacuole	Contains cell sap
Chloroplast	Site of photosynthesis

Organisation of the body

Arrange the following in order from smallest to largest:

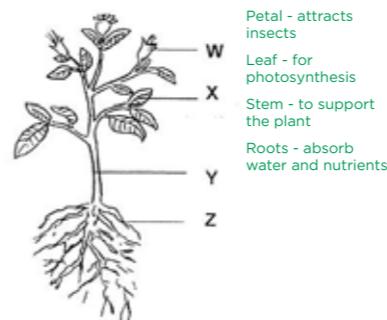
cell
nucleus
organ
tissue
organ system
organism

Complete the method: Viewing cells under a microscope

- Carry the microscope by the **handle**
- Place it near a light source and angle the **mirror** so light shines up through the hole in the stage
- Clip the slide on to the stage
- Select the lowest powered **objective lens**
- Adjust the focusing knobs until you have a clear image

Plant organs

Label each part and state the function



Organ transplants

What is an organ transplant?
A **damaged or faulty organ** is taken from a patient and replaced with a good one from someone else

State an advantage and a disadvantage of having an organ transplant
Adv - helps keep patient alive
Disadv - Could be rejected

Label:

stage, mirror, eyepiece lens, objective lens, handle



Describe how is each cell is adapted for it's function

Root hair cell



- Projections give a large surface area
- Lots of mitochondria

Red blood cell



- No nucleus so contains more haemoglobin
- Shape increases surface area

Organ systems

Organ system	Organs involved	Function
Respiratory system	Lungs	To take in oxygen, let out carbon dioxide
Circulatory system	Heart & Blood vessels	To transport gas and nutrients
Digestive system	Mouth, oesophagus, stomach, intestines, pancreas	Digest food and absorb nutrients

7C2 - Acids and Alkalis - Essential Knowledge Sheet



Corrosive
- could burn skin



Toxic
- poisonous
if ingested



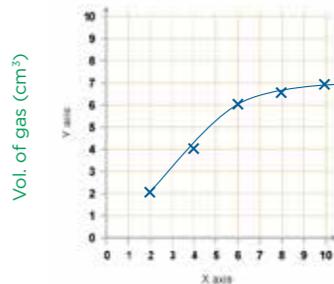
Flammable
- can set
on fire easily



Irritant
- can be itchy on
skin

Plotting graphs

Plot the data on the graph and label the axis



Time (min)
Volume of gas collected (cm³)

2	2
4	4
6	6
8	6.5
10	7

Key Term **Definition** **Examples**

Acid Anything pH 1-6 Car battery acid
Vinegar

Alkali Anything pH 8-14 Soap
Washing powder

Indicator **Acid** **Alkali**

Blue litmus paper Red Blue

Blue litmus paper Red Blue

Blue litmus paper Red-Green Green-purple/blue

pH scale

What does the pH scale tell us?

Label the range of acids, alkalis and neutral on the scale

← Acids Neutral Alkalis →

Colour	Dark Red	Red	Red	Orange Red	Orange	Orange yellow	Greenish yellow	Green	Greenish blue	Blue	Navy blue	Purple	Dark purple	Violet	Violet
pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Neutralisation

Complete the method

1. An acid will react with an **alkali**. Reacting an acid with an alkali is called **neutralisation**.
2. Measure out 20cm³ of acid, and pour it into a **beaker**.
3. Add a few drops of **Universal Indicator** solution. This will turn it a **red** colour. Its pH will be about 1.
4. Carefully add your alkali with a **pipette**. The colour will turn orange, and it is now about pH 4.
5. Eventually you have neutralised the acid. The colour will now be green, it will be pH 7. A solution that is not an acid and not an alkali is described as **neutral**.

7P1 - Energy - Essential Knowledge Sheet

Energy is the ability of an object (or machine) to do something

Energy is measured in **Joules (J)**

Power is the rate of energy transfer per second.

Power is measured in **Watts** Or Kilowatts

1000 Watts = 1 Kilowatt

Three fossil fuels are

1. **Coal**
2. **Oil**
3. **Natural gas**

One disadvantage of burning fossil fuels is that they release **carbon dioxide**

Examples of renewable energy resources are:

Solar (using energy from the sun)

Wind

Waves

Hydroelectric (Using energy from falling water)

Biomass (using organic material e.g. animal waste)

Geothermal heating water using hot rocks under the earth's surface)

Energy Pathways (Energy going from one store to another)

Forces

Electrical Current

Heating

Radiation

Chemical Reaction

Conservation of energy

Energy can not be created or destroyed, it can only be converted from one store into another.

Energy that is 'wasted', like the heat **energy** from an electric lamp, does not disappear. Instead, it is transferred into the surroundings and spreads out so much that it becomes very difficult **to do** anything useful with it.

The sun

The original source of most energy resources.

Plants store the sun's energy through photosynthesis.

Animals then eat the plants.

Energy stores:

Kinetic e.g. a car moving

Gravitational potential e.g. A ball lifted into the air

Chemical E.g. Energy in food

Electrostatic E.g., Charged balloon sticking to wall

Magnetic E.g. Energy in a bar magnet

Elastic E.g. In a stretched elastic band

Nuclear E.g. In Uranium fuel

Thermal e.g. In a hot object