



# Science at James Elliman Academy



Workshop for parents



# Welcome

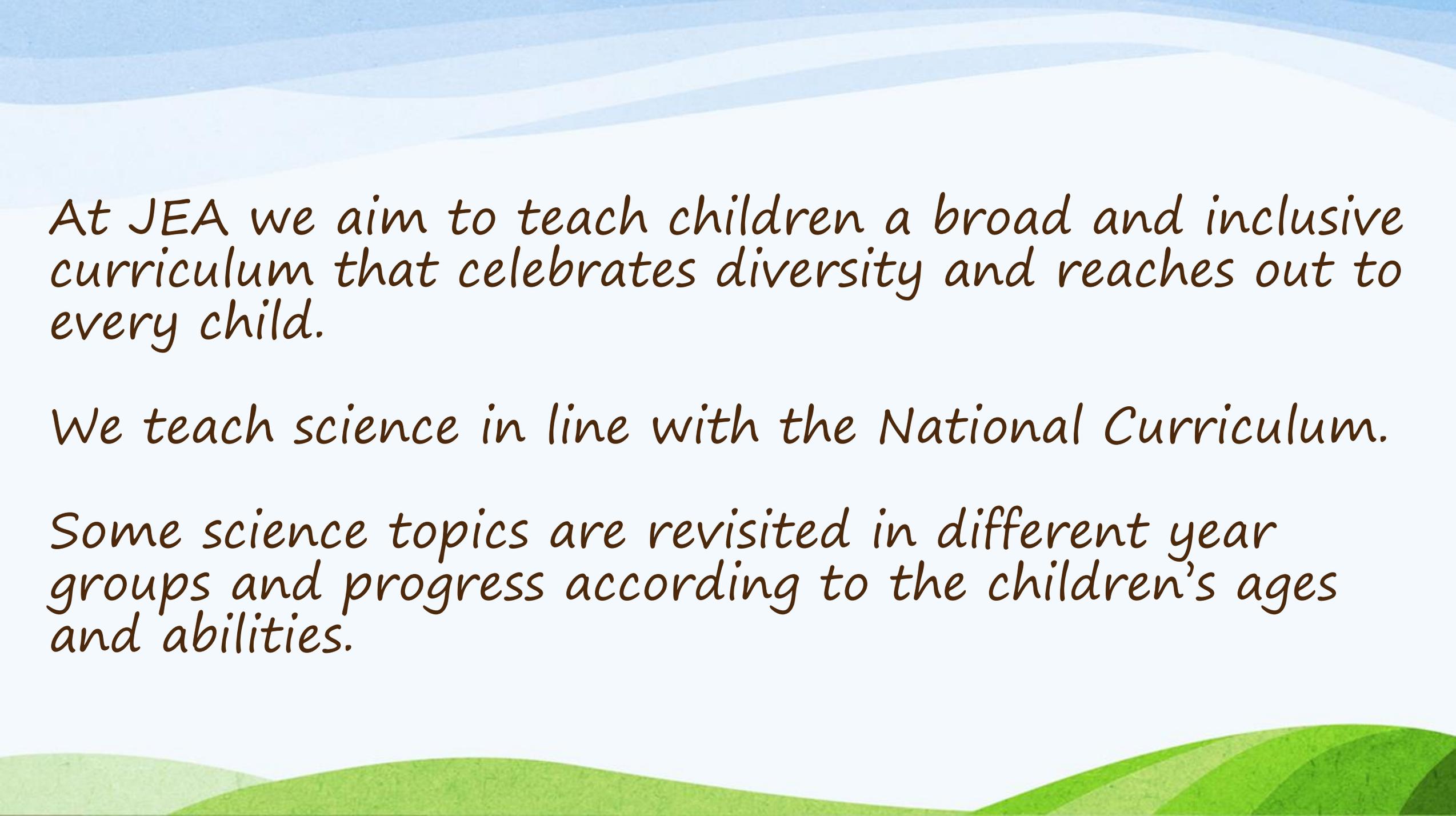
- *Introductions*
- *National Curriculum and statutory requirement*
- *How we teach science at JEA*
- *How you can help your child*

# Subject Leads

*At James Elliman Academy, we have people who are specifically responsible for the development of science.*

*Corina Constantinescu – Science Lead*





At JEA we aim to teach children a broad and inclusive curriculum that celebrates diversity and reaches out to every child.

We teach science in line with the National Curriculum.

Some science topics are revisited in different year groups and progress according to the children's ages and abilities.



Year 1

# Key stage 1 programme of study – years 1 and 2

## Working scientifically

### Statutory requirements

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

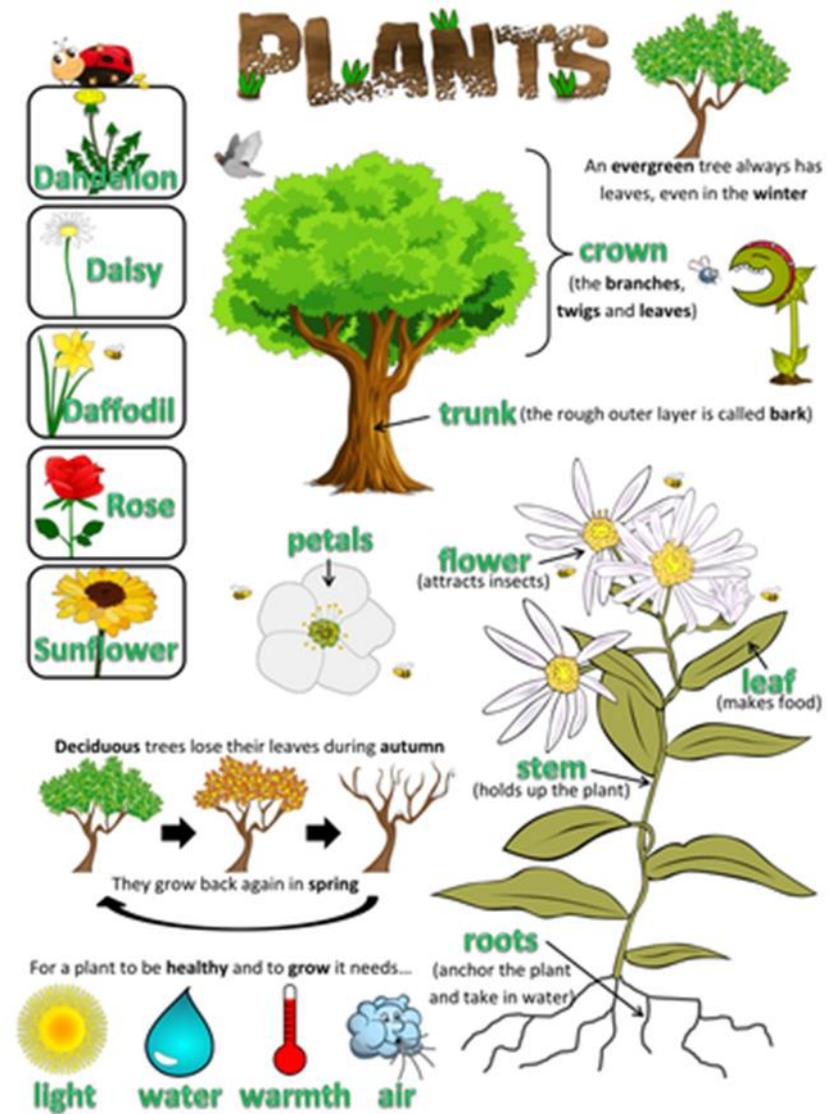
## Year 1 programme of study

### Plants

#### Statutory requirements

Pupils should be taught to:

- 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.



## Animals, including humans

### Statutory requirements

Pupils should be taught to:

- 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.



## Everyday materials

### Statutory requirements

Pupils should be taught to:

- 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.

# EVERYDAY MATERIALS

Objects all around us are made from **materials** chosen for their special **properties**

**PLASTIC**  
(is made from oil)



**hard**  
not easily broken,  
bent or cut

**stretchy**  
can be made longer or  
wider without breaking

**soft**  
not firm to the touch

**stiff**  
not easy to bend out  
of shape

**WOOD**  
(comes from trees)



**shiny**  
reflects light off its surface

**bendy**  
is flexible and can be bent

**rough**  
uneven and bumpy surface

**smooth**  
an even surface with no bumps

**ROCK**  
(is found underground)



**absorbent**  
can soak up liquid

**waterproof**  
will not soak up liquid

**GLASS**  
(is made from sand)



**opaque**  
can't see through it

**transparent**  
can see through it

**METAL**  
(is found inside rock)

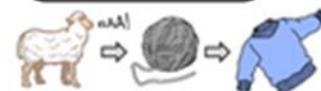


**WATERPROOF**  
fabric to keep out  
the water

**YIKES!**

**METAL** tube to make the  
umbrella strong

**WOODEN** handle for good  
grip and comfort



**WATER**

is all around us in oceans, seas, lakes,  
rivers, ponds and many more places.  
It freezes to make ice and falls from  
the sky as rain or snow. Everything  
living contains water...even us!

## Seasonal changes

### Statutory requirements

Pupils should be taught to:

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

# Seasonal Changes



**REMEMBER:** Never look directly at the sun even wearing sunglasses; it will damage your eyes.



Year 2

## Year 2 programme of study

### Living things and their habitats

#### Statutory requirements

Pupils should be taught to:

- 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 micro-habitats
- 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.



## Plants

### Statutory requirements

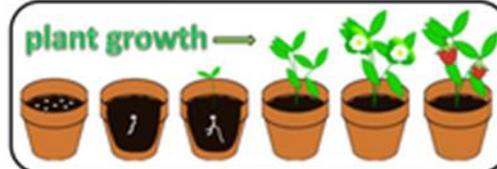
Pupils should be taught to:

- 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.

Plants create seeds to grow new plants. This is called reproduction

# PLANTS

Seeds can stay dormant (asleep) for years before they are ready to grow



### Germination

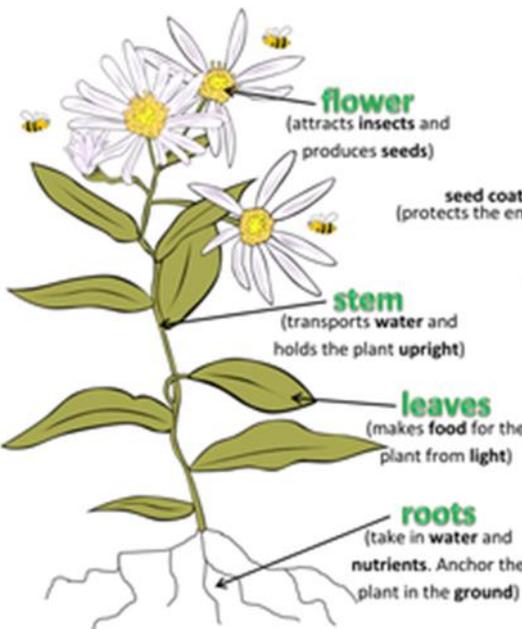
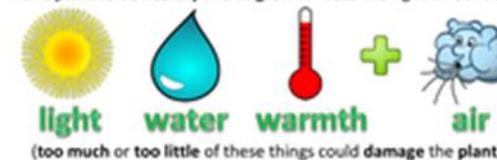
This is when a plant starts to grow from a seed, but only when things are just right!



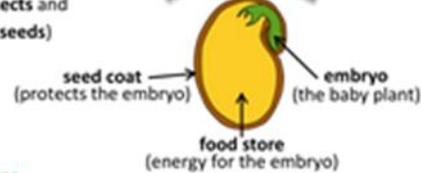
### It needs...

- the right amount of water
- air (oxygen)
- the correct temperature (warm or cold)
- most seeds don't need light

For a plant to be healthy and to grow it needs the right amount of...



### Inside a seed



### This plant has died



- why?
- too much or not enough water
  - too hot or too cold
  - not enough light
  - pests or disease
  - bad weather

## Animals, including humans

### Statutory requirements

Pupils should be taught to:

- 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.

# ANIMALS, INCLUDING HUMANS

**Stages of Life / Life Cycles**

foetus (before birth)   baby (0-1)   childhood (1-12)   teenager (13-19)   adult (20-65)   old age (65+)

**Exercise**

Exercising is good for your heart, muscles and bones. It also gives you energy, makes you feel good and can be great fun!

**Healthy Eating**

Eating a healthy and varied diet will give you energy and will help your body grow, repair itself and fight off illness.

**Hygiene**

Don't eat too many fatty or sugary foods

**Touching Animals**

BE CAREFUL!

- you could upset or hurt them
- they could bite, sting or scratch
- some people can be allergic
- they can carry germs (wash your hands)

**EGGY Animals!**

all of these animals hatch from an egg

All animals, including humans need...

**food + water + air**

...to stay alive, to grow and to be healthy

Human babies depend on adults to provide their basic need for: **food, water, warmth and hygiene** (keeping clean)

# USES OF EVERYDAY MATERIALS



Different materials have different properties which make them better suited for certain tasks...

<p><b>WOOD</b></p> <ul style="list-style-type: none"> <li>- is strong and hard</li> <li>- can be cut and carved</li> <li>- lasts a long time (durable)</li> </ul> <p>Is perfect for...</p>	<p><b>METAL</b></p> <ul style="list-style-type: none"> <li>- is strong, hard and shiny</li> <li>- can be melted and shaped</li> <li>- lasts a long time</li> </ul> <p>Is perfect for...</p>	<p><b>ROCK</b></p> <ul style="list-style-type: none"> <li>- can be either hard or soft</li> <li>- can be cut and carved</li> <li>- some last a long time</li> </ul> <p>Is perfect for...</p>
<p><b>GLASS</b></p> <ul style="list-style-type: none"> <li>- can be melted and shaped</li> <li>- is strong and durable</li> <li>- is waterproof and transparent</li> </ul> <p>Is perfect for...</p>	<p><b>PLASTIC</b></p> <ul style="list-style-type: none"> <li>- is strong and waterproof</li> <li>- can be melted and shaped</li> <li>- can be recycled</li> </ul> <p>Is perfect for...</p>	<p><b>PAPER</b></p> <ul style="list-style-type: none"> <li>- thick paper is called cardboard</li> <li>- can be folded and shaped</li> <li>- can be recycled</li> </ul> <p>Is perfect for...</p>
<p><b>BRICK</b></p> <ul style="list-style-type: none"> <li>- is created by extreme heat</li> <li>- is hard, strong and durable</li> <li>- can make a strong structure</li> </ul> <p>Is perfect for...</p>	<p><b>FABRIC</b></p> <ul style="list-style-type: none"> <li>- can be natural or man-made</li> <li>- is soft, flexible and absorbent</li> <li>- can be stretched and twisted</li> </ul> <p>Is perfect for...</p>	<p>A spoon could be made from metal, plastic or wood, but NOT brick or fabric!</p>

## Uses of everyday materials

### Statutory requirements

Pupils should be taught to:

- 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.

A stylized illustration of a landscape. The foreground features rolling green hills in various shades of green. On the left, a purple and pink flower with a dark brown stem and small white curls grows on a hill. The background consists of a blue sky with wavy, layered bands of light blue and white. A bright yellow rectangular box is positioned in the upper right quadrant, containing the text "Year 3".

Year 3

# Lower key stage 2 programme of study

## Working scientifically

### Statutory requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

# Year 3 programme of study

## Plants

### Statutory requirements

Pupils should be taught to:

- 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.

**PLANTS**

If an animal eats a fruit, often the seeds will come out in their poo! Sometimes seeds will stick to the fur of an animal.

**flowers**  
Responsible for reproduction. The colour and aroma (smell) attract insects to the plant so that pollination can take place.

**leaves**  
The leaves use light from the sun and carbon dioxide to make food for the plant. A process called photosynthesis.

**stem (or trunk)**  
The stem is responsible for the transportation of water and nutrients to the different parts. It also holds the plant upright.

**roots**  
The roots take in water and nutrients from the soil. They also anchor the plant and help it stay upright.

**stem**  
The stem transports the water and nutrients to the different parts. Water and nutrients are taken in by the roots.

**Parts of a Flower**  
stigma, style, ovary, stem, petal, anther, filament, sepal.

This young tree will struggle to survive. The large tree is taking most of the water/nutrients from the soil and blocking out the light.

**Plant Reproduction**  
All living things need to reproduce (create young) for the species to survive.

**POLLINATION**  
Pollen is blown by the wind or carried by an insect from one flower to another.

**FERTILISATION**  
The pollen travels to the ovary of the other flower and a fruit begins to grow.

**SEED DISPERSAL**  
Seeds are dispersed (spread out) by either the wind or by animals.

A cactus has adapted to survive in hot and dry places. Their roots spread out a long way and they are experts at absorbing and storing water!

For a plant to be healthy and to grow it needs the correct amount of...  
light, water, warmth, air, nutrients and space.  
(too much or too little of these things could damage or even kill the plant)

Plants can't grow on the moon because there is no water or air. It is also either far too hot or far too cold!

## Animals, including humans

### Statutory requirements

Pupils should be taught to:

- 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.

# ANIMALS, INCLUDING HUMANS

Animals, including humans, need to eat to get all the energy and nutrients they need



(these are the main source of energy for our bodies)



(are stored by the body for energy and provide a layer of fat for warmth)



(build and repair body tissue - muscles, organs and immune system)



(keep our bodies working and growing properly and help to fight off infections)

### Balanced Diet

You should try to eat a varied diet that includes all the food groups.

Avoid eating too much fatty or sugary food

## SKELETON

All mammals (including humans), birds, fish, reptiles and amphibians have a skeleton inside their bodies (vertebrates)



shoulder (joint)

elbow (joint)

knee (joint)

ankle (joint)

skull  
(protects the brain)

ribs  
(protects the heart and lungs)

backbone

pelvis



### Joints

The skeleton bends at joints such as the shoulder, elbow, knee and ankle where two or more bones join together

### Muscles

Muscles are attached to the skeleton to help us move. They either contract (bunch up) or relax (go back to normal) to move the bones

The skeleton supports our body, protects our internal organs and helps us move (by using muscles)



## INVERTEBRATES

Animals that do not have a skeleton on the inside are called invertebrates. Some have a skeleton on the outside (exoskeleton), whilst some have no skeleton whatsoever!



Milk is rich in calcium which helps to build strong teeth and bones



Sugar forms an acid in your mouth that causes tooth decay

## Rocks

### Statutory requirements

Pupils should be taught to:

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter.

# ROCKS

Fossils tell us what the animal looked like, what they ate and when they lived

You can test how hard a rock is by scratching it with a metal nail (scratch test)

Beneath the surface of the Earth is a layer of rock, and beneath that is a layer of super-hot liquid rock called magma

### IGNEOUS

Igneous rock is formed when magma, or lava from volcanoes, cools down. Most igneous rock is very hard

granite basalt



### SEDIMENTARY

Sedimentary rock is formed over millions of years when tiny rocks and animal skeletons are pressed together (some contain fossils)

chalk sandstone



### METAMORPHIC

Metamorphic rock is formed when other rocks are changed due to pressure or extreme heat (not enough to melt the rock)

slate marble



Different rocks have different properties which make them better suited for certain tasks...

### Hard or Soft

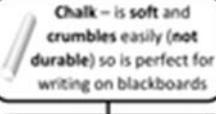
Some rocks (e.g. marble and granite) are very hard and need special tools to cut them. Other rocks (e.g. clay and chalk) are easily moulded or cut



Slate – roof tiles are made from slate which is easy to split into layers, is hard, durable and impermeable

### Permeable or Impermeable

Rocks that allow water to soak into them are called permeable rocks. Those that don't are called impermeable rocks



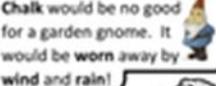
Chalk – is soft and crumbles easily (not durable) so is perfect for writing on blackboards



Granite – is dense, hard, durable and impermeable so is perfect for construction

### Durable

Durable rocks are more resistant to being eroded by rain or wind. These rocks are usually hard and impermeable



Chalk would be no good for a garden gnome. It would be worn away by wind and rain!

### Density

Density is how tightly packed the rock molecules are. Dense rocks are usually heavy and will sink quickly in water. Less dense rocks will usually be lighter and will sink slowly or even float in water



Pumice is less dense than water and floats!

### Fossils

Fossils are usually formed when an animal dies and is covered by a layer of rock. The soft parts rot away leaving only the skeleton. Over thousands of years the skeleton leaves a permanent imprint in the rock which may then be discovered millions of years later!



### DINOSAURS

No human has ever seen a dinosaur as they had been extinct for 63 million years before we appeared on Earth. Without fossils, we would never have known about them!

### Soil

Soil is a mixture of rock particles, dead plants and animals, air and water. It provides a habitat for a variety of mini-beasts



### Meteorites

A meteorite is a chunk of rock from an asteroid which passes through the Earth's atmosphere and falls to the ground (a shooting star)



## Light

### Statutory requirements

Pupils should be taught to:

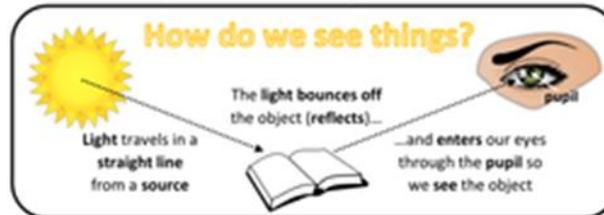
- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change.

The moon is **NOT** a source of light because it **reflects** light from the sun (the same way a mirror can't be a source of light)

# Light



We need light so that we can see things around us in the world



**Darkness is the absence of light**

Our pupils change size to either let in more light (if it is dark) or less light (if it is bright)

Some surfaces/objects are more reflective than others



Reflective surfaces can be very useful



Mirrors in cars help drivers to see what is behind them

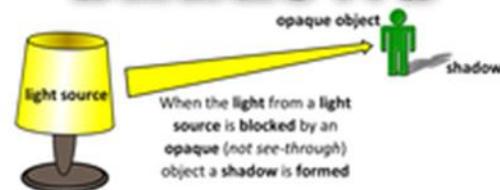


Reflective strips on clothes and bikes make cyclists easier to see at night

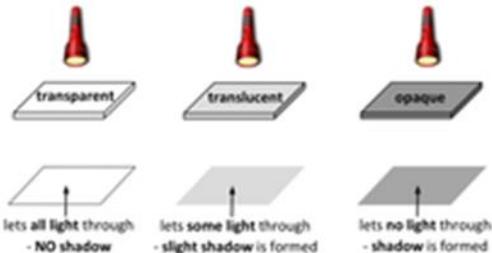


And how could you do your hair and makeup without that mirror?

## Shadows



Some objects allow more light through than others



You can change the shape of a shadow by moving the light source or the object further away from, or closer to, each other

Sunlight can damage your eyes. Protect them by wearing sunglasses or a hat. **NEVER** look directly at the sun

## Forces and magnets

### Statutory requirements

Pupils should be taught to:

- compare how things move on different surfaces
- notice that some forces need contact between two 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 two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing.

# Forces and Magnets

## Forces

Forces are pushes and pulls.  
No object will move unless a force acts upon it.



Friction also produces heat.  
You can feel this if you rub your hands together



Friction is a useful force. The friction between our shoes and the floor stop us from slipping

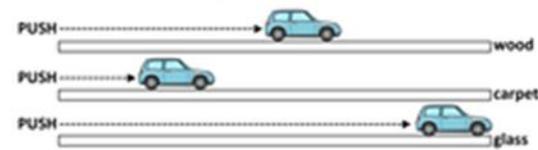
## Friction

Friction is a force between two surfaces when they slide across each other



Friction works in the opposite direction and slows the object down

Different surfaces produce different levels of friction



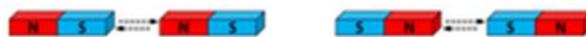
This toy car has been pushed with the same amount of force.

Smoother surfaces produce less friction

## Magnets

Magnetism is an invisible force. A magnet can either attract or repel other magnets

Opposite poles of a magnet will attract each other (pull together)



Similar poles of a magnet will repel each other (push away)



Objects can be sorted by whether they are attracted to a magnet or not



(only metals that contain iron are attracted to a magnet)

Magnets have a north pole (N) and a south pole (S)

Magnetism, like gravity, is different to most forces because it does not need contact with an object to make it move



Magnets come in lots of different shapes and sizes. Some magnets will be stronger than others and create bigger pushing or pulling forces



The Earth is like a giant magnet with a magnetic north and south pole.

A compass points towards the north pole because of the Earth's magnetic field





Year 4

# Year 4 programme of study

## Living things and their habitats

### Statutory requirements

Pupils should be taught to:

- 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.

## Animals, including humans

### Statutory requirements

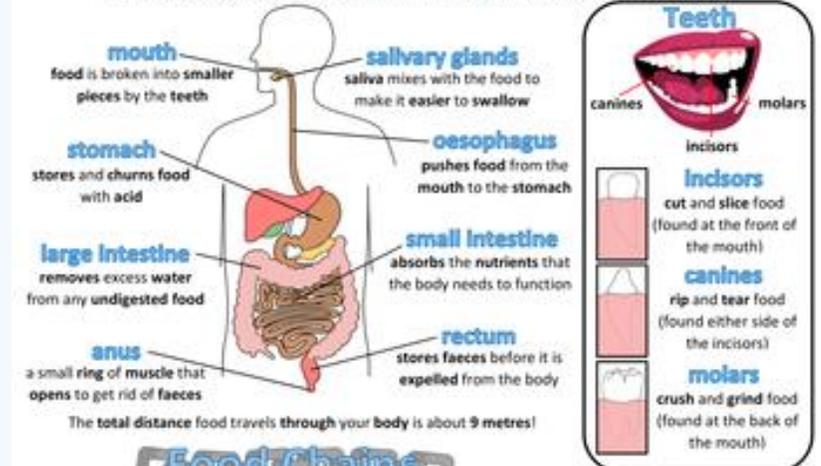
Pupils should be taught to:

- 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.

# ANIMALS, INCLUDING HUMANS

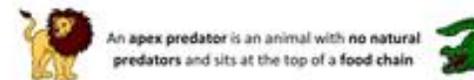
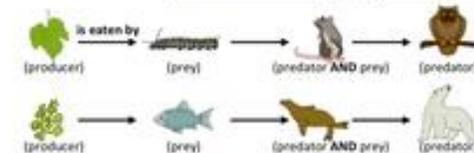
## The Digestive System

The digestive system is responsible for obtaining energy and nutrients from the food we eat



## Food Chains

A food chain shows how energy is passed from one living thing to another...



You will have **two sets of teeth** in your lifetime

**Milk (baby) Teeth**  
Your first set of 20 teeth that eventually fall out

**Permanent (adult) Teeth**  
These will replace the milk teeth that start to fall out when you are six. You will grow up to 32 new teeth

As well as regularly brushing your teeth, you can also look after your teeth by...

- visiting the dentist
- avoiding sugary foods
- flossing or using mouthwash

milk will help teeth stay strong

## States of matter

### Statutory requirements

Pupils should be taught to:

- 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 ( $^{\circ}\text{C}$ )
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

# States Of Matter

Matter is all around us and can be found in one of three major states: solid, liquid or gas

## Solids

- keep their shape and can be held
- do not flow or spread out
- keep the same volume
- can be cut or shaped



## Liquids

- will take the shape of a container
- can be poured and will flow
- keep the same volume
- can not be held easily



## Gases

- will spread out and fill a container
- volume can increase or decrease
- can flow through pipes
- are often invisible



## Particles

Particles are tiny bits of matter that make up all solids, liquids and gases

Particles are very close together and can't move easily

Particles are close together but can move around

Particles are far apart and free to move around



## Changing State



## Evaporation

When a liquid slowly turns into a gas (without boiling), this is called evaporation. It is why puddles disappear and your clothes dry outside on the washing line



## Condensation

Condensation is when a gas turns back into a liquid. It is why a cold drink gets wet on the outside and why a mirror steams up during a hot shower (from the water vapour in the air)



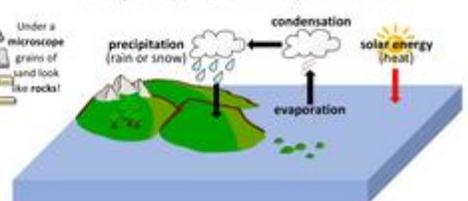
## Solid or Liquid?



Sand, salt and flour behave a bit like a liquid because they can be poured and take the shape of a container. However, they are actually very small solids that keep their shape and volume

## The Water Cycle

The water cycle is the journey of water as it evaporates and condenses



Rain isn't salty because only the water evaporates leaving the salt behind

# Sound

## Statutory requirements

Pupils should be taught to:

- 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.

**To vibrate means to move quickly back and forth**

**Sound cannot travel in space, because there is no air for it to travel through.**

# Sound

Sounds are vibrations that can travel through solids, liquids and gases

## How Sound Travels

When a sound is created, the vibrations will travel in all directions (including up and down) through the air

The further the vibrations travel the weaker they become (the sound gets quieter)

The louder a sound, the further the vibrations will travel

When sound waves hit a smooth and hard object, some of the waves will be reflected (sometimes creating an echo)

Sound travels in waves (a bit like ripples in a pond)

When the vibrations enter our ears, we hear the sound

Vibrations travel through the air by pushing against the particles next to it creating a wave

air particles

Sound can travel through other mediums such as liquids (like water) and solids (like wood, stone & metal)

Therefore, you can hear sounds through windows, walls or the floor

Sound travels faster and further through a metal pipe (solid)

Whale song can travel for thousands of miles through the ocean (water)

## Changing Sounds

It is possible to change the volume (loudness) and the pitch (highness or lowness) of a sound

### Volume

Volume (or loudness) is how loud or soft a sound is (strong or weak vibrations)

You can pluck a harp string strongly or gently to change the volume

A drum can be struck hard to make a loud sound or softly for a quiet sound

A recorder can be blown hard for a loud sound or gently for a soft sound

Changing the volume of a sound does not usually change the pitch

### Pitch

Pitch is how high or low a sound is.

A thick string creates a lower sound than a thin string

low pitch high pitch

A short string will create a higher sound than a long string

high pitch low pitch

Tightening a string or drum skin will make the pitch higher

Loosening a string or drum skin will make the pitch lower

Blowing across the top of a bottle makes the air inside vibrate and create a sound

Filling it gradually with water will start to raise the pitch of the sound heard because the column of air becomes shorter

The inner ear should be protected from loud noises to prevent damage to your hearing

# Electricity

## Statutory requirements

Pupils should be taught 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
- 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.

**Electricity** DANGER  
HIGH VOLTAGE

A lot of modern appliances need electricity to function

**Mains Electricity** (appliances that are plugged in)

**Batteries** (appliances that run on batteries – may need to be charged)

**Simple Circuits**

A circuit needs a power source (cell or battery) with wires to connect the positive (+) and negative (-) ends. Other electrical components (bulbs, motors, buzzers) can also be inserted

**Electrical Components**

cell (battery)  
wire and crocodile clips  
bulb  
motor  
buzzer  
switch

**Switches**

Switches can be added to circuits

An open switch breaks the circuit and the bulb does not light

A closed switch completes the circuit and the bulb does light

**Faulty Circuits**

If a circuit has a gap, or is incorrectly constructed, then it will not work

The bulb does not light because there is a gap in the wire

The bulb does not light because there is no power source

No light as both wires are connected to the negative end of the cell (other possible reasons include: a blown bulb, damaged wire or flat battery)

**Conductors**

Materials that allow electricity to flow through them (metals)

**Insulators**

Materials that do NOT allow electricity to flow through them

**Changing Circuits**

Adding more cells to a circuit will make the bulb brighter

Adding more bulbs to a circuit will make the bulbs dimmer

Never use a mains appliance near water



Year 5

# Upper key stage 2 programme of study

## Working scientifically

### Statutory requirements

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

# Year 5 programme of study

## Living things and their habitats

### Statutory requirements

Pupils should be taught to:

- 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.

## Animals, including humans

### Statutory requirements

Pupils should be taught to:

- describe the changes as humans develop to old age.

## Properties and changes of materials

### Statutory requirements

Pupils should be taught to:

- 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
- know 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.

## Earth and space

### Statutory requirements

Pupils should be taught to:

- 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 movement of the sun across the sky.

## Forces

### Statutory requirements

Pupils should be taught to:

- 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.



Year 6

# Year 6 programme of study

## Living things and their habitats

### Statutory requirements

Pupils should be taught to:

- 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.

Most plants grow flowers that then produce seeds. These are called **flowering plants**.

Some plants release spores or cones to reproduce. These are called **non-flowering plants**.

## LIVING THINGS AND THEIR HABITATS

Because there are so many different living things, it is useful to sort them into groups based on their characteristics.

### Vertebrates (have a backbone)

#### Mammals

- there are over 5000 different species of mammal
- can adjust body temperature to their surroundings (warm-blooded)
- most give birth to live young that look like small versions of parents
- all have hair or fur (sometimes it is not visible)
- all female mammals feed their young milk produced in mammary glands
- all mammals (even aquatic mammals) have lungs and breathe air

There are three main types of mammal...

<b>Placental</b> Babies develop in the womb fed from an organ called the placenta	<b>Marsupial</b> Babies (joeys) are born undeveloped and finish developing in a pouch	<b>Monotreme</b> the only mammals that lay eggs rather than give birth to live young
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#### Fish

- there are almost 28,000 known species of fish
- can't adjust body temperature to their surroundings (cold-blooded)
- most fish species lay eggs that are then fertilised externally
- have scales, fins and streamlined bodies
- have gills that extract oxygen from the water (do not have lungs)
- most fish are bony fish and have a skeleton made of bone
- cartilaginous fish have a flexible bone-like skeleton (cartilage)

#### Reptiles

- there are over 10,000 known species of reptile
- can't adjust body temperature to their surroundings (cold-blooded)
- most reptiles lay eggs that have been fertilised internally
- young usually look like small versions of the parent(s)
- all have scales and breathe using lungs
- can be subdivided into: crocodilians, snakes, lizards and turtles

#### Birds

- there are thought to be about 10,000 species of birds
- can adjust body temperature to their surroundings (warm-blooded)
- all bird species lay eggs that have been fertilised internally
- have beaks, feathers, breathe using lungs and most can fly
- young birds often look quite different from the parents
- Over half of bird species are passerines (perching birds)

#### Amphibians

- there are over 7,000 known species of amphibians
- can't adjust body temperature to their surroundings (cold-blooded)
- lay eggs in water that are then fertilised externally
- have webbed feet and moist skin (no protective scales)
- start life in the water using gills to breathe
- most amphibians go through a big change called metamorphosis
- they live their adult life on land, breathing through lungs and their skin
- Can be subdivided into: frogs & toads, salamanders and caecilians

### Invertebrates (do not have a backbone)

#### Insects

- Insects have an exoskeleton on the outside of their bodies that protect them. They have three parts – the head, thorax (middle) and abdomen (end).
- Insects have six legs and two antennae. They hatch from eggs and go through a metamorphosis.
- Some, but not all, insects have wings.

#### Arachnids

- All arachnids have an exoskeleton. They have two parts – the head and abdomen. Arachnids have eight legs and hatch from eggs. They do not go through a metamorphosis and their young look like small versions of the parent.

#### Gastropods

- This group includes slugs and snails, but most other gastropods live in water. They have a head-foot on which they move and some gastropods have a shell. They have tentacles on the head where the eyes are situated.

#### Annelids

- This group includes worms and leeches. They have no legs, no skeleton and their bodies are in segments (small rings).

#### Micro-Organisms

- Micro-organisms are so small they can only be seen with a microscope. They are in the air, water and inside our bodies.

#### Bacteria

- Bacteria can be good or bad. Some bacteria can cause illnesses or food poisoning. However, most are harmless and can be very helpful. It is used to make yoghurt and cheese, and bacteria in our bodies aid the digestion of food.

#### Viruses

- Viruses are incredibly small and some scientists don't even consider them to be living. They can infect plants and animals and make them sick. We rely on our immune systems to fight off viruses (antibiotics won't help).

#### Fungi

- Not all fungi are microscopic – you can see mushrooms, mould and mildew. Fungi feed on all kinds of materials – wood, leaves, food, clothes, animals, plants and lots more. Like bacteria it can be either good or bad. Some mushrooms are poisonous (never eat one you find in the woods), some fungi (like mould) can make you sick and some can cause skin infections (athlete's foot). However, a fungus (yeast) is used to make bread rise. Fungi help to decompose organic matter AND some fungi are used to make medicines to fight infections (antibiotics).

## Animals including humans

### Statutory requirements

Pupils should be taught to:

- 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.

**Pulse** Your pulse is how fast your heart is beating. You can feel it where an artery passes close to the skin. It is measured in beats per minute (bpm).

**Heart Rate** Your heart rate increases when you exercise because your muscles are working harder and so need more oxygen to keep going.

# ANIMALS, INCLUDING HUMANS

## The Circulatory System

The circulatory system delivers blood to the body's tissues, carrying oxygen, nutrients and water to all of our cells.

### The Heart

blood from the body  
blood to the lungs  
blood from the lungs  
blood to the body

right atrium  
left atrium  
right ventricle  
left ventricle

The heart is a strong muscle that pumps blood around the body. It is made up of four chambers.

### Nutrients and Water

To function properly, our bodies need to absorb the nutrients and water we get from eating and drinking and then transport them around the body.

Most absorption takes place in the small intestine.

small intestine  
cross section  
villi

Millions of tiny finger-like structures called villi line the inside of the small intestine. The villi both absorb nutrients into the blood stream and increase the surface area of the small intestine, making absorption more efficient.

Once the nutrients have been absorbed, they are transported around the body in the circulatory system (like oxygen) to where they are needed.

### Lifestyle Choices

The choices you make can have a big impact on how well your body functions.

#### Diet

Having a healthy diet (balanced diet) will help our bodies to function, grow properly, repair itself and fight off illnesses.

Carbohydrates (for energy)  
Vitamins and Minerals (for health)  
Proteins (for growth & repair)

Having some fat in our diet is fine (energy and insulation). However, too much can lead to weight gain, high cholesterol and eventually heart disease.

#### Exercise

Regular exercise (at least an hour a day) will keep your heart healthy and your muscles/bones strong. The healthier your heart, the better it will be at transporting oxygen, and the nutrients you need, around your body.

#### Drugs

Drugs are chemicals that change how our bodies function in some way.

##### Medicinal

Medicines are drugs that, when used properly and carefully, can make you feel better if you are ill or help your body heal itself.

##### Legal

Drugs such as cigarettes and alcohol are legal for adults. Smoking and excessive drinking can damage your heart, lungs and other organs and stop your body functioning properly.

##### Illegal

Drugs such as marijuana, cocaine and ecstasy are illegal drugs. They can damage the brain, heart and in some cases cause death.

### Blood Vessels

Arteries are the thin tubes that carry oxygen-rich blood away from the heart.

Capillaries are the tiny tubes found in body tissue. They transfer oxygen and nutrients from the blood.

Veins are the thin tubes that carry oxygen-poor blood back to the heart.

If you laid out all an adult's blood vessels end-to-end, they would measure 100,000 miles. That's four times around the world!

## Evolution and inheritance

### Statutory requirements

Pupils should be taught to:

- 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.

**Evolution & Inheritance**

**Fossils**  
Fossils are the remains of plants and animals that lived long ago. They are found in rocks and can tell us about life on Earth millions of years ago. Fossils can be made from bones, shells, and even footprints. They are formed when the remains of an organism are buried in sediment and over time, the sediment hardens into rock, preserving the remains.

**Inheritance**  
Inheritance is the passing on of characteristics from parents to their offspring. All living things have characteristics that are passed on to their offspring. Some characteristics are inherited, meaning they are passed on from parents to offspring. Other characteristics are acquired, meaning they are developed during an organism's lifetime.

**Acquired**  
Acquired characteristics are those that are developed during an organism's lifetime. They are not passed on to offspring. Examples include a scar, a suntan, and a muscle built by exercise.

**Inherited**  
Inherited characteristics are those that are passed on from parents to offspring. They are present from birth. Examples include eye color, hair color, and blood type.

**Variation**  
Variation is the difference between individuals of the same species. It is caused by differences in the genes that individuals inherit from their parents. Variation can be inherited or acquired. Inherited variation is passed on from parents to offspring, while acquired variation is developed during an organism's lifetime.

**Adaptation**  
An adaptation is a characteristic that helps an organism survive in its environment. Adaptations can be inherited or acquired. Inherited adaptations are passed on from parents to offspring, while acquired adaptations are developed during an organism's lifetime. Examples of adaptations include a camel's hump, a fish's gills, and a bird's beak.

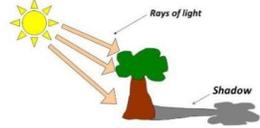
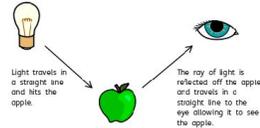
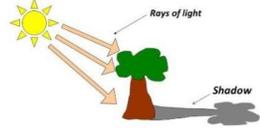
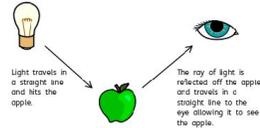
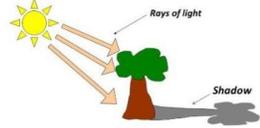
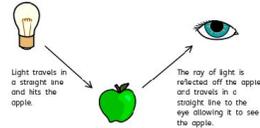
**Evolution**  
Evolution is the change in the characteristics of a population over time. It is caused by natural selection, which is the process by which organisms with characteristics that are better suited to their environment are more likely to survive and reproduce. Over time, the characteristics of a population can change as a result of natural selection.

# Light

## Statutory requirements

Pupils should be taught to:

- 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.

Wells Hall Primary School - Science																																
Topic: Light	Year: 6	Strand: Physics																														
<p><b>What should I already know?</b></p> <ul style="list-style-type: none"> <li>Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights).</li> <li>Shiny materials do not make light but do reflect it.</li> <li>Shadows are caused when certain materials block light.</li> <li>Light travels in straight lines. When light is blocked by an opaque object, a dark shadow is formed.</li> <li>The further away the light source is, the smaller the shadow is. The closer the source of the light, the bigger the shadow.</li> </ul>		<p><b>Investigate!</b></p> <ul style="list-style-type: none"> <li>What happens when light is reflected from different surfaces? What happens when light is reflected from a mirror? What happens when the angle of the mirror (or light source) changes?</li> <li>Draw diagrams to show how light travels and what happens when light is reflected from a mirror.</li> <li>Draw diagrams to show how we see.</li> <li>Design an experiment to measure shadow length by changing a variable. Show your results in a line graph to show the relationship between distance of light source and shadow length. Explain your findings using scientific vocabulary.</li> <li>Create shadow puppets to show how light travels and to demonstrate that a shadow has the same shape as the object that casts them.</li> <li>Make a periscope and explain how it works using diagrams and scientific vocabulary. Use the idea that light appears to travel in straight lines to explain how it works.</li> <li>Research how mirrors are used in different contexts (e.g. rear view mirrors, on a dangerous bend) and explain why and how they work.</li> <li>Explain why objects look bent in water.</li> <li>Explore different contexts in which light travels including rainbows, colours on soap bubbles and coloured filters.</li> </ul>																														
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reflects	sent back from the surface and not pass through it																															
shadows	a dark shape on a surface that is made when something stands between a light and the surface																															
source	where something comes from																															
surface	the flat top part of something or the outside of it																															
torches	a small electric light which is powered by batteries and which you can carry																															
translucent	If a material is translucent, some light can pass through it																															
transparent	If an object or substance is transparent, you can see through it																															

# Electricity

## Statutory requirements

Pupils should be taught to:

- 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.

# ⚡ Electricity

**Circuit Symbols**  
Circuit symbols are used to represent different elements and components in an electrical circuit

**Circuit Diagrams**  
Circuit diagrams can be used to represent electrical circuits. It makes them easier to draw!

**Changing Circuits**  
There are several ways a circuit can be changed (adding or taking away components OR changing cell voltage)

**Voltage**  
Increasing or decreasing the voltage of the cell used in a circuit will also change how it functions

**Switches**  
Switches are a very simple way of controlling the flow of electricity around a circuit

**Circuits In Use**  
All appliances that run on electricity will have a circuit inside of them

**WARNING:** The voltage in mains electricity is dangerously high. NEVER fiddle with, or attempt to repair, an electrical appliance when it is plugged in

# Progression of Animals including humans

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore the natural world around them, making observations and drawing pictures of animals and plants	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>Notice that animals, including humans, have offspring, which grow into adults</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>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</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>Describe the changes as humans develop to old age</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (Y5 - Living things and their habitats)</p> <p>Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans</p> <p>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 (Y6 - Living things and their habitats)</p> <p>Give reasons for classifying plants and animals based on specific characteristics (Y6 - Living things and their habitats)</p>

# Progression of Skills – Working Scientifically

## Working scientifically

During years 1 and 2, pupils should be:

asking simple questions and recognising that they can be answered in different ways

observing closely, using simple equipment

performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions

gathering and recording data to help in answering questions

## Working scientifically

During years 3 and 4, pupils should be:

asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests

making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes

using straightforward scientific evidence to answer questions or to support their findings.

## Working scientifically

During years 5 and 6, pupils should be :

planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests

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

identifying scientific evidence that has been used to support or refute ideas or arguments

# The Science schemes

## Snap Science

**Are all flowers the same?**



Flowers all have 5 petals



1-5

**Do you agree?**

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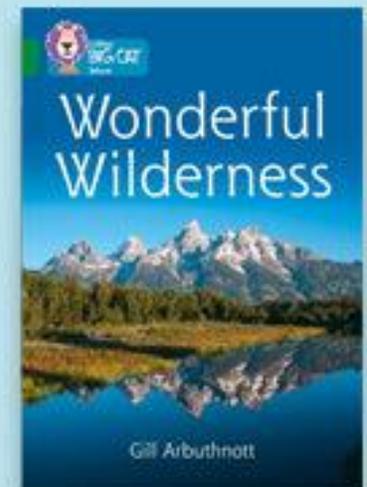
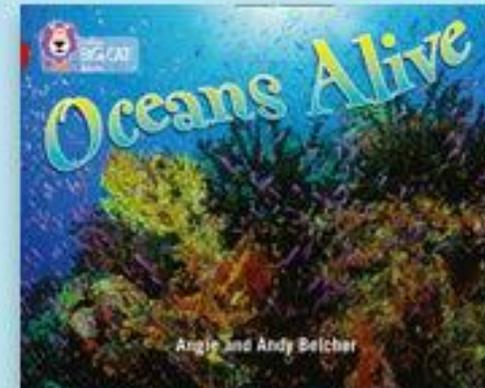
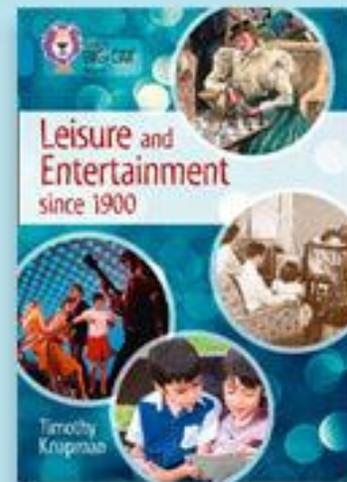
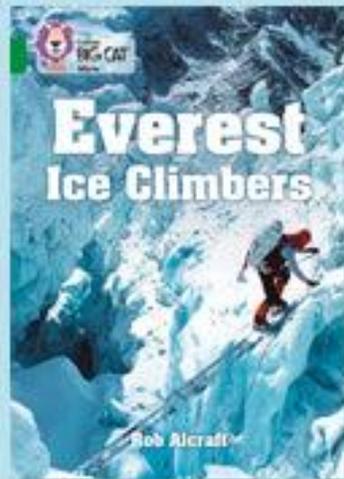
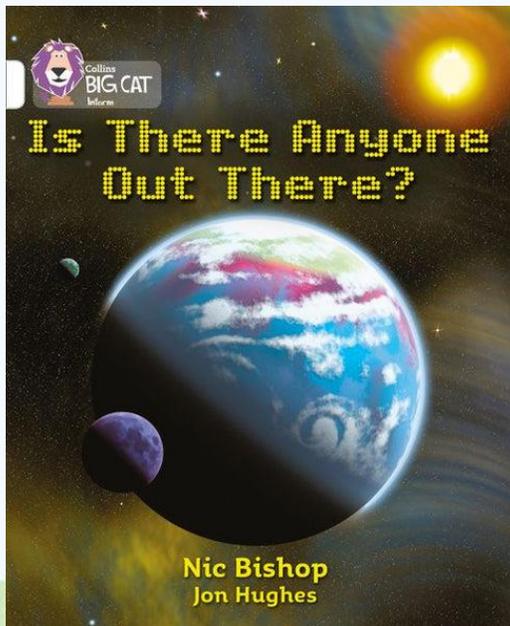
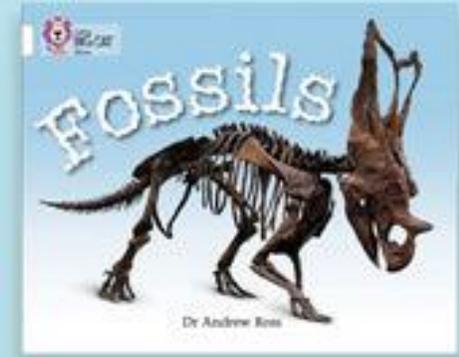
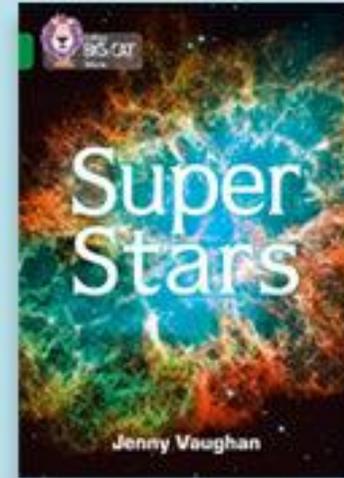
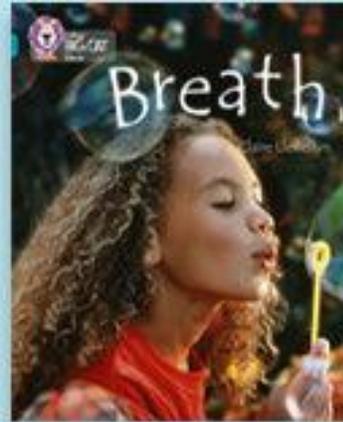
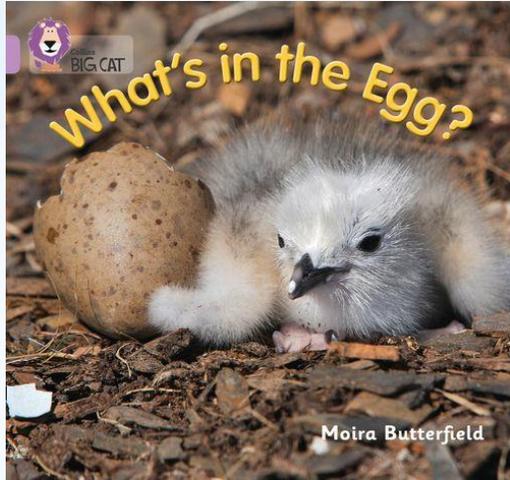
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# The Science Collins Books



# The Science Wall

**SCIENCE**

**Amazing Plants**

**Prediction**  
I think the beans will grow best in...

What you need  
- sand  
- soil  
- cotton  
- bean  
- 3 pots

Parts of a plant:  
Light, Water, Air, Space, Soil, Petals, leaves, Stem, Roots

Plants: fruit and seeds

Broad bean life cycle  
Apple life cycle

How do plants grow?

**Wriggly Worms**

**All About Worms**  
What Do Earthworms Eat?  
The ground and plants in the garden are full of worms. They are called earthworms. They are very important because they help to make the soil rich and healthy. They do this by eating the dead leaves and other organic matter in the soil. They then pass it out as worm droppings, which are full of nutrients. This helps plants to grow better.

**Life Cycle of an Earthworm**

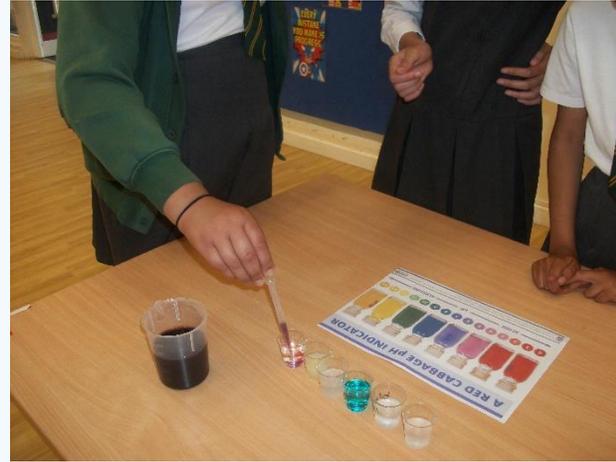
**All About Worms**  
Worms have two heads. They are called parapodia. They are used for breathing. They also have two pairs of legs. They are called parapodia. They are used for moving. They are very important because they help to make the soil rich and healthy. They do this by eating the dead leaves and other organic matter in the soil. They then pass it out as worm droppings, which are full of nutrients. This helps plants to grow better.

**plant**

**shoot**

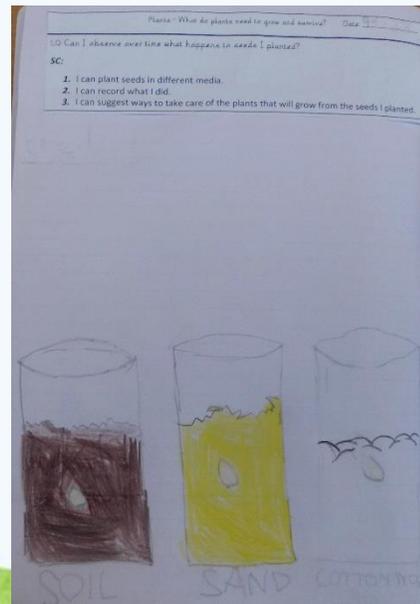
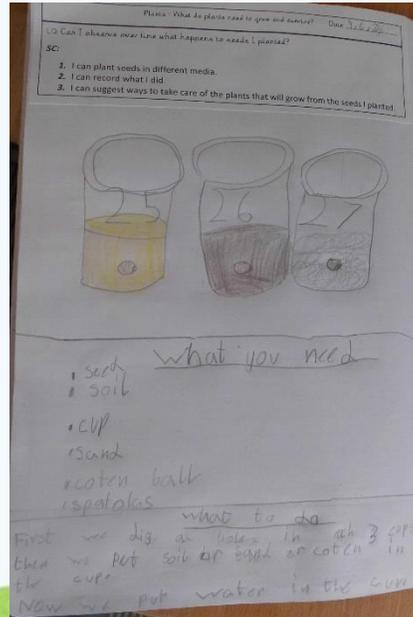
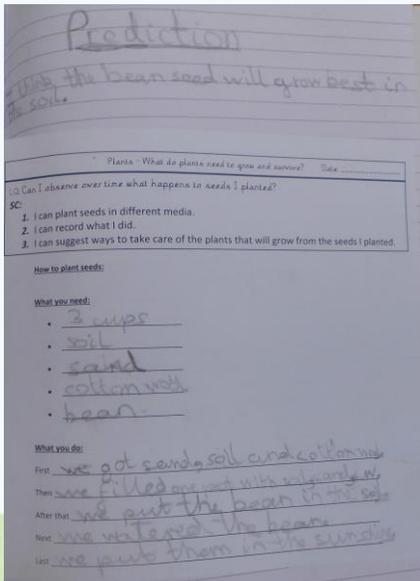
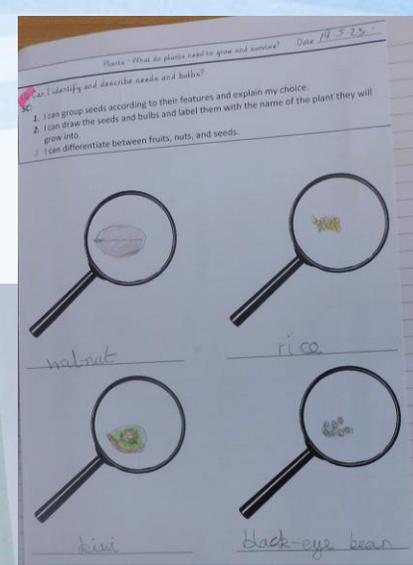
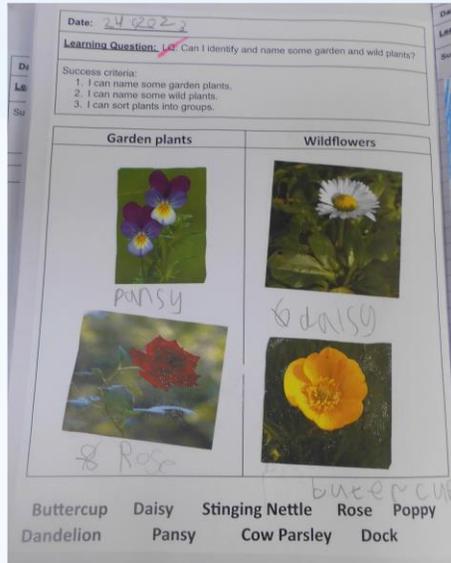
**root**

# Our Children at work,



# and book samples.

# KS1



# and KS2

Wednesday 22<sup>nd</sup> March

Q: Can I recall and retrieve information?

- 1) The leg chameleon lives in Madagascar
- 2) The leg chameleon uses its eyes to see its prey
- 3) So they can spit their tongue out with ease
- 4) The chameleon is a reptile
- 5) It's body is green and brown skin
- 6) They hunt during the night
- 7) They live in an amphibian
- 8) They eat cockroaches, crickets, spiders, lizards and other small insects
- 9) They have hair on their legs and a webbed foot

Wednesday 17<sup>th</sup> May

Q: Can I classify vertebrates into groups using their key characteristics?

**Animal Groups**

Vertebrates can be separated into five broad groups.

Human, chicken, crocodile, chick, Toad, Rhinos, shark, iguana, peacock, Salamanders, Sheep, Whale, Snake, penguin, gako

**Invertebrates**

Invertebrates do not have a backbone or a skeleton made of bones. Many have a hard shell outside their body to protect them. Others have soft, flexible bodies.

For example:  
Jellyfish, snails and starfish

Wednesday 24<sup>th</sup> May

Year 4 assessment

Which is the odd one out?

**Fish 1** **Fish 2** **Newt**

Explain? The Newt because it's an amphibian.

**Frog** **Alligator** **Turtle**

Explain? The Frog because it's an invertebrate.

**Mouse** **Elephant** **Alligator**

Explain? The mouse because the others are vertebrates.

**Eagle** **Ostrich** **Gorilla**

Explain? The Gorilla because it doesn't have wings.

Friday 28<sup>th</sup> April 2023

Q: Can I explain what metamorphosis is?

- I can explain metamorphosis and give examples.
- I can describe the life cycles of amphibians and insects.
- I can describe the similarities and differences between the life cycles of amphibians and insects.

**Frog**

The frog starts as an egg in a pond. The egg hatches and the tadpole grows. The tadpole has a long tail and gills. The tadpole grows into a froglet. The froglet has a shorter tail and no gills. The froglet grows into a frog. The frog has four legs and no tail.

**Butterfly**

The butterfly starts as an egg on a leaf. The egg hatches and the caterpillar grows. The caterpillar has a long body and legs. The caterpillar grows into a pupa. The pupa has a hard shell and legs. The pupa grows into an adult butterfly. The adult butterfly has four legs and wings.

**Dragonfly**

The dragonfly starts as an egg in a pond. The egg hatches and the nymph grows. The nymph has a long body and legs. The nymph grows into an adult dragonfly. The adult dragonfly has a long body and wings.

**Newt**

The newt starts as an egg in a pond. The egg hatches and the larva grows. The larva has a long tail and gills. The larva grows into a juvenile newt. The juvenile newt has a shorter tail and no gills. The juvenile newt grows into an adult newt. The adult newt has four legs and no tail.

Thursday 20<sup>th</sup> April 2023

Q: Can I describe the life cycle of different mammals?

- I can describe the process of reproduction in mammals.
- I can describe different types of mammals.
- I can describe and compare the life cycles of different mammals.

**Platypus**

The platypus lays eggs in a nest.

The female platypus lives in the nest for 6 months. It feeds milk from its mother.

The young platypus lives in the nest for 6 months. It feeds milk from its mother.

**Rabbit**

The rabbit eats grass and other plants.

The female rabbit lays a litter of young.

The young rabbit grows and develops.

The adult rabbit will mate and reproduce.

Thursday 19<sup>th</sup> January 2023

Q: Can I identify evidence of evolution from fossil records?

Shape and size of the skeleton

The horse's skeleton looks much thicker with its legs adapted to become longer. This was helped the horse to run faster and make it a less target for predators.

**Skull:**

The Equus skull is much larger than its ancestors. This was given more space for the brain and hence.

**Legs and feet:**

The ancestor of Equus has three separate toes on each foot whereas the modern horses have hooves. They have more evolved ankles which gives them more flexibility and grip.

Monday 26<sup>th</sup> January 2023

Q: Can I identify how human beings evolved?

**Comparison between Australopithecus and Homo Neanderthalensis**

Similarities - Both have big, wide nose and sloped foreheads.

Differences - Australopithecus were covered with more hair than Neanderthalensis. Australopithecus have bigger gaps between their toes, whereas Neanderthalensis have much less gap.

**Comparison between Homo Neanderthalensis and Human**

Similarities - Both the Homo Neanderthalensis and Human walk in two legs.

Differences - The hips for Homo Neanderthalensis is larger than human hips.

# Assessment

## Quiz - plants

1. Sort the images into the correct groups. ( Matching groups )



- Plants:
- Not plants:

2. Which of these plants do people often eat? ( Multiple choice )



3. What part of the plant absorbs nutrients from the soil, and supports the plant? ( Multiple choice )



4. Add the labels to the plant. ( Labelling quiz )



- flower
- roots
- leaf

Science Standards Grid: Year 1			
Pupil's Name & Class			
Working Towards the Expected Standard (WTS): 1w			
Working at the Expected Standard (EXS): 1S			
Working at Greater Depth Within the Expected Standard (GDS): 1S+			
Plants	Standard		
	(WT) 1w	(EXP) 1s	(GD) 1s+
I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.			
I can identify and describe the basic structure of a variety of common flowering plants, including trees.			
Animals including humans	Standard		
	(WT) 1w	(EXP) 1s	(GD) 1s+
I can identify and name a variety of common animals including fish, amphibians, reptiles, birds, mammals.			
I can identify and name a variety of animals that are carnivores, herbivores and omnivores.			
I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)			
I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.			
Materials	Standard		
	(WT) 1w	(EXP) 1s	(GD) 1s+
I can distinguish between an object and the material from which it is made.			
I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.			
I can describe the simple physical properties of a variety of everyday materials			
I can compare and group together a variety of everyday materials on the basis of their simple physical properties.			
Seasonal changes	Standard		
	(WT) 1w	(EXP) 1s	(GD) 1s+
I can observe changes across the four seasons.			
I can observe and describe weather associated with the seasons and how day length varies.			
Working Scientifically	Standard		
	(WT) 1w	(EXP) 1s	(GD) 1s+
I can ask simple questions and recognise that they can be answered in different ways...			
I can observe closely, using simple equipment.			
I can perform simple tests.			
I can identify and classify.			
I can use the observations and my ideas to suggest answers to questions.			
I can gather and record data to help in answering questions.			

Science - Animals including humans 5 Date 14.10.22

LQ: Can I describe the importance of exercise to stay healthy?

- I can describe the effects that exercise has on my body
- I understand that exercise is good for us and what happens if humans do not exercise
- I can identify some of the specific ways that it helps us
- I can record my findings in a simple chart

Number of beats before exercise	Exercise	Number of beats after exercise
72	20 jumps	90

What did I find out?

Before exercise it was 72 ev.  
Before jumping my heartbeat was 72. After exercise my heartbeat was 90.

Green



Pink



Monday 5<sup>th</sup> June 2023

Q: Can I plan an investigation?

Q: Can I understand variations in how components function?

Electricity Investigation

Q: Can I plan an investigation to understand variations in how components function?

Question: Does wire length affect how components in a circuit work?

Prediction: I believe the wire length will affect the bulb brightness due to the...

In my investigation, I will change the length of the wire, measure the brightness of the bulb, and I will keep the bulb, the cells and the switch the same.

Equipment:

- bulb
- wires (short)
- wires (long)
- batteries
- switch

Method:

- Firstly you have to create the circuit which includes wires (short) & bulb, I call switch. Then measure the brightness.
- Then disconnect the wires and replace them with longer wires.

Plants - What do plants need to grow?

SC: Can I identify and describe seeds and bulbs?

- I can group seeds according to their features and explain my choice.
- I can draw the seeds and bulbs and label them with the name of the plant they will grow into.
- I can differentiate between fruits, nuts, and seeds.

# Science trips, science week, outdoor learning



# Homework

## Year 2 Food Chains project for science week

For the Science Week, every child in Yr2 will have to prepare a science project about food chains. Please complete this and submit by 14<sup>th</sup> June 2023.

Below you can find a few examples to inspire you. Have fun!

Diorama:



Finger puppets from felt or paper:



Poster:



Masks:



KS1 Science: Habitats and food chains - mixed up food chains

Use this real life picture cut and stick activity to support the learning of food chains in KS1. This download also includes a food web to encourage greater depth pupils to consider their future learning. It complements our book 'Habitats and Food Chains' from our **FUNDAMENTAL Science** series. For more information, downloads and to purchase our books, please visit [www.rubytuesdaybooks.com](http://www.rubytuesdaybooks.com)

This download helps meet the following National Curriculum targets:

Year 2 Science: Living things and their habitats

Statutory requirements:

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, anyhow they depend on each other.

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.



Name \_\_\_\_\_ Date \_\_\_\_\_

### Mixed Up Food Chains

Look at these food chains. They are all mixed up!  
Cut out the images and then glue them onto the worksheet in the correct order.

#### Garden Food Chain 1



#### Garden Food Chain 2



#### Woodland Food Chain



Fact file:

### Food Chains

A food chain shows what eats what. It shows the flow of energy from one organism to the next, starting with a producer and ending with the top predator.

In the example below, algae is eaten by snails, which are eaten by froglets. Energy flows from the algae to the snails to the froglets.



In nature, all organisms are rarely eaten, and organisms themselves do not eat food. Organisms are eaten by other organisms, and energy flows from the top. The other organisms in food chains are consumers because they get their energy from consuming other organisms.

Consumers feed on other organisms. Primary consumers eat plants. Secondary consumers eat primary consumers. Tertiary consumers eat secondary consumers.

Producers are plants. Carnivores eat other animals. Omnivores feed on both plants and animals and eat the unassigned parts of plant and animal matter in nature.

A food web shows how different food chains are connected and how energy flows through part of an ecosystem. For example:



How many food chains are there in the web? Can you name the producers, primary consumers, secondary consumers and tertiary consumers? What will happen if the foxes were removed?

Book marks:



Others:



You can be creative and make your own in a different way. What other ideas could you have?

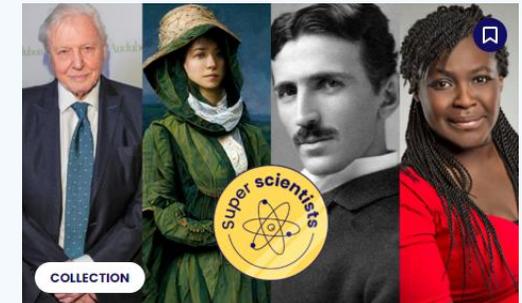
# Useful websites to help at home.



<https://explorify.uk/en/activities?search>



<https://energisingfutures.co.uk/levels/primary-resources/>



<https://www.bbc.co.uk/bitesize/subjects/zq26n39>



What does the heart do?



How do humans breathe?