

Living things and their habitats

Knowledge	Skills
Micro-organisms, plants and animals can be subdivided into groups depending on their characteristics and based on similarities and differences and the reasons for doing this.	Using observation skills to group animals for a new zoo, according to common characteristics. Through direct observations where possible/use of secondary sources , they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). Discuss the reasons why scientists use these groupings.
How to use a classification key, and know they describe characteristics of micro-organisms, plants and animals.	Using classification keys online, and researching , using secondary sources to understand the groupings of familiar and unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.
Micro-organisms have requirements for growth.	Perform a fair test to find out where best Aunty can store her bread. Make a prediction , understand how to control variables and collect results in simple diagram form. Estimate through direct observation and interpret what the results have demonstrated to help decide on the best place to store it. Present their findings in writing a note to their Aunty.
Famous Scientist	Carl Linnaeus

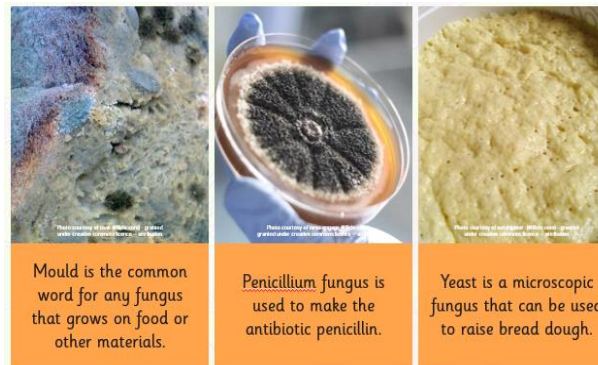


Galapagos penguin

spectacled bear

meerkat

emu



Mould is the common word for any fungus that grows on food or other materials.

Penicillium fungus is used to make the antibiotic penicillin.

Yeast is a microscopic fungus that can be used to raise bread dough.

Key Words

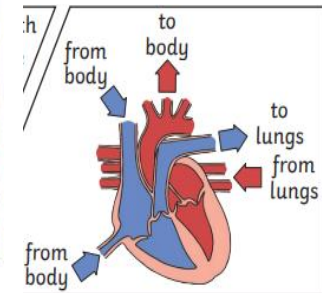
Mammal reptile amphibians
 habitat micro-organism
 adapt adaptation
 characteristics classify
 fungi virus bacteria
 movement respiration
 reproduction growth
 nutrition excretion
 sensitivity vertebrate
 invertebrates species
 kingdoms mosses ferns
 woody flowering plants non-woody
 flowering plants

Animals, including humans

Knowledge	Skills
Describe the human circulatory system.	Using secondary sources to assist in labelling a diagram of the heart and circulatory system.
The functions of the heart, blood vessels and blood.	Using secondary sources to explore and answer questions on how the circulatory system enables the body to function. Identifying scientific evidence that has been used to support or refute ideas or arguments about how the circulatory system works.
The ways in which nutrients and water are transported in animals, including humans.	Reporting in creative writing how nutrients and water are absorbed across the villi in the small intestine.
Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	Through a session in the life bus and a follow-up science session where we explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. Using secondary resources understand how these are linked. Report findings in a TV commercial/news article.
How exercise affects the pulse rate.	Perform a fair test , controlling variables , and make a prediction to explore how exercise affects our pulse rate and recovery rate can be linked to fitness. Collect results , taking repeat readings across a section of the class. Interpret results through drawing a graph to see the patterns in pulse rate. Using test results to make predictions to suggest further comparative and fair tests. Concluding investigation in written form using scientific vocabulary, to describe the effect of exercise on our body.
Famous scientist	William Harvey



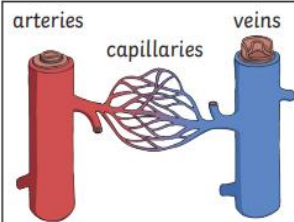
A healthy diet involves eating the right types of **nutrients** in the right amounts.

**Key Words**

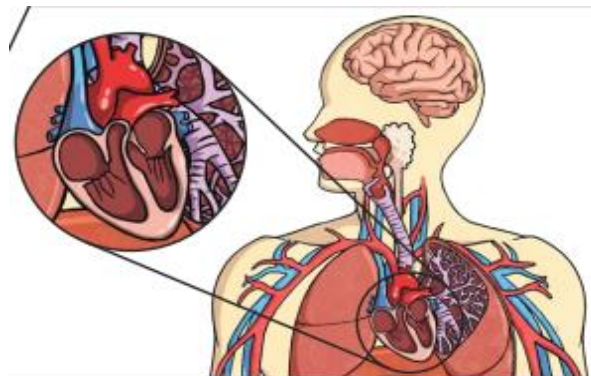
Circulatory system heart
 blood vessel veins
 capillaries lungs
 oxygenated aorta
 de-oxygenated respiration
 pulse ventricle atrium
 arteries oxygen carbon
 dioxide

Capillaries are the smallest **blood vessels** in the body and it is here that the exchange of water, nutrients, oxygen and carbon dioxide takes place.

Arteries carry **oxygenated** blood away from the **heart**.

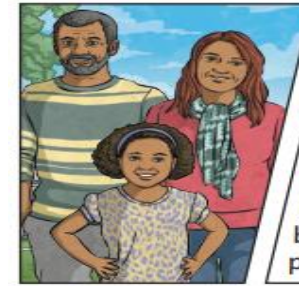


Veins carry **deoxygenated** blood toward the **heart**.



Evolution and Inheritance

Knowledge	Skills
Living things have changed over time and fossils can provide information about living things that lived on Earth millions of years ago.	Discuss scientific evidence that has been used to support the idea that fossils show us a lot about Earth and its environment millions of years ago.
Living things produce offspring of the same kind, but normally they vary and are not identical to the parent.	Verbally describe how some physical features in humans are inherited from a parent. Debate how we can sometimes inherit skills e.g. piano playing from a parent.
The adaptations of animals and plants and that these may lead to evolution.	Observing and raising questions about local animals and how they are adapted to their environment. Comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and venus fly-trap. They might analyse the advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.
The adaptations of animals and plants and that these may lead to evolution.	Perform a fair test to see how the size and shape of beaks in finches has evolved and how this has impacted on their choice of food. Make a prediction and control variables . Collect data on speed of moving the food from one place to another with different beaks. Interpret results and use causal relationships to explain in writing how a particular beak type has evolved.
Famous scientist	Charles Darwin



Offspring
Animals and plants produce **offspring** that are similar but not identical to them. **Offspring** often look like their parents because features are passed on.

Variation

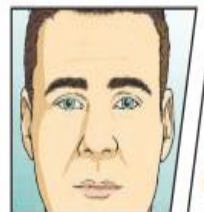
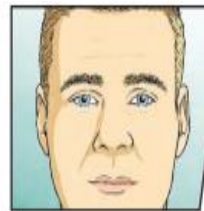
In the same way that there is **variation** between parents and their **offspring**, you can see **variation** within any species, even plants.



Fossils are the preserved remains, or partial remains, of ancient animals and plants. Fossils let scientists know how plants and animals used to look millions of years ago. This is proof that living things have **evolved** over time.

**Adaptive Traits**

Characteristics that are influenced by the **environment** the living things live in. These **adaptations** can develop as a result of many things, such as food and climate.

**Inherited Traits**

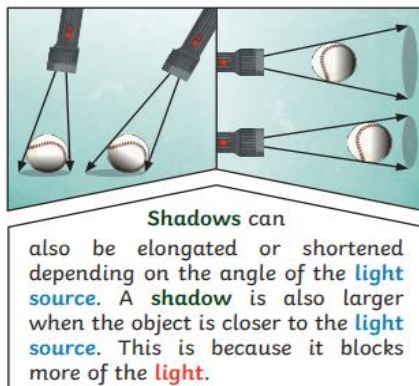
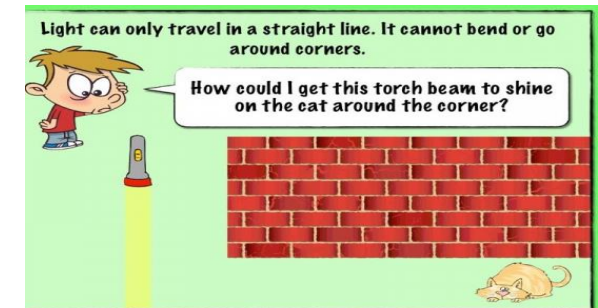
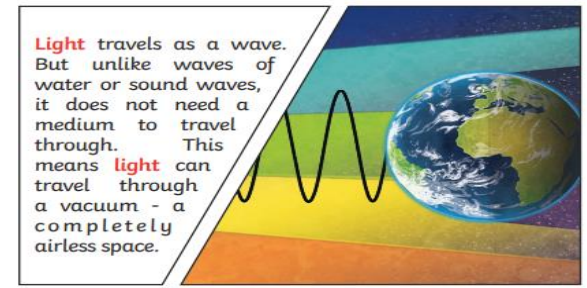
Eye colour is an example of an **inherited trait**, but so are things like hair colour, the shape of your earlobes and whether or not you can smell certain flowers.

Key Words

Natural selection breed
characteristics evidence
fossils parent offspring
inherit inherited characteristic
environmental characteristic
adapt adaptation evolve
environment species

Light

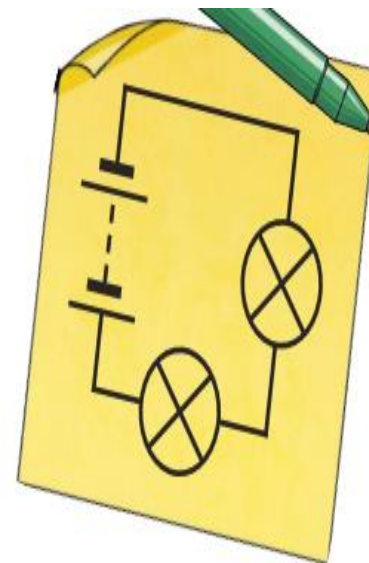
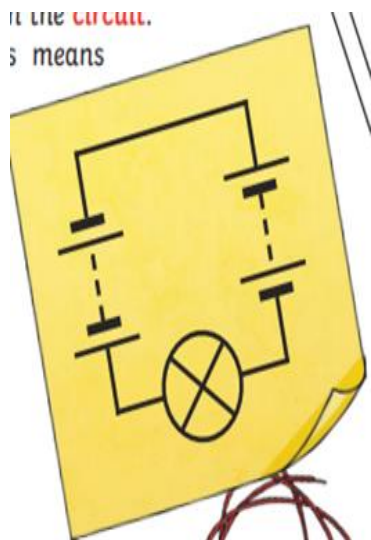
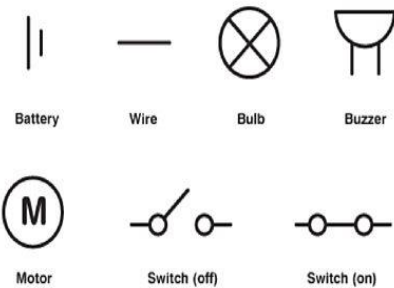
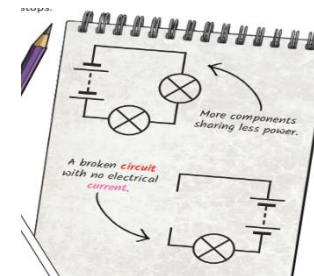
Knowledge	Skills
Light travels in a straight line.	Exploring through practical demonstration how light travels using mirrors and torches. Use of simple scientific, labelled diagrams to demonstrate the path of light.
Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.	Designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. Report their findings through simple labelled diagrams .
Light travels from a light source to our eyes/ from a light source to the object then to our eyes.	Use of simple scientific, labelled diagrams to demonstrate the path of light from a light source onto an object and into our eyes.
Shadows have the same shape as the object that formed them and if we change the angle of light from source, the shadow will change.	Perform a fair test, controlling variables to investigate what happens to the size of a shadow when the angle of the light source is changed. This will build on their knowledge of light from Year 3. Use what they already know to make a prediction . Observe and collect results in the form of labelled diagrams, using a protractor to measure accurately and precisely the angle of the shadow. Conclude what the diagrams show about the effect on the shadow created when we change the angle of the light source. Using test results to make predictions to set up further comparative and fair tests suggesting where the method could be improved.
Famous scientist	Mixture of scientists who have made historic discoveries related to light.

**Key Words**

Reflect	reflection	shadow
light ray	transmit	opaque
transparent	translucent	
emit	absorb	dispersion
prism	pupil	retina
optic nerve	lens	image
cornea	refraction	mirror
convex	concave	

Electricity

Knowledge	Skills
How to draw simple series circuit diagrams using the standard symbols.	Drawing simple labelled scientific diagrams of simple series circuits applying knowledge of the symbols for the components of a circuit.
The brightness of a bulb or volume of a buzzer depends on the number and volume of cells.	Through practical exploration test predictions made related to brightness of a bulb or volume of a buzzer. Systematically identifying the effect of changing one component at a time in a circuit. Compare and give reasons for the variation in the brightness/volume of the circuit.
How to make a circuit quiz board using what is known about components of a simple series circuit.	Applying previous knowledge of electricity from Year 4, design and create a quiz board using scientific equipment, which tests a peers knowledge on a topic of their choice.
The on/off position of a switch affects the function of the circuit.	Through practical exploration test predictions made related to whether a circuit will work or not, dependent on the setting of the switch. Relating this to the design of the quiz game.
Famous scientist	John Logie Baird

Key Words

Conductor	insulator
battery	cell lamp
switch	circuit component
buzzer	motor voltage
function	brightness volume
symbols	wire graphite
series	parallel plastic
metal	