

Year 6- Living things and their habitats-Autumn 1 Term Knowledge Organiser



What should I already know?

In Yr 1, 2 and 4, children have classified plants and animals based on their characteristics and appearance.

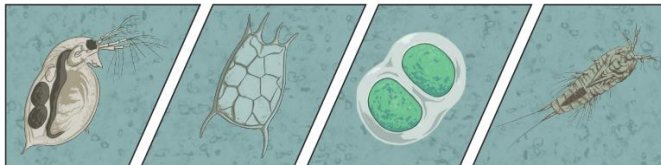
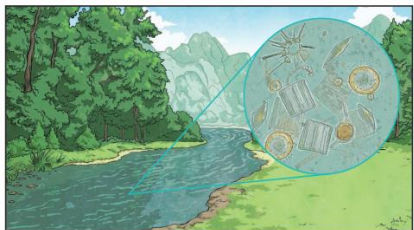
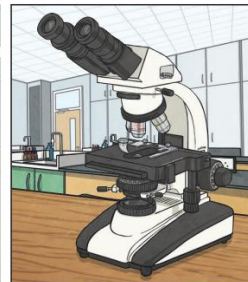
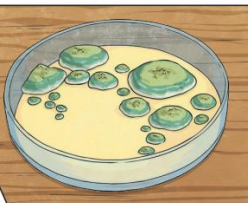
National Curriculum objectives:

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics

Microorganisms

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

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.



Why should rainforests be important to us all? (Americas)

Key vocabulary

Characteristics-special qualities or appearances that make an individual or group of things different to others.

Classify- to sort things into different groups.

Taxonomist- a scientist who classifies different living things into categories.

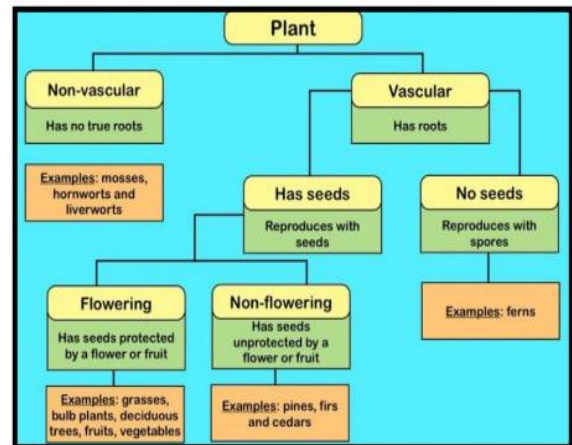
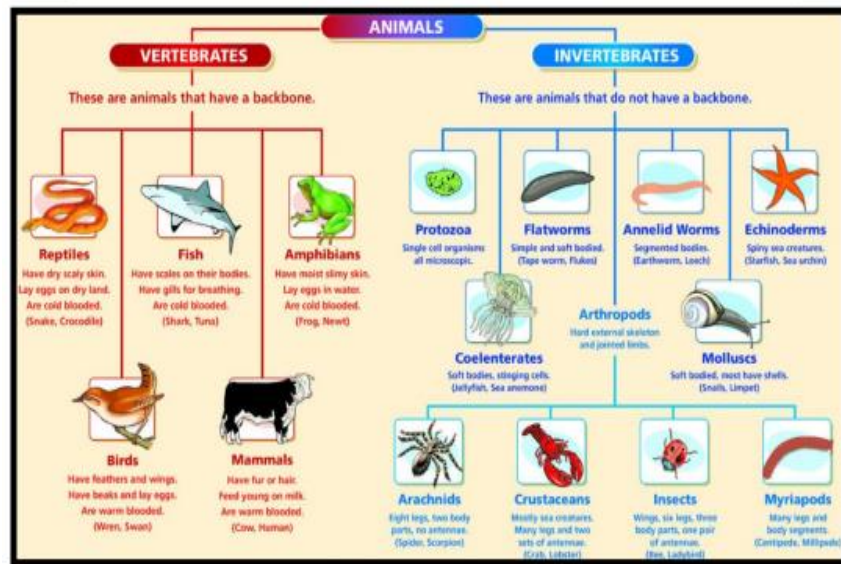
Key- a key is a series of questions about the characteristics of living things. A key is used to identify a living thing or decide which group it belongs to by answering 'yes' or 'no' questions.

Bacteria- a single-celled microorganism.

Microorganism- an organism that can only be seen using a microscope, e.g. bacteria, mould and yeast.

Microscope- a piece of equipment that is used to view very tiny (microscopic) things by magnifying their appearance.

Species-a group of animals that can reproduce to produce fertile offspring



Year 6- Animals including humans- Autumn 2 Term Knowledge

Organiser

What should I already know?

In Year 3, children learn about how to achieve a balanced diet and the nutritional value of different types of food.

How did WW2 impact the local area?

Key vocabulary

Circulatory system- a system which includes the heart, veins, arteries and blood transporting substances around the body.

Heart- an organ which constantly pumps blood around the circulatory system.

Blood vessels- the tube-like structures that carry blood through the tissues and organs. Veins, arteries and capillaries are the three types of blood vessels.

Oxygenated blood- oxygenated blood has more oxygen. It is pumped from the heart to the rest of the body.

Deoxygenated blood- deoxygenated blood is blood where most of the oxygen has already been transferred to the rest of the body

Drug- a substance containing natural or man-made chemicals that has an effect on your body when it enters your system.

Alcohol- a drug produced from grains, fruits or vegetables when they are put through a process called fermentation.

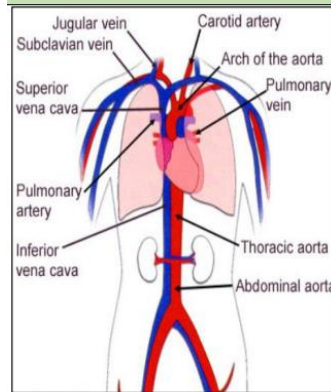
Nutrients- substances that animals need to stay alive and healthy

National Curriculum objectives:

- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- describe the ways in which nutrients and water are transported within animals, including humans.



The Circulatory System



-The circulatory system is your body's delivery system. It is made up of your heart, blood and blood vessels.

-The human body needs a constant supply of blood to keep working. Blood delivers oxygen to all of the body's cells – without this, cells would die. The circulatory system gets blood (and the oxygen) all around your body.

-The heart pumps blood to the lungs via the pulmonary artery, where it picks up oxygen. It is then returned to the heart through the pulmonary vein.

-The heart then pumps the oxygenated blood to the rest of the body through the aorta and the other arteries.

-Veins are vessels that bring blood back to the heart.

Impact of Diet, Exercise, and Drugs



Diet

-A healthy, balanced diet can have a huge effect on a person's health. People who eat the right balance of fresh, healthy foods are less prone to chronic illnesses and diseases.

-Carbohydrates are used by the body to create glucose, the body's main energy source. Fat is also helpful for energy, but too much fat in a person's diet causes them to gain weight. Protein helps to build and repair muscles, but too much can cause indigestion and intestinal problems.

Exercise



-As we exercise, our muscles need more oxygen. So, we breathe quicker, helping our lungs to take in more oxygen.

-Our heart needs to pump blood more quickly to get all of the oxygen around the body. In order to do this, our heart rate increases.

-Regular exercise helps our bones and muscles to become stronger. It also helps the heart and lungs to become healthier.

Drugs

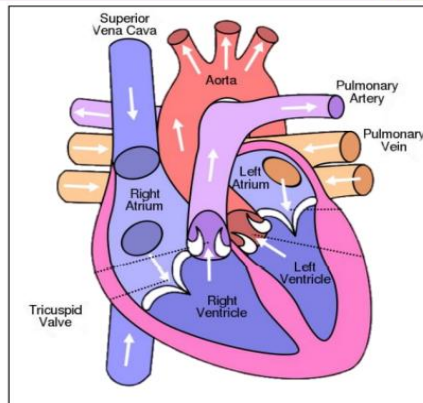


-A drug is a chemical that has an effect on your body.

-Some drugs are prescribed by doctors to make people healthy. Other, illegal drugs can have a dangerous effect on our health.

-Alcohol is a depressant. Alcohol can cause damage to the liver and brain. Cigarettes contain nicotine, which is a stimulant, and is addictive. Cigarettes cause damage to the lungs and heart.

The Heart



-The circulatory system is centred on the heart, an organ that works constantly to pump blood around the body.

-The heart is made up of four sections, called chambers. There are two sides to the heart (right and left) each of which have an atrium (at the top) and a ventricle (at the bottom).

-The job of the 'atria' (the word for the two atriums) is to fill with the blood returning to the heart before pushing it to the ventricles.

-The left atrium receives blood from the lungs and the right atrium receives it from the rest of the body.

-The job of the ventricles is to push the blood out of the heart. The left ventricle pushes blood to the lungs and the right ventricle pushes blood to the rest of the body.

Year 6-Light- spring Term Knowledge Organiser

What should I already know?

In Year 3, children learn how light travels and is reflected off a surface. They understand that light travels in a straight line. When light hits an object, it's reflected. If the reflected light hits our eyes, we can see the object.

National Curriculum objectives:

- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.



How did WW2 impact the local area?

Key vocabulary

Light- a form of energy that travels in a wave from a source.

Light source- an object that makes its own light.

Reflection-when light bounces off a surface, changing the direction of a ray of light.

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

Reflected ray-a ray of light that has bounced back after hitting a surface.

The law of reflection- the law states that the angle of the incident ray is equal to the angle of the reflected ray.

Refraction-this is when light bends as it passes from one medium to another. E.g. Light bends when it moves from air into water.

Visible spectrum-light that is visible to the human eye. It is made up of a colour spectrum

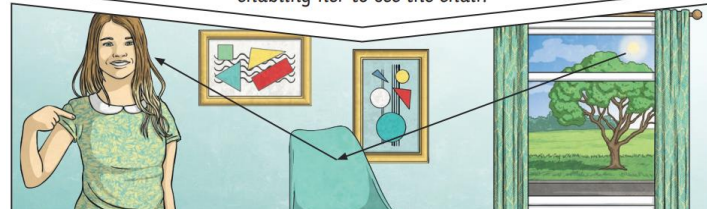
Prism- a prism is a solid 3D shape with flat sides. The two ends are an equal shape and size. A transparent prism separates out visible light into all the colours of the spectrum.

Shadow- an area of darkness where light has been blocked.

Transparent- describes objects that let light travel through them easily, meaning you can see through the object. Translucent-describes objects that things let some light through, but scatters the light so we can't see through them properly.

Opaque-describes objects that do not let any light pass through them.

Light from the sun travels in a straight line and hits the chair. The **light** ray is then **reflected** off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.



How Light Travels

-Light originates from light sources.

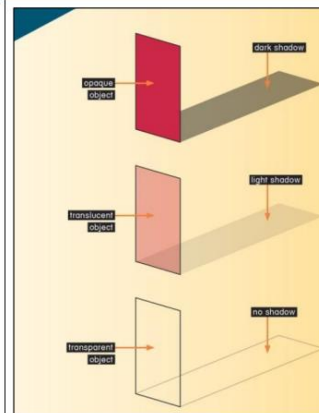
-Light sources can be natural (e.g. The Sun, the stars) or man-made (e.g. street lamp, Christmas tree lights, glow stick, mobile phone, TV).

-Light travels in a straight line from light sources.

-We can see that light travels in straight lines when we shine a torch in a dark room, or when a ray of light comes through a window.

-When an object passes in front of a ray of light, the light can be blocked, creating a shadow.

-Opaque objects let no light through (creating the darkest shadows), translucent objects let some light through (creating fainter shadows), transparent objects let all light through (no shadow).



Our Eyes

Our eyes have a small window at the front called a pupil, through which light can enter. The pupil looks as though it is black because it is dark inside our eyes.



-When it is dark, our pupils go larger, in order to let more light in so that we can see better. In bright lights, our pupils go smaller.

-At the back of our eye is a sensitive sheet of nerves called a retina. They can detect light when it comes in through the pupil, and send messages to the brain about what we can see.

Light Spectrum

Red

Orange

Yellow

Green

Blue

Indigo

Violet

Year 6- Evolution and inheritance-Summer 1 Term Knowledge Organiser

What should I already know?

In Year 2, children looked at how animals are suited to their environments. Now children are looking at how these adaptations can lead to evolution.

National Curriculum objectives:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

What will our coast look like in 20 years time?

Key vocabulary

Offspring-the young animal or plant that is produced by the reproduction of that species.

Inheritance-this is when characteristics are passed onto offspring from their parents.

Variations- the differences between individuals within a species.

Characteristics-the distinguishing features or qualities that are specific to a species.

Adaptation- an adaptation is a trait (or characteristic) changing to increase a living thing's chances of surviving and reproducing.

Habitat- refers to a specific area or place in which particular animals and plants can live.

Environment- an environment contains many habitats and includes areas where there are both living and nonliving things.

Evolution- adaptation over a very long time.

Natural selection-the process where organisms that are better adapted to their environment tend to survive and produce more offspring.

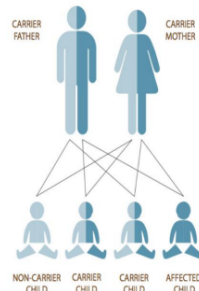
Fossil-the remains or imprint of a prehistoric plant or animal, embedded in rock and preserved.

Adaptive traits- genetic features that help a living thing to survive.

Inherited traits- these are traits you get from your parents. Within a family, you will often see similar traits, e.g. curly hair

Inheritance and Mutation

Evolution is the name given for changes to a species over time.



-Living things produce offspring of the same kind.

-Some of a parent's characteristics are passed down to the offspring – this is called inheritance.

-This is why we often share similar features with our parents, and some conditions are shared (see image).

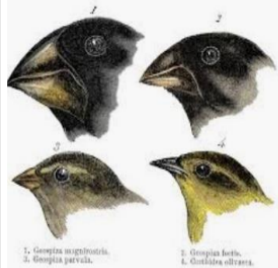
-Inheritance is genetic, not environmental. E.g. If two blonde-haired parents dye their hair black, this does not mean they will have a black-haired child.

-Some features are new to the offspring. These are called mutations. This is why we are not exact copies of our parents.

-These changes in offspring over time allow evolution to take place.

Evidence for Evolution

Fossils are the remains of living things, found in sedimentary rocks.











-When paleontologists compare animals in fossils to animals today, they can see similarities and differences between them.

-e.g. Fossils show that giraffes necks did not used to be as long. They have developed over time to reach high branches.

-Living things also provide evidence of natural selection and evolution.

-e.g. On the Galapagos Islands, Charles Darwin found differences between finches from island to island. They had adapted for the different foods that they eat.

Living Things		Habitat	Adaptive Traits
polar bear		arctic	 Its white fur enables it to camouflage in the snow.
camel		desert	 It has wide feet to make it easier to walk in the sand.
cactus		desert	 It stores water in its stem.
toucan		rainforest	 Its narrow tongue allows it to eat small fruit and insects.

Year 6-Electricity-Summer Term 2 Knowledge Organiser



National Curriculum objectives:

- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- use recognised symbols when representing a simple circuit in a diagram.

What should I already know?

In Year 4, children are able to identify common appliances that run on electricity, construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. They can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. They are able to recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.

How will the Humber go carbon neutral?

Key vocabulary

Circuit- a path that an electrical current can flow around.

Symbol- a visual picture that stands for something else.

Cell/battery- a device that stores energy as a chemical until it is needed. A cell is a single unit. A battery is a collection of cells.

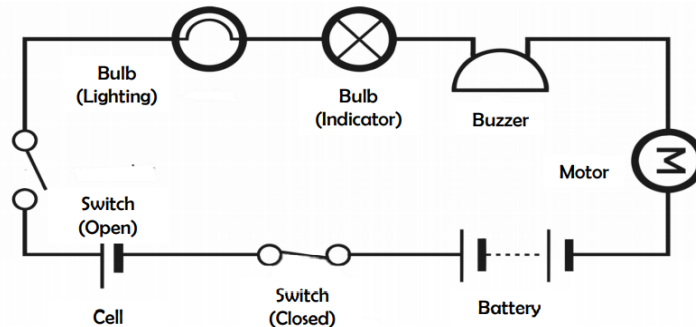
Current- the flow of electrons, measured in amps.

Amps- how electric current is measured.

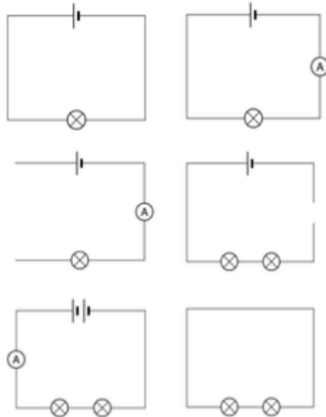
Voltage- the force that makes the electric current move through the wires. The greater the voltage, the more current will flow.

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

Electrons- very small particles that travel around an electrical circuit.



Variation of Components



When changes are made to circuits, components can function differently:

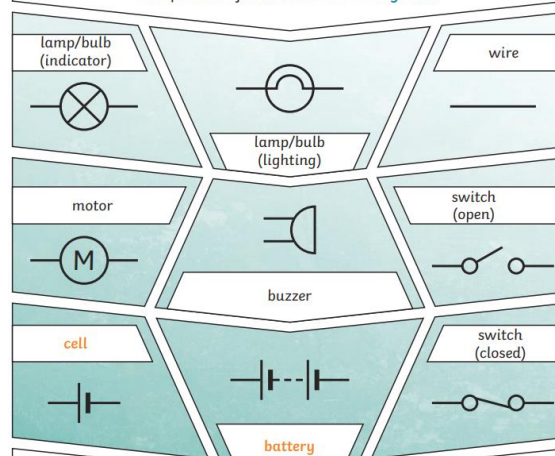
-When switches are open or wires are removed from a circuit (so that it is no longer a closed circuit), bulbs and buzzers will turn off. You can use crocodile clips to investigate adding and removing wires.

-When more batteries or cells are added (or batteries or cells are included with a higher voltage) the brightness of bulbs and the volume of buzzers will increase.

-When more bulbs are added to a simple circuit, they will be dimmer than if there were one bulb. This is because the electricity is shared between the two bulbs. More voltage would be needed to make them brighter.

You should be able to look at circuits like those on the left, and work out what would happen.

Components of a Circuit and Their Symbols



These symbols can be used to create electrical circuit diagrams.

If electricity is not used safely, it can be highly dangerous. When using electricity, make sure that you:

- Make sure that wires are placed in safe locations, where people cannot trip over them;
- Never stick your fingers or objects into a plug socket;
- Never use frayed wires – don't pull wires;
- Ensure that your hands are dry when you are near sockets/ electrical equipment;
- Do not overload a plug socket;
- Always get broken appliances and plugs fixed.

