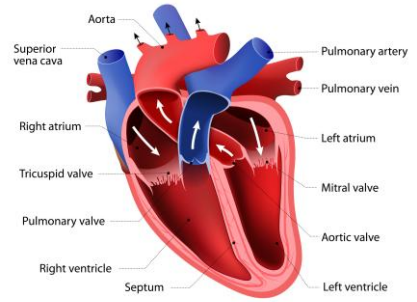
Knowledge Organiser: Year 6 – Animals, including humans

Key Vocabulary

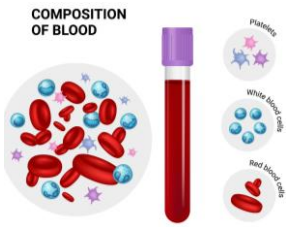
circulatory system	the system that controls the flow of blood around the body
BPM	beats per minute measuring heart rate
diet	the kind of food an animal usually eats
pulse	the rhythmical throbbing of the arteries as blood is pumped through them
oxygenated	containing oxygen
deoxygenated	not containing oxygen
atrium	the upper chambers of the heart
ventricle	the lower chambers of the heart
vessel	tube which circulates the blood through the body
valve	flaps which open and close to allow blood flow
diffusion	diffusion is the movement of all liquids and gases
osmosis	osmosis is the movement of water only

The Heart

The heart pumps blood, carrying nutrients and oxygen, around every part of the body.



The red vessels are arteries and the blue vessels are veins. Arteries have thick, muscular walls and carry oxygenated blood from the heart to the rest of the body. Veins carry deoxygenated blood back to the heart and have thinner walls. Capillaries are microscopic vessels which link the veins and arteries together.



Red blood cells carry oxygen. White blood cells fight infection as part of the immune system. Platelets help to clot (thicken) the blood and form a scab. Plasma is the fluid part of the blood, which transports

Looking After Our Heart

Healthy Food Pyramid

To keep our heart and body healthy, we need to:

- eat a balanced diet (not too much sugar or fat);
- exercise regularly;
- drink approximately 2 litres of water a day;
- limit alcohol intake, in adults;
- get approximately 8 hours of sleep.

Drugs, including alcohol, can cause liver damage, poor sleep, high blood pressure, and different types of cancer. Drugs can be classified into four groups – painkillers, stimulants, depressants and hallucinogens.

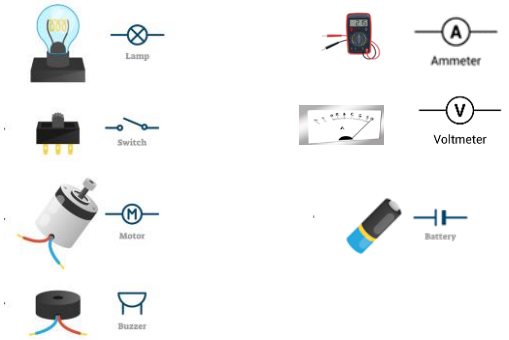
Knowledge Organiser: Year 6 Electricity

Careers connected to electricity: mechanical engineering technician, electricity distribution worker, electrical engineer, energy engineer

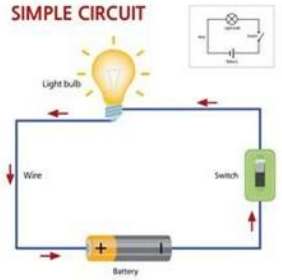
Key Vocabulary

circuit	a compete path which allows electricity to flow
battery	a source of energy in an electrical circuit
electricity	a form of energy
resistor	a component that reduces electric current flow
signal	an electrical impulse transmitted or received
conductor	materials which allow electricity to flow through them easily
insulator	materials that do not let electricity pass through them easily

Circuit Symbols

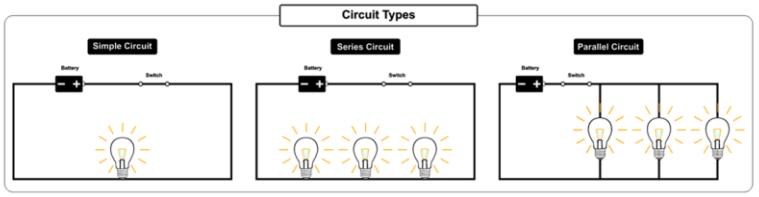


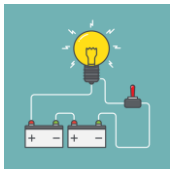
Wires are always drawn with a **straight line** using a **ruler** in scientific diagrams.



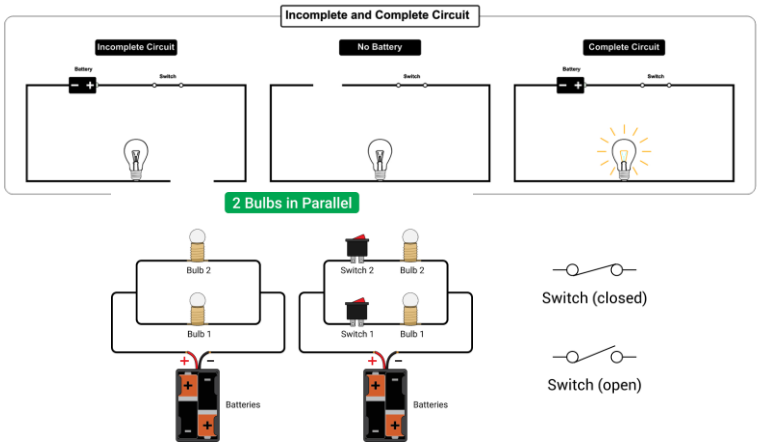
The **current** flows from negative to positive. There are no gaps - it is a **complete** circuit and the bulb lights up.

Different Circuits





Adding more cells (batteries) to a circuit will make bulbs **brighter**, buzzers **louder** and motors **faster**.



Switches can be placed in a **parallel circuit**, so that 1 light can be turned on while another is off (just like in a house).

Knowledge Organiser: Evolution and Inheritance Year 6

Careers connected to Evolution and Inheritance: Geneticist, DNA Analyst, Biological Researcher, Conservationist

Key Vocabulary

inherit	when features are passed on from parents to offspring
adaptation	changes or special features of a living thing to help it live in a habitat
fossil	the remains or impression of a prehistoric plant or animal embedded in rock
evolved	how living things gradually change over time
natural selection	survival and reproduction of the fittest
ancestor	a person/living thing an organism is descended from
Homo sapiens	the scientific name for the human species

Characteristics and Variation

A characteristic describes how something looks or how it behaves. **Characteristics** can be passed on from parents to their offspring, meaning that they can be **inherited**. They can include hair colour, eye colour and height. However, **environmental** factors are important too.

Charles Darwin, the Galapagos Islands and Human Evolution

Charles Darwin was a famous naturalist who studied finches and tortoises on the Galapagos Islands. He suggested that some species may share a common ancestor and evolve to suit their habitats. He called this process natural selection.

Australopithecus
Homo habilis
Homo erectus
Homo heidelbergensis/ neanderthalensis
Homo sapiens

3.6 million years ago

↓

Human Evolution

↓

Today

Adaptations

Plants and animals have numerous **adaptations** which help them to survive in their **habitats**.

- Camels have humps to store food, two rows of eyelashes and small slits for nostrils
- Epiphytes are plants which can grow on the surface of another plant
- Some plants contain toxic minerals to protect themselves from predators
- Other plants can store water, trap insects and smother other plants

Fossils

Mary Anning was a palaeontologist who found and collected many fossils along the Jurassic Coast in Dorset. She was the first person to uncover a full ichthyosaurus skeleton.

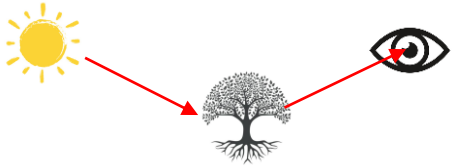
Knowledge Organiser: Year 6 Light

Careers connected to Light:
Photonics, Lighting technician, Optometrist, Photographic Processor

Key Vocabulary

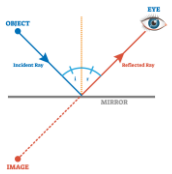
light	a form of energy
light source	an object that provides its own light
reflected	when light shines on a surface and bounces back
variable	any one of the elements of an experiment which could be changed
angle	the space between 2 intersecting lines
mirror	a surface that reflects a clear image
opaque	it describes materials which do not allow light to travel through
transparent	it describes materials which allow all light to travel through
sunshade	a device giving protection from the sun
rotate	to turn an object around a centre point
optical	relating to the science of optics
spectrum	a band of several colours

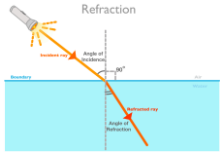
How We See



Light travels in **straight lines**.
The light **rays** from a light source **reflect** off the object we are looking at. The light travels in a **straight line** and enters the eye through our **pupil**.

Bending Light





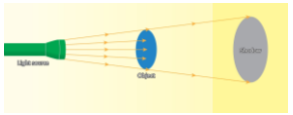
Reflection

Light reflects off shiny, bright or light surfaces. That is why you can see your reflection when you look in a mirror.

Refraction

Water and bent shiny surfaces cause light rays to be reflected at different angles, meaning the reflection of the image is distorted.

Shadows



Opaque objects block the light rays so they can only travel around the edges of the object in straight lines. That is why a shadow is the same shape as the object.

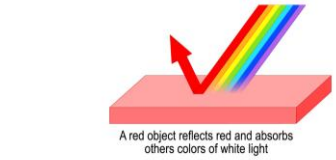
The **closer** an object is to the light source, the **bigger** the shadow.

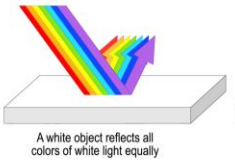
The **further away** the object is from the shadow, the **smaller** the shadow.

Colours

White light is made up of the colours of the rainbow. When light is refracted through a transparent object, a rainbow is formed.

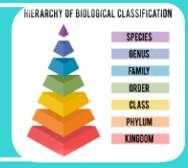
Absorption and reflection of light





Knowledge Organiser: Living Things and their Habitats Year 6

Careers connected to Living Things and their habitats:
Zoologist, Veterinary Surgeon, Biologist

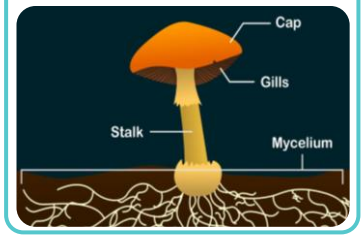


Key Vocabulary

classification	The arrangement of animals and plants in groups according to their observered similarities.
microorganism	A tiny, microscopic organism such as bacteria, virus or fungus.
habitat	A place where living organisms live.
living organism	Something that can move, use energy and reproduce.
species	The smallest class of organisms.
microscopic	A microscopic organism, too small to see with the naked eye.
ecosystem	A group of living organisms that live and interact with each other in a specific environment.
kingdom	A category grouping together all forms of life, having certain characteristics in common.

Fungi

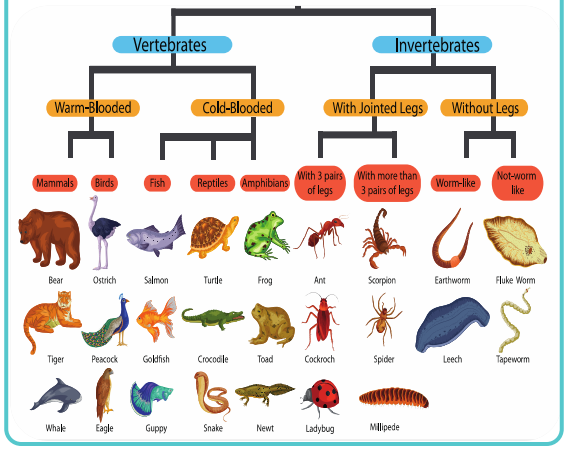
Fungi gain energy from dead matter.



MRS GREN

M Movement
R Respiration
S Sensitivity
G Growth
R Reproduce
E Excretion
N Nutrition

Classification of Animals

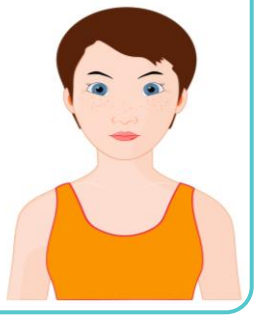


Six Kingdoms of Life

Carl Linnaeus

Carl Linnaeus created a system of classification, which ranks living things into groups in order to name their species.

DOMAIN	*Eukarya*
KINGDOM	*Animalia*
PHYLUM	*Chordata*
CLASS	*Mammalia*
ORDER	*Primates*
FAMILY	*Hominidae*
GENUS	*Homo*
SPECIES	*Homo sapiens*



Microorganisms

Antibiotics, yoghurt, cheese, wine and yeast are all **helpful bacteria.**

Mould, food poisoning and athletes foot are **harmful bacteria.**