

Year 6
Science Knowledge
Organisers

Living Things + Their Habitats

KNOWLEDGE ORGANISER

What you should already know:

- Animals and plants can be classified into different groups based on their characteristics.
- Animals can be grouped into **vertebrates** (with a backbone) and **invertebrates** (without a backbone).
- They can then be subdivided into further groups, for example **mammals**, **fish**, **reptiles** etc. (vertebrates) or **spiders**, **snails**, **worms** etc. (invertebrates).
- Plants are commonly grouped into flowering plants and non-flowering plants. They too can be sub-divided beyond these broad classifications.

Vocabulary:

Classification – living things can be classified into broad groups according to observable characteristics that are similar or different.

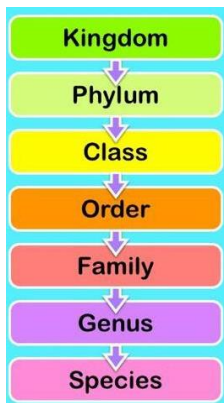
Taxonomy – an area in science that focuses on the classification of different organisms.

Microorganism – these are tiny living creatures. Most can only be seen through a microscope. They can be sub-divided into smaller groups including bacteria, fungi and viruses.

Species – this is the grouping together of similar types of plants, animals and other organisms that can reproduce with each other.

Microorganisms are very tiny living things that can only be seen using a microscope. They can be found in and on our bodies, in the air, in water and on objects around us.

Microorganisms are **viruses**, **bacteria**, **moulds** and **yeast**. Some animals (dust mites) and plants (phytoplankton) are also microorganisms.



Carl Linnaeus was a Swedish scientist who developed the modern system of classifying and naming organisms. Before this the names of living things were often very long. He gave them a two-part name.

	HUMAN
DOMAIN	Eukarya
KINGDOM	Animalia
PHYLUM	Chordata
CLASS	Mammalia
ORDER	Primate
FAMILY	Hominidae
GENUS	<i>Homo</i>
SPECIES	<i>sapien</i>

Animals Including Humans



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Vocabulary:

Circulatory system – a system that moves blood around the body. It includes the heart, blood vessels and blood.

Heart – the heart pumps blood around the body.

Blood – the red liquid that is pumped around to transport oxygen, water and nutrients to all parts of the body.

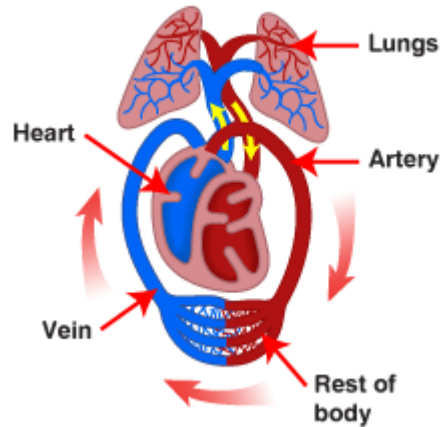
Blood vessels – the narrow tubes the blood flows through including arteries, capillaries and veins.

Lungs – organs in our chests that fill with air when we breathe in. They remove carbon dioxide from the blood and add oxygen.

Pulse – each time the heart pumps it can be felt as a pulse. Typically in your wrist or neck.

Oxygenated – when something contains oxygen.

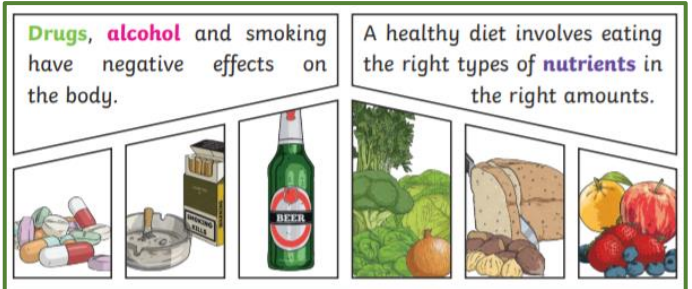
Deoxygenated – when oxygen has been removed.



- The **heart** pumps **blood** in the **blood vessels** to the **lungs** where oxygen goes into the blood and carbon dioxide is removed.
- The blood goes back to the heart.
- It is then pumped around the body so that water, nutrients and oxygen are transported in the blood to the muscles and all the other parts of the body where they are needed. As all these are used, they produce carbon dioxide and other waste products.
- Carbon dioxide is carried by the blood in blood vessels back to the heart.
- The **cycle starts again** as the carbon dioxide is then transported back to the lungs to be removed from the body.

Diet, exercise, drugs and other lifestyle choices have an impact on how our bodies function. This can affect how well our heart and lungs work and how fit and well we feel.

Exercise can increase fitness, make you feel physically and mentally healthier, strengthen your heart and improve your lung function.



Transportation of Water in the Body

Rehydration – water is drunk through the mouth.



Absorption – water is absorbed by the intestines and is carried in the bloodstream.



Transportation – water is taken in blood to different parts of the body.

Excretion – waste water is passed out as urine.

EVOLUTION

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Vocabulary:

Evolution – the way in which animals and plants have changed over millions of years.

Offspring – a person's child or an animal's young.

Inherited – the way a trait or characteristic is passed on to the offspring from its parents.

Variation – a change or small difference.

Identical – exactly the same.

Adapted – the way an animal or plant changes to survive better in an environment.

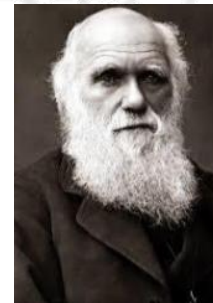
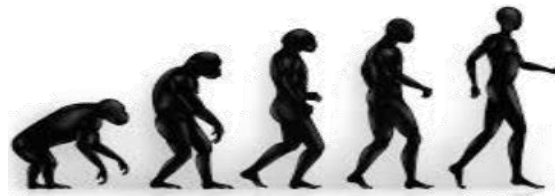
Fossils – the naturally preserved remains or traces of an animal or plant from a long time ago.

Fossils give us evidence of what lived on Earth millions of years ago.

By studying fossils, scientists can put together how a plant or animal looked. They can identify what the animal ate, where it lived and how it died.

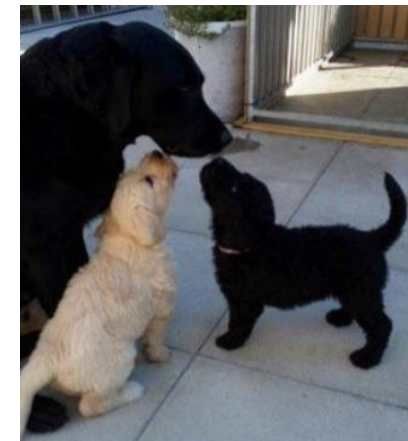


Adaptations:



Charles Darwin

- **Adaptation** can lead to **evolution** if the environment changes.
- Animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young.
- This is **natural selection**.
- Over time these inherited characteristics become more dominant within the population.



Living things produce offspring of the same kind. The offspring are not normally identical to their parents and vary from each other.

ELECTRICITY



Y6



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What you should already know:

Electricity is a type of energy.

It is used to power lots of different things, including many items that we use in everyday life.

Electricity can flow through wires and cables, and can be stored in batteries (sometimes called cells).

Electricity can only flow if the circuit is complete and there are no gaps.

Some materials conduct electricity, and others do not (insulators).

ELECTRICAL SAFETY:

- Never stick your fingers or objects into a plug socket.
- Never use frayed wires.
- Ensure that your hands are dry.
- Do not overload a plug socket.
- Make sure that wires are placed in safe locations, where people cannot trip over them.
- Always get broken appliances and plugs fixed.



Vocabulary:

Circuit – a complete path electrical current can flow around.

Circuit diagram – a visual representation of an electrical circuit using symbols to represent the electrical components.

Cell / battery – an electrical energy source. A cell = single, battery = more than one cell.

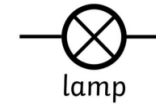
Current – the flow of electrons around the circuit. Current is measured in amps.

Electron – the very small particles that travel around an electrical circuit.

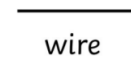
Voltage – the force that makes the electric current move through the wires. The greater the voltage, the more current will flow. Measured in volts.

Resistance – the difficulty that the electric current has when flowing around a circuit.

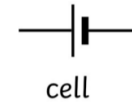
Circuit symbols:



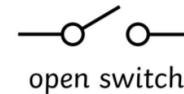
lamp



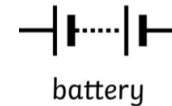
wire



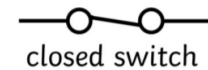
cell



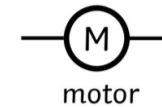
open switch



battery



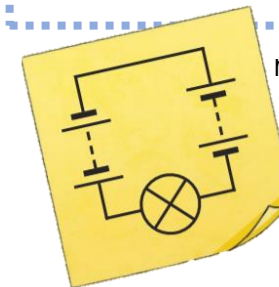
closed switch



motor

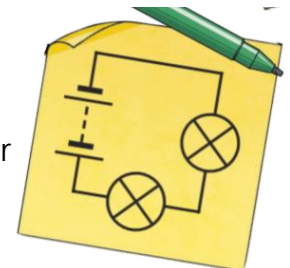


buzzer



more batteries →
more power →
brighter bulb

less batteries and
more bulbs → power
needs to be shared
→ dimmer bulb





LIGHT



Y6



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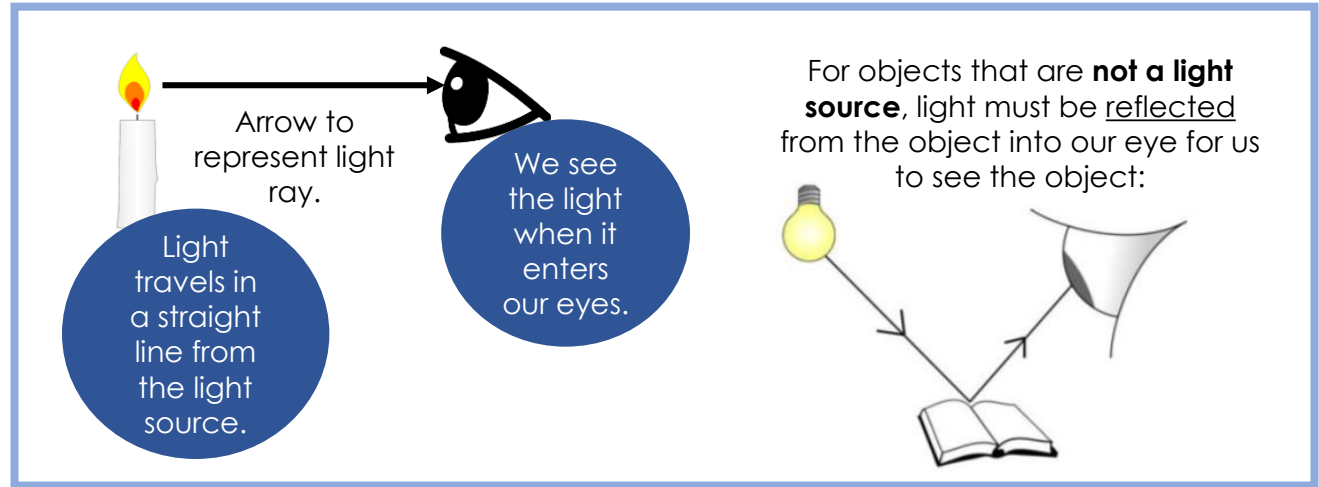
What you should already know:

Light is a form of energy that makes it possible to see. Light is given off from some objects (for example the Sun).

Darkness is the absence of light.

Light can reflect off surfaces (e.g. mirrors). Objects can be labelled as transparent, translucent, or opaque, depending on the amount of light that they let through.

Shadows are formed when light is blocked by an opaque object.



Vocabulary:

Light source – an object that gives out its own light.

Light ray – each light ray travels in a straight line from its source.

Reflect – when light bounces off a surface to change the direction of the light ray.

Shadow – a dark area created where light from a light source is blocked by an object.

Incident ray – a ray of light that hits a surface.

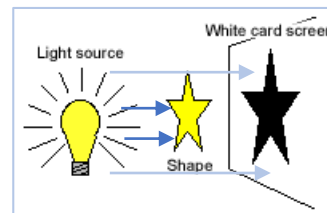
Reflected ray – a ray of light that has bounced (reflected) off a surface.

Our eyes have a small window at the front called a pupil, through which light can enter.

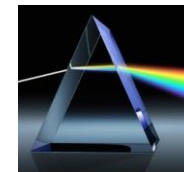
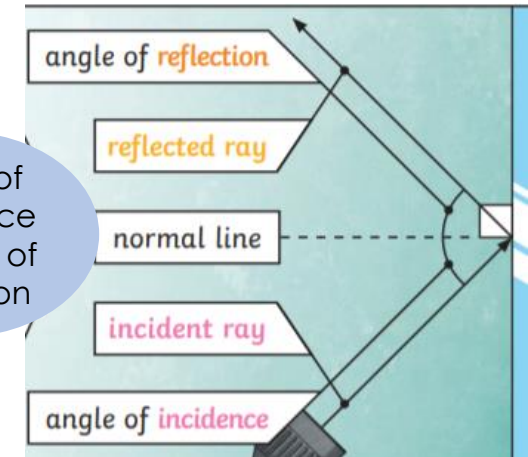


angle of incidence = angle of reflection

Shadows have the same shape as the objects that cast them:



Because when an opaque object is in the path of light travelling from a light source, it will block the light rays, while the rest of the light continues travelling in a straight line.



All colours merge to make visible light!