



# Inspiring Curiosity, Knowledge and Aspiration in Science



# Working Scientifically

Key Stage 1 (Y1/2)	Lower Key Stage 2 (Y3/4)	Upper Key Stage 2 (Y5/6)
<ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways</li> <li>• observing closely, using simple equipment</li> <li>• performing simple tests</li> <li>• identifying and classifying</li> <li>• using their observations and ideas to suggest answers to questions</li> </ul> <p>gathering and recording data to help in answering questions</p>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> </ul> <p>using straightforward scientific evidence to answer questions or to support their findings</p>	<ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• using test results to make predictions to set up further comparative and fair tests</li> <li>• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>



# EYFS

Introduce a simple timeline from baby to now. Compare common experiences/objects that belonged to us as babies and now as children. Introduce simple vocab to represent now and then.

Explore the natural world- collect colourful leaves to decorate our home-made lanterns.

Explore the natural world: identifying seasonal changes of Autumn. Autumn walk in the park.

Caring for our local environment: Litter pick in the park. Creating bug hotels. (Park School)

Explore the natural world- identify the seasonal changes that Spring brings. Explore life-cycles of frogs and butterflies and watch chicks hatch.

Gaining a sense of chronology. Being a palaeontologist. Exploring fossils. Introduce new vocab 'prehistory'.

To know how animal patterns can help them camouflage.

Observe and interact with natural processes: Light travelling through transparent material and shadows. Stained glass windows and Shadow puppet theatre.

To compare and contrast environments: Seas and Oceans. Who lives here?  
Caring for the natural world- the dangers of pollution and plastics in our ocean. What can we do?  
Observe and interact with natural processes: Floating and sinking.

Name and describe familiar plants and animals within a woodland setting.  
Caring for the natural world: To know the value of trees and plants within our environment for us and animals (food, shelter, shade).

Explore the natural world- Use senses to explore the season of Winter. Explore ice melting.

Find out about animals and birds that hibernate or migrate during the Winter and animals who are suited to the cold (polar animals).

Observe and interact with natural processes: Explore sounds and vibrations when drumming.

Observe and interact with natural processes: explore magnets and magnetic materials.

# Materials



y1

## Materials

distinguish between an object and the material from which it is made  
identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

describe the simple physical properties of a variety of everyday materials  
compare and group together a variety of everyday materials on the basis of their simple physical properties

y2

## Everyday materials

identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

y3

## Rocks

compare and group together different kinds of rocks on the basis of their appearance and simple physical properties  
recognise that soils are made from rocks and organic matter

y4

## States of Matter

compare and group materials together, according to whether they are solids, liquids or gases

observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)

identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

y5

## Properties of Materials

compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

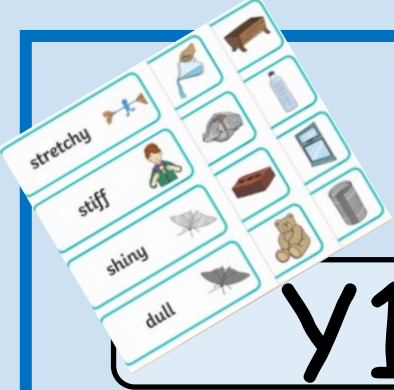
now that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

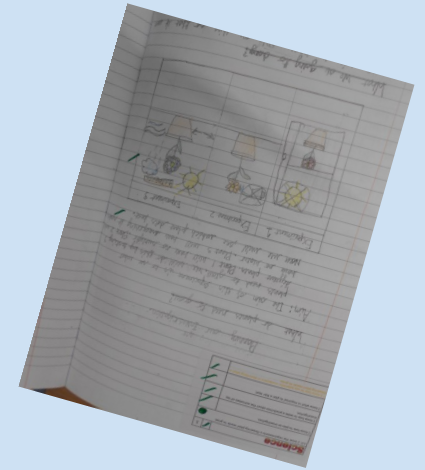
demonstrate that dissolving, mixing and changes of state are reversible changes

explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda





# Plants



## y1

### Plants

identify and name a variety of common wild and garden plants, including deciduous and evergreen trees

identify and describe the basic structure of a variety of common flowering plants, including trees

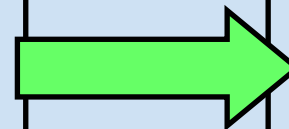


## y2

### Plants

observe and describe how seeds and bulbs grow into mature plants

find out and describe how plants need water, light and a suitable temperature to grow and stay healthy



## y3

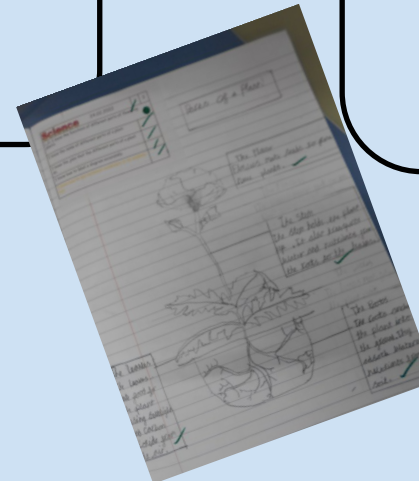
### Plants

identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

investigate the way in which water is transported within plants

explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal





# Earth and Space

y1

## Seasonal Changes

observe changes across the four seasons

observe and describe weather associated with the seasons and how day length varies.

y5

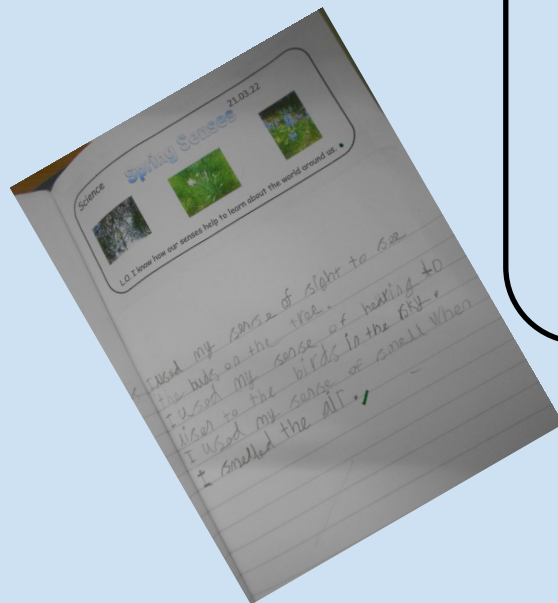
## Earth and Space

describe the movement of the Earth, and other planets, relative to the Sun in the solar system

describe the movement of the Moon relative to the Earth

describe the Sun, Earth and Moon as approximately spherical bodies

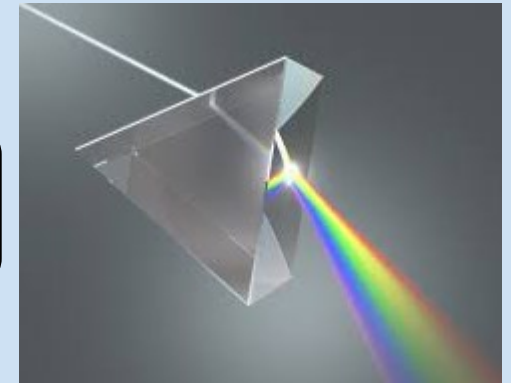
use the idea of the Earth's rotation to explain day and night and the apparent







# Light



Y3

Y6

## Light and Shadows

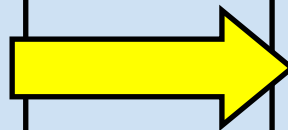
recognise that they need light in order to see things and that dark is the absence of light

notice that light is reflected from surfaces

recognise that light from the sun can be dangerous and that there are ways to protect their eyes

recognise that shadows are formed when the light from a light source is blocked by an opaque object

find patterns in the way that the size of shadows change



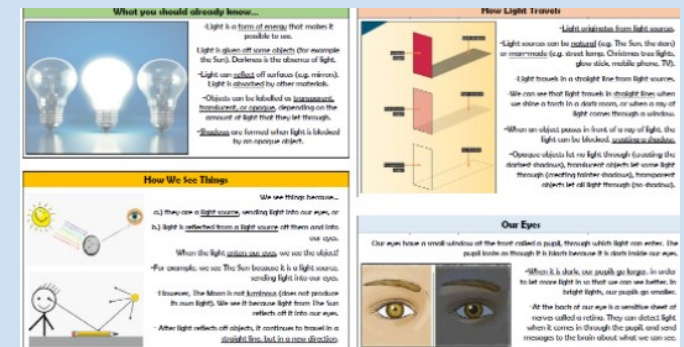
## Light

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



# Living Things and their Habitats

y1

explore and compare the differences between things that are living, dead, and things that have never been alive

identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

identify and name a variety of plants and animals in their habitats, including microhabitats

describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

y4

recognise that living things can be grouped in a variety of ways

explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

recognise that environments can change and that this can sometimes pose dangers to living things

y5

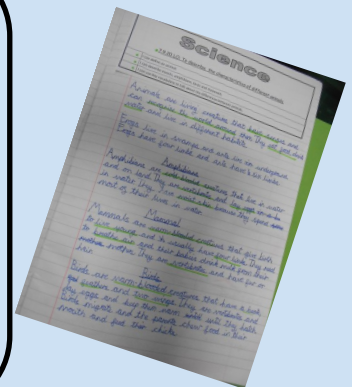
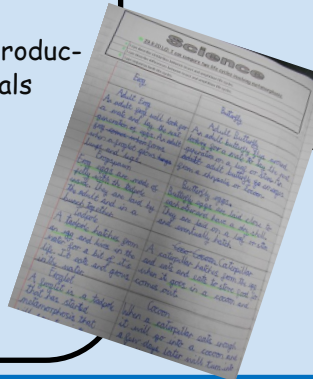
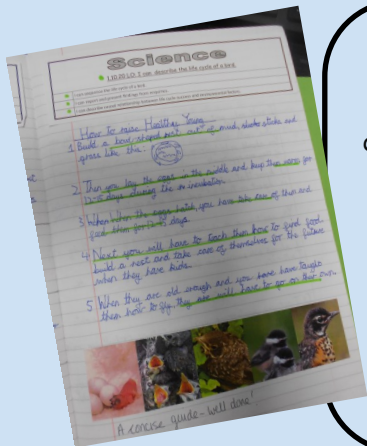
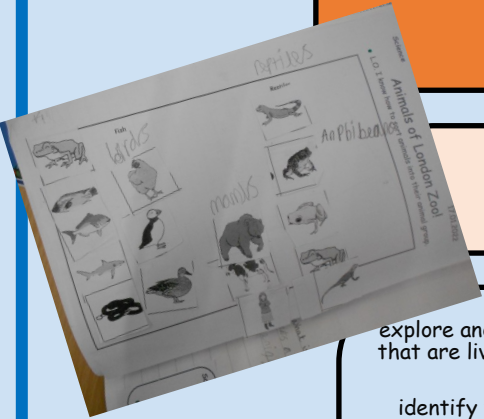
describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

describe the life process of reproduction in some plants and animals

y6

describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals

give reasons for classifying plants and animals based on specific characteristics



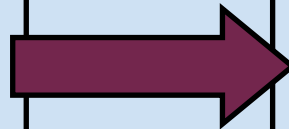


# Electricity



Y4

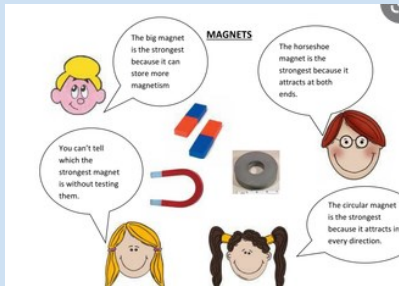
identify common appliances that run on electricity  
construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers  
identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery  
recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit  
recognise some common conductors and insulators, and associate metals with being good conductors



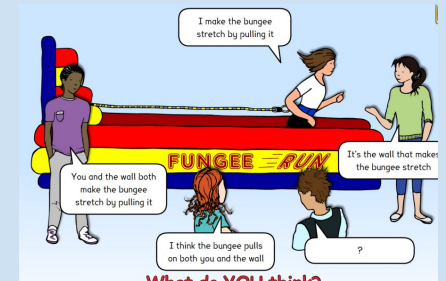
Y6

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





# Forces/Magnets



y3

## Forces and Magnets

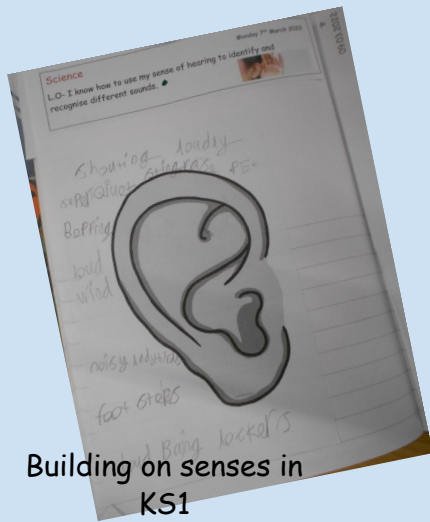
compare how things move on different surfaces  
notice that some forces need contact between 2 objects, but magnetic forces can act at a distance  
observe how magnets attract or repel each other and attract some materials and not others  
compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials  
describe magnets as having 2 poles  
predict whether 2 magnets will attract or repel each other, depending on which poles are facing



y5

## Forces

explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object  
identify the effects of air resistance, water resistance and friction, that act between moving surfaces  
recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect



Building on senses in  
KS1

# Sound

y4

identify how sounds are made, associating some of them with something vibrating  
recognise that vibrations from sounds travel through a medium to the ear  
find patterns between the pitch of a sound and features of the object that produced it  
find patterns between the volume of a sound and the strength of the vibrations that produced it  
recognise that sounds get fainter as the distance from the sound source increases





# Evolution and Inheritance

Y3

## Fossils

describe in simple terms how fossils are formed when things that have lived are trapped within rock



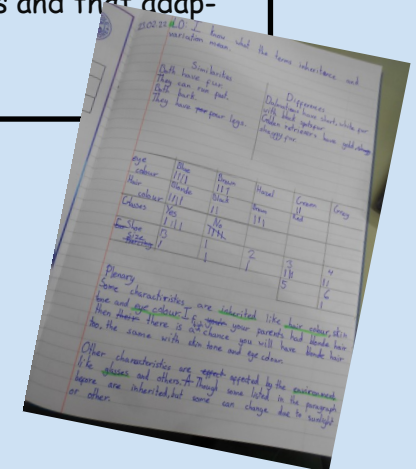
Y6

## Evolution and Inheritance

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



# Animals Including Humans

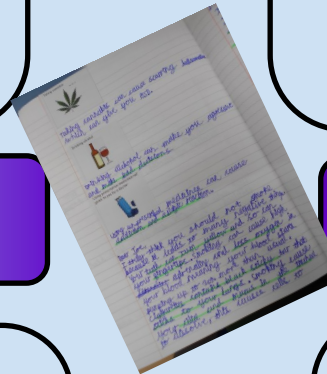
Y1

identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals  
identify and name a variety of common animals that are carnivores, herbivores and omnivores  
describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)  
identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense



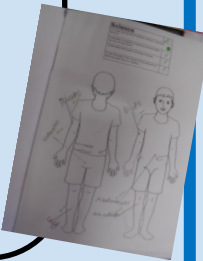
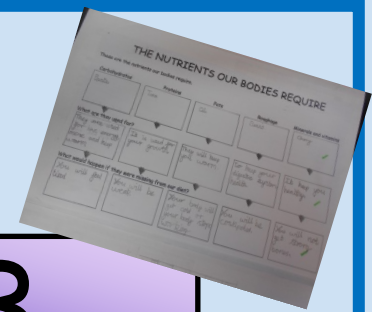
Y2

notice that animals, including humans, have offspring which grow into adults  
find out about and describe the basic needs of animals, including humans, for survival (water, food and air)  
describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene



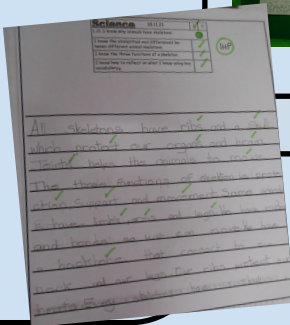
Y3

identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat  
identify that humans and some other animals have skeletons and muscles for support, protection and movement



Y4

describe the simple functions of the basic parts of the digestive system in humans  
identify the different types of teeth in humans and their simple functions  
construct and interpret a variety of food chains, identifying producers, predators and prey



Y5

describe the changes as humans develop to old age



Y6

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