Curriculum Handbook
Key Stage 1 and Key Stage 2
Science

Updated **October 2022**

Subject Lead **Mr Wyatt**

Curriculum Statement

INTENT

The aim of Science at Eynsham Community Primary School is for our children to be engaged, curious, ambitious and reflective. Our Science lessons aim to start by getting children thinking deeply about science, often through a warm-up activity such as 'Odd One Out' or 'Positive, Negative, Interesting'.

Our lessons always include a three-tiered learning objective, breaking down the expectation of the lesson for children. Recording in books should align specifically with the learning objective (children do not need to spend time recording the entirety of an investigation in their books). Each unit of Science will begin with a KCV document (these have been carefully developed over time, combining the National Curriculum with our own vision and expectation for the teaching of science) being shared with the children. The document sets out what the children should have covered previously in relation to the topic, relevant vocabulary for their year group and beyond, and the knowledge and skills objectives that they will be aiming to achieve during that term (or those two terms). The KCV documents have been carefully designed to ensure appropriate progression from one year group to another, from one unit of study to another. The scientific skills come from the National Curriculum expectations for Year 1-2, Year 3-4 and Year 5-6, and should be steadily developed over the course of those two year groups by the staff involved. Teachers are encouraged to ensure that the teaching sequence provided allows children to cumulatively build knowledge and skills as they progress through the unit.

In order to encourage a positive start to the unit for all children, students will be asked to record anything they already know about the topic and what they would like to find out. It is our intent that each term children will take part in investigations and experiments within their unit of science.

The children are to be actively encouraged to think of their own questions to investigate, both through our participation in the annual 'Big Science Event' and through the modelling and guidance given to them in class. Through the warm-up activities, group investigations and experiments, and through the sharing and understanding of scientific vocabulary, it is our intent to ensure that all children are engaged in science lessons, all children are being challenged, all children are making appropriate progress. To this end, different learners' needs are also to be met through the use of special weeks, inviting in specialists and scientific organisations to the school, and the use of video clips within class. Where appropriate to do so, teachers are encouraged to leave the classroom to engage pupils in their lessons (for example, by making use of the school's marsh area during units of work on plants and animals). Teachers are asked to ensure that expectation is high for all of their pupils, with the appropriate provision put in place to allow all students to access the curriculum. This might come in the form of group work, carefully selected pairs, consistent targeted questioning, recording frames (where necessary) and vocabulary sheets. Through the use of tools such as Concept Cartoons (to set out ideas for discussion, prediction and investigation) and stories/anecdotes (to engage all pupils and give their work purpose), alongside the work we do with parents, community groups and local businesses and charitable organisations, it is our intent to ensure that all children engage with Science, and that many intend to pursue it as a hobby, area of study, or as a career in the future.

IMPLEMENTATION

Science should be taught weekly at our school. Investigations and experiments should take place regularly in science lessons, with all pupils accessing the school's wide range of science resources. There will be a special science week each year (often in the summer terms). Year 1-6 will also take part in the annual 'Big Science Event', which includes an EPA winner each year. Children will develop an understanding of the notion of a 'fair test', and a follow-up 'investigation', with regular references being made as to the purpose and process of Science in the wider world.

Partner teachers will work together to ensure that they are clear about their subject knowledge for each unit of work. Teachers are encouraged to ask for time with the science lead to support them in the planning of particular units of science. This has been implemented to good effect in recent years. Book scrutinies will take place three times during the year to ensure that the quality of work being produced is of a high standard, and that pupils are engaging in investigation on a regular basis. The science lead will be involved in regular 'drop ins' to ensure that the delivery of lessons is consistent with our intent at Eynsham Community Primary School. Staff meetings allow for opportunities to reflect on book scrutinies and drop ins, sharing good practice and clarifying for staff key areas for further development.

All teachers (Years 1-6) use the school's three tick assessment system (on the KCV, in books), with our aim being to give children a solid understanding of how this works and how they can achieve to a high standard.

IMPACT

The overall impact of Science lessons at our school should be that children are engaged, curious, ambitious and reflective. In other words, our children should enjoy their science lessons, with many pupils aspiring to become scientists, to study Science at a higher level, and to see Science as something that is both an exciting and essential part of their futures. Children should look forward to their Science lessons, and should come to these sessions full of confidence, questions, and ideas for investigations. Most pupils will achieve at least ARE by the end of key stage two, with lots of children being assessed at greater depth by the end of their time at primary school.

RECORDING

All Science work should be recorded in Science books. Each unit will see a KCV being stuck in to the books (and used for assessment purposes), pupils' initial responses to the KCV ('What I Already Know' + 'What I'd Like To Find Out'), then evidence of one lesson per week. Recording in books should align specifically with the learning objective (children do not need to spend time recording the entirety of an investigation in their books). Where at all possible, recording should be handwritten by pupils (worksheets are only used where it is deemed more appropriate than handwritten work), of a high standard (underlined date, learning objective, piece of work), with diagrams (making us of a ruler when necessary) and tables drawn in pencil, but labelled/filled in in pen. In the event that a lesson only requires photographic evidence, a clear photograph should be stuck into the child's book, with appropriate details of what took place in the lesson typed underneath the picture/s. Recording will sometimes include cross-curricular links (particularly to Maths, English, PSHE, DT and PE), but the focus in the Science book should be on the Science leaning objective allocated to that lesson. Over time, pieces of work in books will include biographies, diary entries, explanatory texts and non-chronological reports. There should also be clear progression of the recording of data handling, from pictograms through to Venn diagrams and line graphs.

ASSESSMENT

Each lesson sees our teachers mark the children's work using green and pink pens. The teacher will place either one or two ticks next to each of the three tiered learning objectives. 'Green to grow' comments are written on some pieces of work to give the children feedback or further assess their understanding.

For each unit of Science, pupils will stick a KCV into their books. The KCV includes learning objectives for knowledge and scientific skills. All of these are teacher assessed both during, and at the end of the unit. Teachers use a three tick system to assess each objective. One tick indicates that the child is working towards ARE, two ticks indicates working at ARE and three ticks tells us that the child has achieved the objective to a standard of greater depth. At each of the school's assessment points, this tick system is then used by the class teacher to make an informed teacher assessment.

At the end of Year 6 (Term 5), pupils complete a Science sample SATs paper and any areas that need addressing are taught again/more thoroughly in Term 6.

INCLUSION

In our Science lessons, our teachers aim to ensure that every child is valued, every child is challenged and every child is appropriately supported. A three-tiered learning objective system is used at the school to give the children clarity as to their potential achievement in any given lesson. Vocabulary banks, carefully selected partners and groups, and writing frames are all part of the class teacher's consideration when preparing their lessons. The aim is also to ensure that the lessons are as engaging as possible, with lots of investigations/experiments (use of resources; practical learning) taking place, anecdotes used as stimulus ('Mr Williams needs the perfect viscosity of barbecue sauce to ensure that he doesn't spill any on his new jumper whilst eating a cheeseburger' etc), examples shared with the children, and predictions being modelled.

CULTURAL CAPITAL

At our school we want every child to enjoy science, every child to experience science, and every child to understand that there are lots of opportunities (globally, nationally and locally) for them to become the scientists and engineers of the future.

Eynsham Community Primary School strives to showcase the wide range of future professions available to pupils in the fields of science and engineering. Every year, we host a science week where parents, local science and engineering companies, local educational establishments and paid organisations visit the school to work with the children and share their passion of and expertise in the world of science and engineering. The school also takes part in Science Oxford's annual 'Big Science Event', giving pupils the opportunity to devise their own lines of scientific enquiry. The Eynsham Partnership Academy has also (recently) agreed to host its own annual final for this event, inviting two teams per school to take part in a showcase of investigation and scientific presentation.

We hold strong links with Science Oxford, with our aim being that each child either visits their centre or is visited by one of their experts for a workshop or show.

Curriculum Overview

YEAR	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
1	Everyday Materials	Seasonal Changes	Animals, Including Humans	Animals, Including Humans	Plants	Plants
2	Uses of Everyday Materials: Including Focus on Flammability Linked to Work on Great Fire of London	Uses of Everyday Materials: Including Focus on Flammability Linked to Work on Great Fire of London	Animals, Including Humans: Focus on the Human Body, How to Keep Fit, Impact of Lifestyles, Healthy Living	Plants	Biodiversity	Living Things and Their Habitats
3	Forces and Magnets	Rocks	Animals, Including Humans	Light	Plants	Plants
4	Sound	Electricity	Animals, Including Humans, Digestion and Teeth	Living Things and Their Habitats	Biodiversity	States of Matter
5	Animals, Including Humans	Animals, Including Humans	Forces, Including Mechanisms, Levers, Gears and Pulleys	Earth & Space	Properties and Changes of Materials	Living Things and Their Habitats
6	Light	Evolution and Inheritance	Living Things and Their Habitats	Animals, Including Humans	Electricity	Biodiversity

Skills Progression

PLANTS						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can explore the natural world around me. I can recognise similarities and differences between different environments. I can understand some important processes and changes in the natural world in plants. I can make observations and draw pictures of plants.	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I understand the difference between deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees. I understand that people grow plants for food and decoration.	I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can explore the requirements of plants for life and successful growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			

Skills Progression

SEASONAL CHANGES						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can understand some important processes and changes in the natural world including within the seasons. I can understand the effects of changing seasons in the natural world around me.	I can observe changes across the 4 seasons. I can observe and describe weather associated with the seasons and how day length varies.					

Skills Progression

EVOLUTION						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can describe what I see and hear whilst I am outside.						I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. I can write a biography of a significant scientist, commenting on the impact of their work.

Skills Progression

ANIMALS INCLUDING HUMANS

FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
I can identify and name a range of animals in contrast to their locations. I can talk about different ways to stay healthy. I can begin to manage my own personal hygiene and personal needs.	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common 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.	I can notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (e.g. water, food and oxygen). I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	I can 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. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. I can recognise that animals have to get their food by eating plants or other animals. I can recognise that food can be divided into various groups: fruit and vegetables (vitamins); carbohydrates (starchy foods); milk and dairy; eggs and meat (protein); fat and sugar.	I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey.	I can describe the changes that develop through a human lifetime. I can draw a timeline to indicate stages in the growth and development of humans. I can learn about the changes experienced in puberty. I can research the gestation periods of other animals and comparing them with humans. I can find out and record the length and mass of a baby as it grows. I can describe the ways in which nutrients and water are transported within animals, including humans.	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function. I can compare and contrast the human skeleton with that of another animal.

Skills Progression

LIVING THINGS AND THEIR HABITATS						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can talk about animals in different habitats.		I can explore and compare the differences between things that are living, dead and things that have never been alive. I can 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. I can identify and name a variety of plants and animals in their habitats, including microhabitats. I can 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.		I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. I can recognise that environments can change and that this can sometimes pose dangers to living things.	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals. I can write a biography of the life and work of David Attenborough.	I can 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. I can give reasons for classifying plants and animals based on specific characteristics. I can write a biography of the scientist Carl Linnaeus, explaining how his work came to be influential. I can write a detailed non-chronological report about an animal.

Skills Progression

MATERIALS/STATES OF MATTER						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can understand some important processes and changes in the natural world including states of matter.	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.	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		I can compare and group materials together, according to whether they are solids, liquids or gases. I can observe that some materials change state when they are heated/ cooled, and measure/research the temperature at which this happens in degrees Celsius (°C). I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	I can 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. I can discover that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I can 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.	

Skills Progression

FORCES / MAGNETS						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can talk about things that are heavy and light and make comparisons.			I can compare how things move on different surfaces. I can notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having 2 poles. I can predict whether 2 magnets will attract or repel each other, depending on which poles are facing.		I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. I can write a biography of Isaac Newton or Galileo Galilei.	

Skills Progression

ROCKS						
FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. I can recognise that soils are made from rocks and organic matter.			

Skills Progression

LIGHT						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can talk about how my senses help me.			I can recognise that we need light in order to see things and that dark is the absence of light. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object. I can find patterns in the way that the sizes of shadows change.			I can recognise that light appears to travel in straight lines. I can 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. I can explain how the human eye works. I can 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. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Skills Progression

SOUND						
FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
I can talk about how my senses help me.				I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.		

Skills Progression

ELECTRICITY						
FOUNDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
				I can identify common appliances that run on electricity. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I can recognise some common conductors and insulators, and associate metals with being good conductors.		I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can 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. I can use recognised symbols when representing a simple circuit in a diagram.

Skills Progression

EARTH & SPACE						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can name some of the planets.					I can describe the movement of the Earth and other planets relative to the sun in the solar system. I can describe the movement of the moon relative to the Earth. I can describe the sun, Earth and moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	

Skills Progression

WORKING SCIENTIFICALLY						
FOUNDATION	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
I can make comments about things I hear and ask questions to clarify my understanding. I can engage in investigations and test out ideas.	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 my observations and ideas to suggest answers to questions. I can gather and record data to help answer questions.		i can ask relevant questions and use different types of scientific enquiries to answer them. I can set up simple practical enquiries, comparative and fair tests. I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. I can gather, record, classify and present data in a variety of ways to help answer questions. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. I can identify differences, similarities or changes related to simple scientific ideas and processes. I can use straightforward scientific evidence to answer questions or to support my findings.		I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can report and present 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. I can identify scientific evidence that has been used to support or refute ideas or arguments.	

YEAR 1 Everyday Materials

PRIOR LEARNING

This unit of work is first taught in Year 1. Most children will be aware of the fact that different objects are made of different things, such as wood, metal or plastic. They should be able to articulate that different objects feel different to each other.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- 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.
- I can ask simple questions and recognise that they can be answered in different ways.
- I can observe closely, using simple equipment.
- I can identify and classify.
- I can use my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

SUBJECT SPECIFIC VOCABULARY 3

Absorbent
Material that easily soaks up liquid.

Inventor
Someone who invents or creates things that have not been made before.

Opaque
If an object is opaque, light cannot travel through it.

Properties
The qualities of materials, particularly those that mean it can be used for specific purposes.

Suitability
Whether something is acceptable for a given purpose.

Translucent
If something is translucent, light can partly pass through it (e.g. frosted or tinted windows).

Transparent
If an object is transparent, you can see through it and light can easily pass through it.

HIGH FREQUENCY VOCABULARY 2

Bendy	Natural	Waterproof
Fabrics	Shiny	Elastic
Metal	Stretchy	Man-made
Rough	Dull	Rock
Stiff	Glass	Soft
Brick	Plastic	Wood
Foil	Smooth	

KEY CONCEPT QUESTIONS

Which material is a pair of scissors made from?

Is plastic a natural material or is it made by a person (manmade)?

Which words can you use to describe glass?

What is the best material to make curtains with? Explain your answer.

YEAR 1 Seasonal Changes

PRIOR LEARNING

Children should have some understanding of the four seasons.

In school and at home, they may well have talked about the different weather that we have in this country at different times of the year.

They may have also discussed the impact that changes in the weather have on plants and animals in this country.

Some children may also be able to tell you about the hours of daylight at different times of the year.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can observe changes across the 4 seasons.
- I can observe and describe weather associated with the seasons and how day length varies.
- 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 my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

HIGH FREQUENCY VOCABULARY 2

autumn	change	rainfall
Season	shadows	spring
summer	snow	winter

SUBJECT SPECIFIC VOCABULARY 3

Climate
The general weather conditions usually found in a particular place.

Daylight hours
The period in a day when there is light (sunrise to sunset).

Elements
The weather conditions (especially bad ones).

Observe
To watch carefully.

Pictogram
A type of graph that uses pictures or symbols to show or compare data.

Precipitation
Water that falls from the clouds towards the ground, especially as rain or snow.

Rainfall gauge
A rain gauge is an instrument used by weather experts to gather and measure rainfall.

Seasonal
Something that happens during a particular time in the year.

Sunrise
The time in the morning when the sun starts to rise in the sky.

Sunset
The time in the evening when you last see the sun in the sky.

Temperature
The measured amount of heat in a place or in the body.

Thermometer
A device used for measuring temperature, especially of the air or in a person's body.

KEY CONCEPT QUESTIONS

What is the weather like at different times of the year?

What impact does the weather have on our plants?

What impact does the weather have on animals?

Why do you think that the weather changes?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Picture books about seasons.

Catching rain water and recording the weekly rainfall on a class bar chart.

Weather poems.

https://www.outstandingscience.co.uk/index.php?action=view_page&page=view_unit&unit=1d

YEAR 1 Animals Including Humans

PRIOR LEARNING

This unit will be taught in every year group (1-6).

Children may have learnt about their body through song (`Heads, Shoulders, Knees and Toes').

Pupils will probably have already engaged (at home/at school) in discussions about healthy eating and the importance of exercise.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.
- I can identify and name a variety of common 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.
- 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 classifying.
- I can use my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

SUBJECT SPECIFIC VOCABULARY 3

Amphibian
An animal, such as a frog, that lives both on land and in water but must produce its eggs in water.

Carnivore
An animal that eats meat.

Cold-blooded
Cold-blooded animals can only control their body heat by taking in heat from the outside or by being very active (e.g. snakes and lizards are cold-blooded).

Eardrum
A thin piece of skin inside the ear that moves backwards and forwards very quickly when sound waves reach it, allowing you to hear sounds.

Heartrate
The number of times a person's heart beats in a minute (or in a specified time).

Herbivore
An animal that eats only plants.

Invertebrate
An animal with no spine.

Mammal
Any animal of which the female feeds her young on milk from her own body. Most mammals give birth to live young, not eggs.

Nostril
Either of the two openings in the nose through which air moves when you breathe.

Omnivore
An animal that is naturally able to eat both plants and meat.

Reptile
An animal that produces eggs and uses the heat of the sun to keep its blood warm.

Warm-blooded
Having a body temperature that stays the same and does not change with the temperature of the environment.

Vertebrate
Having a spine (backbone).

HIGH FREQUENCY VOCABULARY 2

Birds	Herb	Touch
Feet	See	Eyes
Hear	Toes	Healthy
Nose	Exercise	Mouth
Taste	Hands	Smell
Ears	Meat	Vegetable
Fish	Sense	

KEY CONCEPT QUESTIONS

What do you use your eyes, nose, ears, mouth and hands for?

How is a lion different to a cat?

Draw a picture of a person and label the parts of their body.

Describe what is the same and what is different about a cow and a person.

YEAR 1 Plants

PRIOR LEARNING

EYFS: Plants can grow from seeds.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- I understand the difference between deciduous and evergreen trees.
- I can identify and describe the basic structure of a variety of common flowering plants, including trees.
- I understand that people grow plants for food and decoration.
- 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 my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

SUBJECT SPECIFIC VOCABULARY 3

Bulb
Something that you plant, which grows into a flower or plant.

Branch
One of the parts of a tree that grows out from the main trunk and has leaves, flowers, or fruit on it.

Common
Something that is found in large numbers.

Crop
The total amount collected of a plant such as a grain, fruit or vegetable grown in large amounts.

Deciduous
A tree that loses its leaves in autumn each year.

Evergreen
A tree or bush that has green leaves all year round.

Fertiliser
A natural or chemical substance that is spread on the land or given to plants, to make plants grow well.

Flowering
Trees or plants which produce flowers.

Herb
A plant which has leaves that are used for flavouring in cooking or as a medicine.

Stem
The thin, upright part of a plant on which the flowers and leaves grow.

Vegetation
Plants, flowers, bushes, shrubs and trees.

Wild
Plants that live and grow in natural surroundings.

HIGH FREQUENCY VOCABULARY 2

Flower	Plant	Vegetable
Petal	Trunk	Leaf
Tree	Garden	Seed
Fruit	Root	Weed

KEY CONCEPT QUESTIONS

Which plants can be eaten?

What do plants need in order to grow well?

Draw a flower or tree and label its parts.

Can a seed grow in the dark? Explain your answer.

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Plant a bean/seed and observe its growth.

Record observations through pictures, labelled diagrams, tables (plant height), and diary entries.

Go on a wild plant hunt around the schools grounds – create a tally chart.

Visit to Harcourt Arboretum or the new Science Oxford site.

YEAR 2 Uses Of Everyday Materials

PRIOR LEARNING

In Year 1, the children will have learnt to distinguish between an object and the material it is made from (e.g. table/wood). They will have learnt to identify, group and name everyday materials and describe some of their key properties.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- I can ask simple questions and recognise that they can be answered in different ways.
- I can observe closely, using simple equipment.
- I can identify and classify.
- I can use my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

HIGH FREQUENCY VOCABULARY 2

Absorbent	Plastic	Waterproof
Glass	Shiny	Inventors
Opaque	Transparent	Natural
Rough	Heat	Rock
Translucent	Metal	Suitability
Fabrics	Properties	Wood
Man-made	Smooth	

KEY CONCEPT QUESTIONS

What ingredients does fire require?

Why did the Great Fire Of London spread?

How do we make everyday items safe from the risk of fire?

Which materials are flammable?

Why are different materials commonly used for different purposes?

What are the key properties of this material?

SUBJECT SPECIFIC VOCABULARY 3

Conductivity
The property of allowing heat or electricity to go through something, or the degree to which a substance allows this this.

Durability
The fact of something continuing to be used without getting damaged.

Fire Triangle
The Fire Triangle or Combustion Triangle is a simple model for understanding the necessary ingredients for most fires. The triangle illustrates the three elements a fire needs to ignite: heat, fuel, and an oxidizing agent (usually oxygen).

Flammable
Something which burns easily.

Fuel
A substance that is used to provide heat or power, usually by being burned.

Insulator
A material or covering that electricity, heat, or sound cannot go through.

Oxygen
A gas with no smell or colour. Oxygen forms a large part of the air on Earth, and is needed by animals and plants to live.

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Science Oxford – 'Great Fire Of London' workshop.

Term 1-2 topic links.

Visit from local fire brigade.

Create a board game based on the Great Fire Of London, incorporating scientific questions.

YEAR 2 Animals including Humans

PRIOR LEARNING

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.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can notice that animals, including humans, have offspring which grow into adults.
- I can find out about and describe the basic needs of animals, including humans, for survival (e.g. water, food and oxygen).
- I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
- 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 my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

KEY CONCEPT QUESTIONS

Do all animals have babies? Are they all born in the same way?

What do animals need to stay alive?

What is exercise and why is it important?

Which are the healthiest foods to eat?

Why is it important to wash ourselves and brush our teeth?

SUBJECT SPECIFIC VOCABULARY 3

Balanced diet
A variety of foods, which, when eaten regularly, consist of a healthy set of meals.

Hygiene
A collection of habits that keep your body clean and healthy.

Emotional Health
How you are feeling (emotionally) about things.

Vitamins
Nutrients that our body needs in order to keep healthy. These are usually found in the plants and animals that we eat.

Germs
Tiny living things that we cannot see. They live in our body and on other surfaces, and can cause disease.

Exercise
Moving parts of the body regularly to become healthy and stronger.

HIGH FREQUENCY VOCABULARY 2

Fish	Carnivore	Temperature
Environment	Herbivore	Gills
Backbone	Omnivore	Alive

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Compare the heights of people at different stages of their lives.

Investigate how animals are cared for in zoos and on farms.

Research animal charities, such as the RSPCA, and how they keep animals safe.

Record a food diary and evaluate your diet.

Collect information about favourite foods and present it in a pictogram or bar chart.

Participate in a series of exercises and investigate how each exercise impacts on you in various ways.

YEAR 2 Plants

PRIOR LEARNING

In Year 1, children learn to identify and name various plants and trees. They learn about the difference between deciduous and evergreen trees and are taught that people grow plants both for decoration and for the purpose of feeding. Pupils also learn to identify and describe the basic structure of a variety of common flowering plants, including trees.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can observe and describe how seeds and bulbs grow into mature plants.
- I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- 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 my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

KEY CONCEPT QUESTIONS

Draw a picture of a flower and label the different parts.

What is the difference between an evergreen tree and a deciduous tree?

What do seeds need in order to grow well?

Would a seed grow better indoors or outdoors? Explain your answer.

HIGH FREQUENCY VOCABULARY 2

Branches	Evergreen	Reproduce
Bulb	Flowering	Seed
Common	Herb	Stem
Crop	Nutrients	Vegetation
Deciduous	Petal	Wild

SUBJECT SPECIFIC VOCABULARY 3

Absorb
To take something in (like water), especially gradually.

Annual
Something that happens every year.

Biennial
Something that happens every two years.

Carbon dioxide
The gas formed when carbon is burned, or when people or animals breathe out.

Crop
The total amount collected of a plant such as a grain, fruit or vegetable grown in large amounts.

Nutrients
Any substance that plants or animals need in order to live and grow.

Overcrowding
When too many plants are trying to grow near to each other.

Perennial
A plant that lives for several years.

Reproduce
To create a new living thing of the same type as itself.

Root vegetables
Where the root of the plant is the edible part (e.g. potatoes or carrots).

Seedling
A very young plant that has grown from a seed.

Stem vegetables
Where the stem of the plant is the edible part (e.g. celery or leeks).

Surroundings
The place where a plant is and the conditions around this.

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Plant beans/seeds in different conditions and observe their growth.

Record observations through pictures, labelled diagrams, tables (plant height), instructional texts, explanations and diary entries.

Go on a wild plant hunt around the schools grounds – create a tally chart.

Visit to Harcourt Arboretum or the new Science Oxford site.

Watch time lapse footage.

YEAR 2 Biodiversity

PRIOR LEARNING

Seasonal Changes: The children observe changes in the weather across the four seasons.
Animals, Including Humans: Our pupils learn to name some animals, identifying carnivores, herbivores and omnivores.
Plants: The children learn to identify some common wild and garden plants, identifying and describing the basic structures of some of these plants.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can design a bug hotel for our school grounds.
- I can identify different birds around our school site.
- I can draw a labelled diagram of a bee.
- I can plant a pollinating flower and explain how to help it to grow well.
- I can create a tally chart of the number of insects in a part of my school.

KEY CONCEPT QUESTIONS

How many different insects and birds can you name?

Why are insects important in our world?

What might be bad about building houses on a field at the edge of a village?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Design and make a bug hotel.

Plant flowers and look after them as they grow.

Oxford Botanic Garden and Arboretum

SUBJECT SPECIFIC VOCABULARY 3

Colony
A group of animals, insects, or plants of the same type that live together (e.g. bees).

Habitat
The natural environment in which an animal or plant usually lives.

Nectar
A sweet liquid produced by flowers and collected by bees and other insects (bees turn nectar into honey).

Pollen
A powder, produced by the male part of a flower, which causes the female part of the same type of flower to produce seeds. It is carried by insects or the wind.

Pollution
Damage caused to water, air, (etc.) by harmful substances or waste.

Species
A set of animals or plants in which the members have similar characteristics to each other and can breed with each other (e.g. dogs).

HIGH FREQUENCY VOCABULARY 2

Animals	Earth	Ocean
Carbon dioxide	Forest	Oxygen
Desert	Insects	Plants

YEAR 2 Living Things And Their Habitats

PRIOR LEARNING

The children will have studied plants and animals in Year 1. They should be able to identify things which are alive, dead and that have never been alive. Pupils should be able to name some common plants, trees and animals. They should also have a basic understanding of animals' needs and that they live in different places, as well as knowing that they can be classified and that they have offspring.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can explore and compare the differences between things that are living, dead and things that have never been alive.
- I can 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.
- I can identify and name a variety of plants and animals in their habitats, including microhabitats.
- I can 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.
- I can ask simple questions and recognise that they can be answered in different ways.
- I can observe closely, using simple equipment.
- I can identify and classify.
- I can use my observations and ideas to suggest answers to questions.
- I can gather and record data to help in answering questions.

KEY CONCEPT QUESTIONS

What is a habitat?

What is a microhabitat?

How do animals and plants depend on each other?

Can an animal or plant adapt to different conditions?

What are the primary reasons (factors) that impact on where animals chose to live?

HIGH FREQUENCY VOCABULARY 2

Carnivore	Minibeast	Tree
Herbivore	Source	Habitat
Prey	Food Chain	Plant
Depend	Omnivore	Vegetation

SUBJECT SPECIFIC VOCABULARY 3

Adaptation
The process of changing to suit different conditions.

Biomes
A part of the Earth's surface where plants and animals are found.

Consumer
Something that eats something else in a food chain.

Invertebrate
An animal with no spine.

Microhabitat
A micro habitat is a very small, specific habitat for animals and plants, for example a pond or a rotting log.

Offspring
The young of an animal.

Predator
An animal that hunts, kills, and eats other animals.

Producer
The plant at the beginning of a food chain.

Vertebrate
An animal with a spine.

YEAR 3 Forces and Magnets

PRIOR LEARNING

This unit of work is only taught in Year 3. Prior to planning the unit of work, identify existing knowledge, misconceptions and gaps through verbal pre-assessment with the class. Children should know that magnets can pick some things up.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can compare how things move on different surfaces.
- I can notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.
- I can observe how magnets attract or repel each other and attract some materials and not others.
- I can 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.
- I can describe magnets as having 2 poles.
- I can predict whether 2 magnets will attract or repel each other, depending on which poles are facing.
- I can set up simple practical enquiries, comparative and fair tests.
- I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- I can use straightforward scientific evidence to answer questions or to support my findings.

HIGH FREQUENCY VOCABULARY 2

Attract	Metal	Repel
Material	Properties	Magnet (ism)
Push	Contact	Pull
Compass	Poles	Surface

SUBJECT SPECIFIC VOCABULARY 3

Atoms
Everything is made up of atoms. They are so small that they require a microscope to be seen.

Attraction
A force by which things are pulled towards each other.

Current
The movement of electricity.

Electric Field
The area surrounding an object with an electrical charge where positive and negative particles are reacting with each other.

Electromagnetism
The interaction of electric currents or fields and magnetic fields.

Electrons
An extremely small piece of matter with a negative electrical charge.

Inner Core
The inner core is the very centre of the Earth.

Magnetic Field
The magnetic field is the area around a magnet in which there is magnetic force.

Proton
A type of particle with a positive electrical charge that is found in the nucleus of all atoms.

Repulsion
The force in physics that pushes two objects apart.

KEY CONCEPT QUESTIONS

What is a force?

How do magnets work?

Why are some materials magnetic?

Where are magnets used in the world of work?

Can they be used to help people?

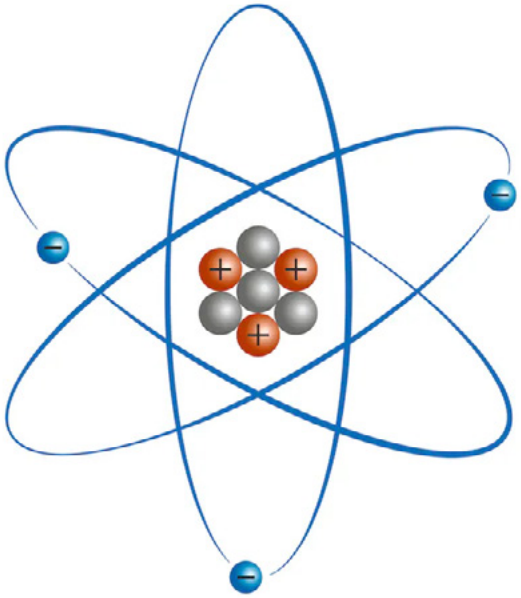
Where are magnets in use in our community?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Invite Siemens in to work with the year group on magnets and explain their role in engineering and industry.

https://www.youtube.com/watch?v=MZtTVsIOA9c

Encourage families to attend the Family Open Day at Science Oxford on 9th November.



Atom structure

- Proton
- Neutron
- Electron

YEAR 3 Rocks

PRIOR LEARNING

This unit of work is only taught in Year 3. However, in Year 2 pupils will have been 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. They will also have learnt to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. They should also know: that soil contains nutrients and these help plants to grow; the meaning of the word absorb; why some materials are used for certain purposes because of their properties.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- I can recognise that soils are made from rocks and organic matter.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can set up simple practical enquiries, comparative and fair tests.
- I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- I can use straightforward scientific evidence to answer questions.

HIGH FREQUENCY VOCABULARY 2

Chalk	Rock	Weathering
Granite	Smooth	Flint
Rain	Water	Pressure
Sandstone	Erosion	Sand
Volcano	Hard	Soil
Clay	Rough	Wind
Gravel	Soft	

SUBJECT SPECIFIC VOCABULARY 3

Absorb
To take something in, especially gradually (e.g. water, carbon dioxide or nutrients).

Bedrock
The hard area of rock in the ground that holds up the loose soil above.

Decaying
To become gradually damaged, worse, or less.

Fragment
A small piece or a part, especially when broken from something whole.

Grain
A very small piece of a hard substance (e.g. sand).

Igneous
Rocks formed from magma.

Impermeable
If a substance is impermeable, it does not allow liquids or gases to go through it.

Imprint
To mark a surface by pressing something hard into it.

Magma
Hot liquid rock found just below the surface of the earth.

Man-made
Artificial rather than natural.

Metamorphic
Rock which changes into a new form and structure by very great heat and pressure.

Mineral
A valuable or useful chemical substance that is formed naturally in the ground.

Molten
Molten metal or rock is in a liquid state because of great heat.

Natural
As found in nature and not involving anything made or done by people.

Nutrient
Any substance that plants or animals need in order to live and grow.

Palaeontology
The study of fossils as a way of getting information about the history of life on Earth and the structure of rocks.

Permeable
If a substance is permeable, it allows liquids or gases to go through it.

Porous
Something that is porous has many small holes, so liquid or air can pass through, especially slowly.

Prehistoric
Describing the period before there were written records.

Preserve
To keep something as it is, especially in order to prevent it from decaying or being damaged or destroyed.

Property
A quality in a substance or material (e.g. steel is strong).

Sediment
A soft substance that is like a wet powder and consists of very small pieces of a solid material that have fallen to the bottom of a liquid.

Sedimentary
Rock made from sediment left by the action of water, ice or wind.

KEY CONCEPT QUESTIONS

What do you think a fossil is?

Try to name some different types of rocks.

How could you separate rice, stones, sand and water if they were mixed together?

What does the word 'erosion' mean?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Study erosion in relation to waterfalls and/or create your own erosion experiment (using guttering, rocks, mud, clay, sand, salt, water etc).

Cross-curricular link with geography to understand the difference between igneous, sedimentary and metamorphic rocks.

Use filter paper, sieves and colanders to separate different solids. Look at evaporation (using a candle or warmth over time) as a way to separate water and salt.

YEAR 3 Animals Including Humans

PRIOR LEARNING

Children will have learnt about exercise, eating the right amounts of different types of food and that hygiene is important for a human's health.

They have also studied what children can do to be safe and happy. (Social and Emotional Health)

They should have learnt that exercise gives our heart a workout, strengthens our muscles in different parts of the body, keeps us flexible and makes us feel good. (Physical Health)

They will have looked at how fruits and vegetables (rich in vitamins) help reduce tooth decay, are good for the eyes, help us go to the toilet, keep our heart healthy, are low in calories, keep our brains healthy and help our lungs to work better.

Children will have focused on the importance of personal hygiene.

They will have studied life cycles and should know that they are continuously happening within animals in order for species to continue.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can 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.
- I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.
- I can recognise that animals have to get their food by eating plants or other animals.
- I can recognise that food can be divided into various groups: fruit and vegetables (vitamins); carbohydrates (starchy foods); milk and dairy; eggs and meat (protein); fat and sugar.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

HIGH FREQUENCY VOCABULARY 2

Alive	Omnivore	Temperature
Emotional health	Balanced diet	Elbow
Herbivore	Exercise	Germs
Backbone	Skeleton	Vitamins
Environment	Carnivore	
	Gills	

KEY CONCEPT QUESTIONS

Why do humans need to have a skeleton?

What do the muscles in our body do?

Which types of food should we eat more of or less of?

Is it better to be a herbivore, a carnivore or an omnivore?

SUBJECT SPECIFIC VOCABULARY 3

Contract
To make smaller by drawing together; shrink or make tighter.

Carbohydrate
One of several substances, such as sugar or starch, which provide the body with energy, or foods containing these substances such as bread, potatoes, pasta and rice.

Endoskeleton
The internal skeleton of an animal, especially the bony skeleton of vertebrates.

Exoskeleton
The protective or supporting structure covering the outside of the body of many animals.

Fat
A solid or liquid substance from animals or plants, used especially in cooking.

Joint
A place in your body where two bones are connected.

Muscles
Something inside your body which connects two bones and which you use when you make a movement.

Nutrients
Any substance that plants or animals need in order to live and grow.

Organs
A part of the body of an animal or plant that performs a particular job (e.g. the human heart).

Protect
To keep something safe from injury or damage.

Protein
One of the many substances found in food such as meat, cheese, fish, or eggs, which is necessary for the body to grow and be strong.

Support
Your skeleton supports your body.

Tendons
Strong pieces of tissue in the body connecting muscles to bones.

Vertebrate
Having a spine (humans are vertebrates).

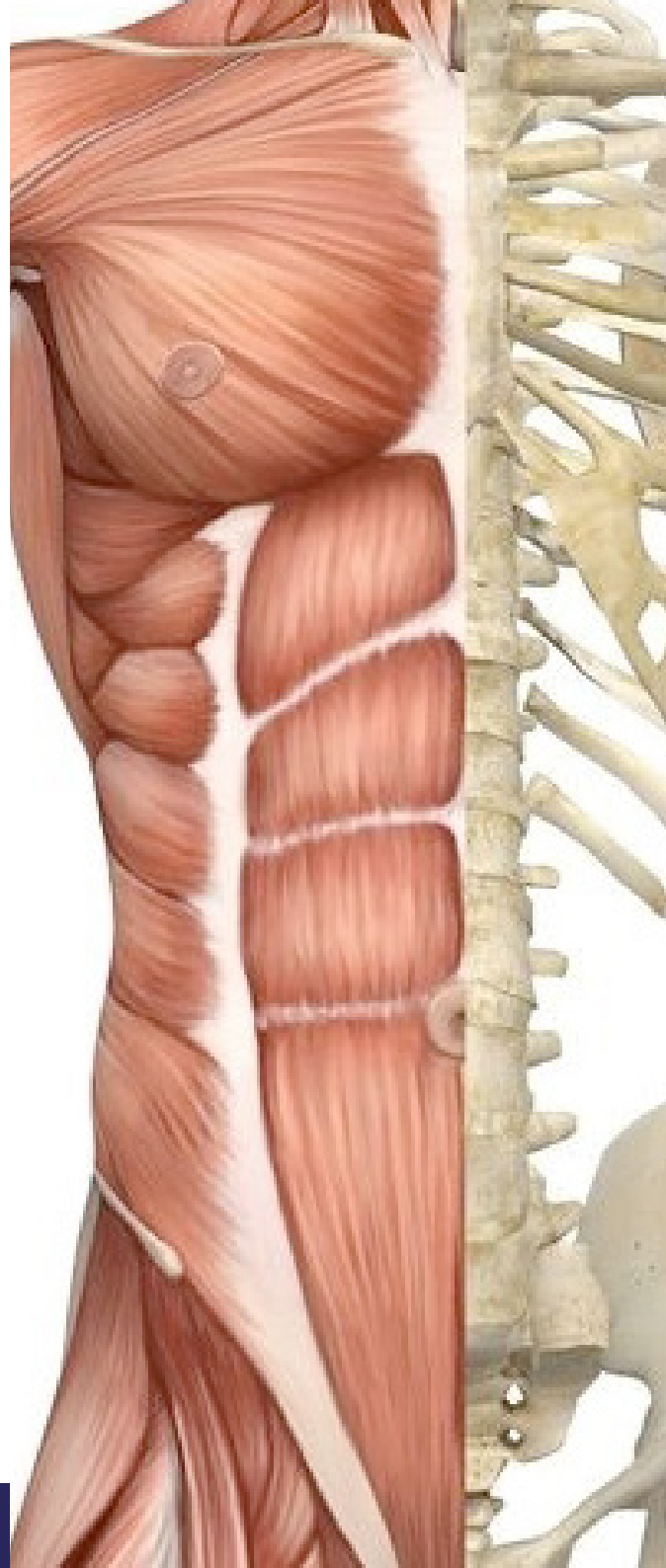
OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Visits from a local doctor or even a radiologist.

Creating simple pie charts by looking at the make-up of our diets.

Researching information relating to foods that we eat such as how they keep us healthy as well as comparing different diets.

Looking at a variety of charts such as pictograph, bar chart and tally chart to collect, gather and interpret data.



YEAR 3 Light

PRIOR LEARNING

This unit of work is first taught in Year 3. Prior to planning the unit of work, identify existing knowledge, misconceptions and gaps through verbal/written pre-assessment with the class. Children should already know that there are various different sources of light.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can recognise that we need light in order to see things and that dark is the absence of light.
- I can notice that light is reflected from surfaces.
- I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes.
- I can recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- I can find patterns in the way that the sizes of shadows change.
- I can set up simple practical enquiries, comparative and fair tests.
- I can make systematic and careful observations and take accurate measurements using standard units, using a range of equipment, including data loggers.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- I can use straightforward scientific evidence to answer questions or to support my findings.

HIGH FREQUENCY VOCABULARY 2

Angle	Reflect	Dim
Electricity	Torch	Mirror
Opaque	Dark	Source
Surface	Light	Transparent
Bright	Shadow	
Emit	Translucent	

SUBJECT SPECIFIC VOCABULARY 3

Cornea
The transparent outer covering of the eye.

Focus
If you focus your eyes, you try to look directly at an object so that you can see it more clearly.

Lens
The part of the eye behind the pupil that helps you to see clearly by focusing light onto the retina.

Image (ry)
Any picture, especially one formed by a mirror or a lens.

Optic Nerve
The group of nerve fibres that pass signals from the retina at the back of each eye to the brain.

Organ
A part of the body of an animal or plant that performs a particular job.

Periscope
A long, vertical tube containing a set of mirrors that gives you a view of what is above you when you look through the bottom of the tube.

Phenomena
Things that happen that are unusual or interesting (e.g. a rainbow).

Project
To cause a film, image, or light to appear on a screen or other surface.

Pupil
The circular black area in the centre of an eye, through which light enters.

Rainbow
An arch of different colours seen in the sky when rain is falling and the sun is shining.

Retina
The area at the back of the eye that receives light and sends pictures of what the eye sees to the brain.

KEY CONCEPT QUESTIONS

What would happen if the Sun stopped producing light?

Why are shadows formed?

How do we see things?

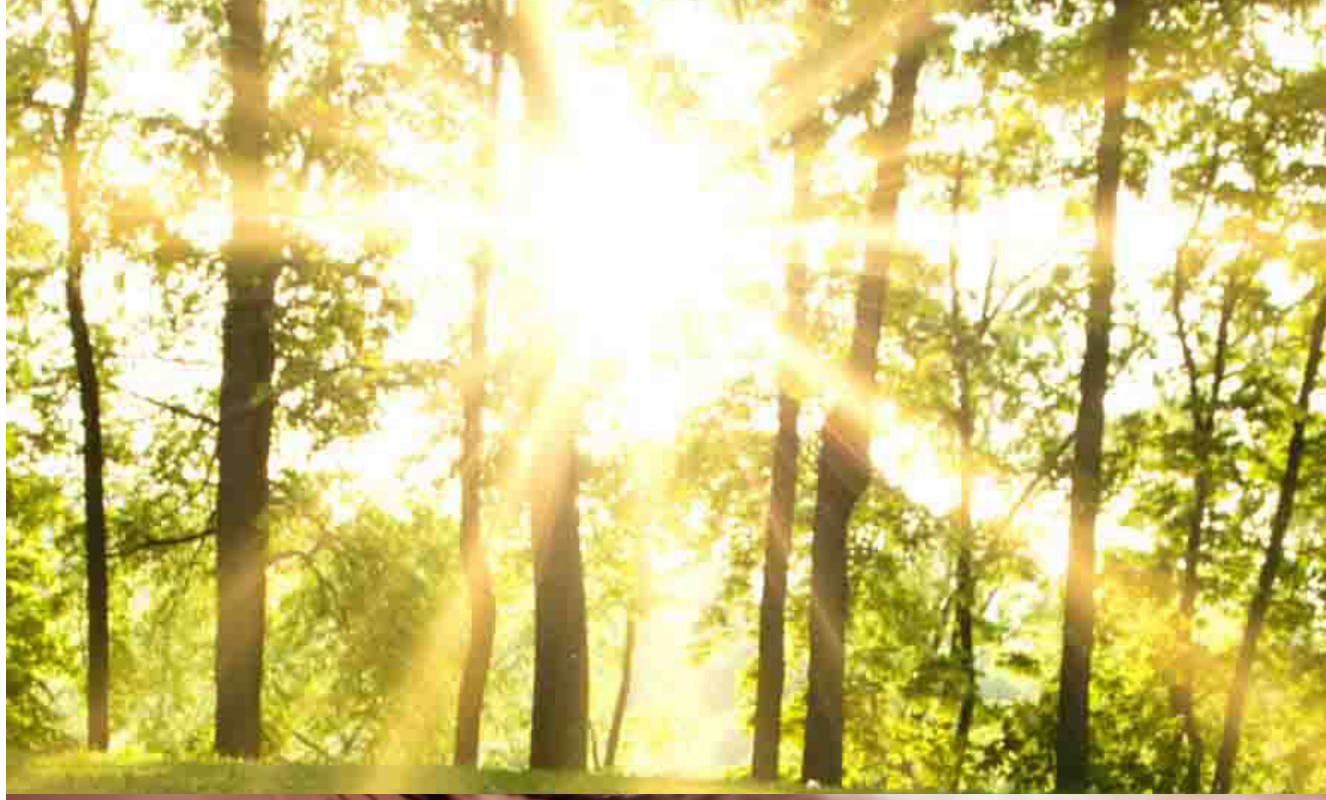
Have you ever been in a state of complete darkness?

What's the difference between a natural source of light and a manmade source of light?

How does light travel?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Science Oxford – The Light Fantastic show. https://scienceoxford.com/centre/schools/shows/



YEAR 3 Plants

PRIOR LEARNING

In Year 2, children will have learned: how seeds and bulbs turn into plants; that plants need water, light and a suitable temperature; about germination, growth and survival; how to identify that a plant is alive; the different types of plant and parts of plants that humans eat; to observe, measure accurately, perform a fair test, use bar charts/tables/diagrams and make predictions.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.
- I can explore the requirements of plants for life and successful growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.
- I can investigate the way in which water is transported within plants.
- I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can set up simple practical enquiries, comparative and fair tests.
- I can record findings using simple scientific language, drawings and labelled diagrams.
- I can use results to draw simple conclusions.
- I can use straightforward scientific evidence to answer questions or to support my findings.

HIGH FREQUENCY VOCABULARY 2

Absorb
Annual
Biennial
Carbon dioxide
Crop
Flowering vegetables
Leafy vegetables
Nutrients
Overcrowding
Perennial
Reproduce
Root vegetables
Seedling
Stem vegetables
Surroundings

KEY CONCEPT QUESTIONS

Why do plants have roots?

Do seeds only grow if humans plant them?

Why is it good that flowers are colourful?

How are plants useful to humans?

SUBJECT SPECIFIC VOCABULARY 3

Anther
The part of a stamen that produces and releases the pollen.

Climate zone
Sections of the Earth that are divided according to the climate. There are three main climate zones; polar, temperate and tropical.

Dispersed
Scattered, separated, or spread through a large area.

Dissect
To carefully cut something up in order to examine it Scientifically.

Fertilisation
In plants, where pollen meets the ovule to form a seed.

Fertiliser
A substance that is added to soil in order to make plants grow more successfully.

Function
A useful thing that something does

Mature
When something matures, it is fully developed

Ovule
A small egg.

Pollen
A fine powder produced by flowers. It fertilises other flowers of the same species so that they produce seeds.

Pollination
To pollinate a plant or tree means to fertilise it with pollen. This is often done by insects.

Stigma
The top of the centre part of a flower which takes in pollen.

Structure
The way in which something is built or made.

Transported
Taking something from one place to another.

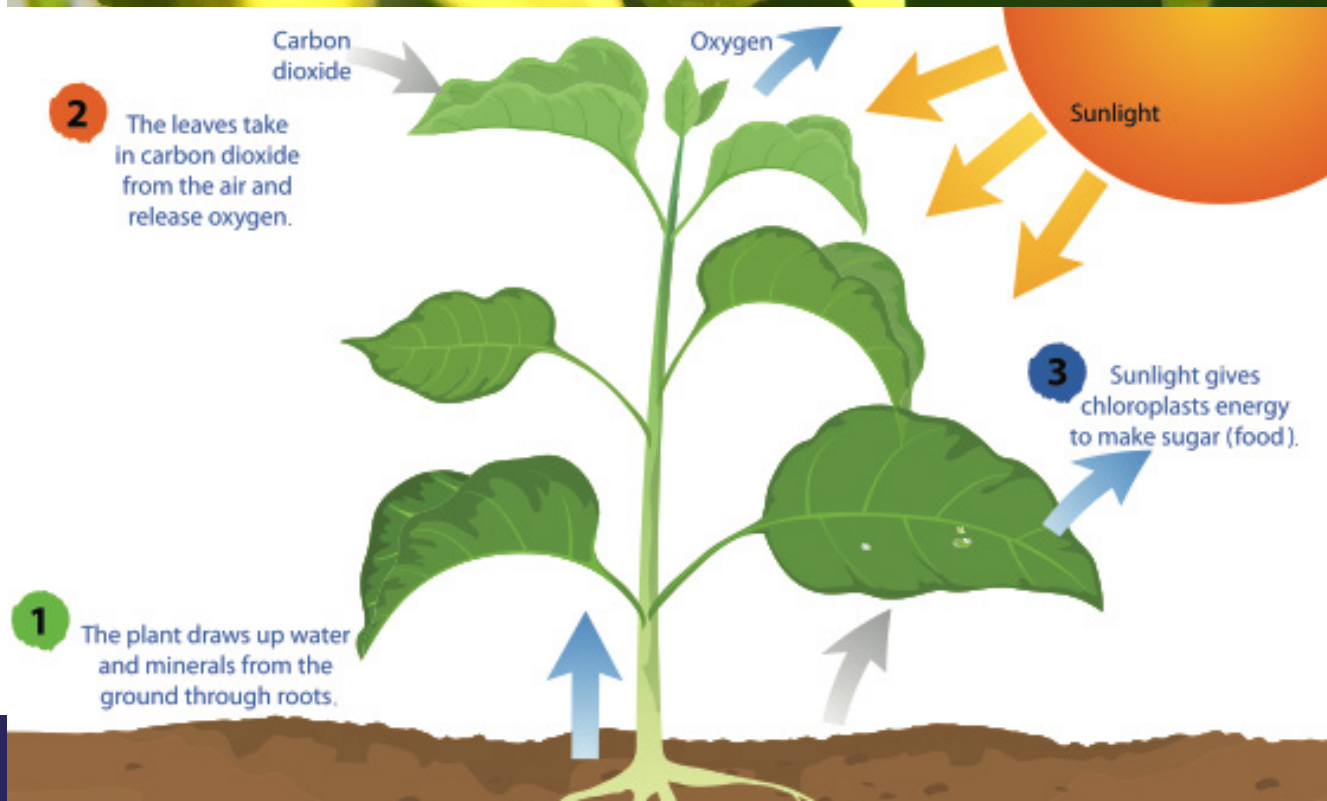
OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Dissect plants and fruits to observe and sketch them internally.

Use food colouring to prove that water is absorbed and makes its way up a plant stem.

Visit to Science Oxford or Harcourt Arboretum or Botanical Gardens.

Use the plants on our grounds or within the village.



YEAR 4 Sound

PRIOR LEARNING

This unit of work is only taught in Year 4. Prior to planning the unit of work, identify existing knowledge, misconceptions and gaps through verbal pre-assessment with the class. Children should know that hearing is one of their senses. They may also understand that sound travels from a source to their ears.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can identify how sounds are made, associating some of them with something vibrating.
- I can recognise that vibrations from sounds travel through a medium to the ear.
- I can find patterns between the pitch of a sound and features of the object that produced it.
- I can find patterns between the volume of a sound and the strength of the vibrations that produced it.
- I can recognise that sounds get fainter as the distance from the sound source increases.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can set up simple practical enquiries, comparative and fair tests.
- I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including data loggers.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

KEY CONCEPT QUESTIONS

What is a sound?

How are sounds made?

How do sounds travel?

How do we hear sounds?

SUBJECT SPECIFIC VOCABULARY 3

Amplitude
A measure of the strength of a sound wave.

Cochlea
A twisted tube inside the inner ear that is the main organ of hearing.

Decibel
A measure of how loud a sound is.

Ear Canal
A pathway running from the outer ear to the middle ear.

Ear Drum
A thin, cone-shaped membrane that separates the external ear from the middle ear.

Hair Cells
Hair cells are the sensory receptors in the inner ear that detect sound.

Ossicles
The three smallest bones in the human body. They may be called ear bones or auditory ossicles.

HIGH FREQUENCY VOCABULARY 2

Electricity	Power	Vibrations
Pitch	Travel	Medium
Transmit	Frequency	Source
Energy	Sound Waves	Volume

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Conduct an investigation into insulation (making use of the data loggers – two in school and/or borrow 8 on kit loan from Science Oxford). Which material would make the best sound defender? How can you investigate this?

Fill identical jars with different volumes of water. Which one creates the highest pitch?

Make musical instruments using different length strings. How do their pitches differ?

Sound Of Science workshop from Science Oxford.

YEAR 4 Electricity

PRIOR LEARNING

This is the first unit on electricity. However, children will be aware that electricity can be dangerous. They should know that electricity is a form of energy that can be carried by wires, and that sources of light and sound may need electricity to work. They may well know that it is used for heating and lighting, and to provide power for devices/appliances. They should know that humans have only been using electricity for a limited amount (relatively speaking) of time. Pupils may well have an understanding of the fact that there are different sources of power (and that this is evolving). The may also be aware of the impact this has on the environment.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify common appliances that run on electricity.
- I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- I can recognise some common conductors and insulators, and associate metals with being good conductors.
- I can set up simple practical enquiries, comparative and fair tests.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- I can use straightforward scientific evidence to answer questions or to support my findings.

HIGH FREQUENCY VOCABULARY 2

Battery	Current	Mains
Bulb	Device	Motor
Buzzer	Electricity	Power
Cell	Energy	Source
Circuit	Fuel	Switch
Conductor	Insulator	Wires

SUBJECT SPECIFIC VOCABULARY 3

Ammeter
A device for measuring the strength of an electric current in units called amps.

Appliances
Devices, machines, or pieces of equipment, especially electrical ones that are used in the house, such as cookers or washing machines.

Component
A part that combines with other parts to form something bigger.

Generate
To produce energy in a particular form.

Resistance
The degree to which a substance prevents the flow of an electric current through it.

Resistor
A part of an electrical circuit designed to produce a particular amount of resistance to the flow of current.

Voltage
The force of an electric current, measured in volts.

KEY CONCEPT QUESTIONS

Which items in your home require electricity?

Explain why a doorbell rings when someone presses it.

Which items conduct electricity?

Which items are insulators?

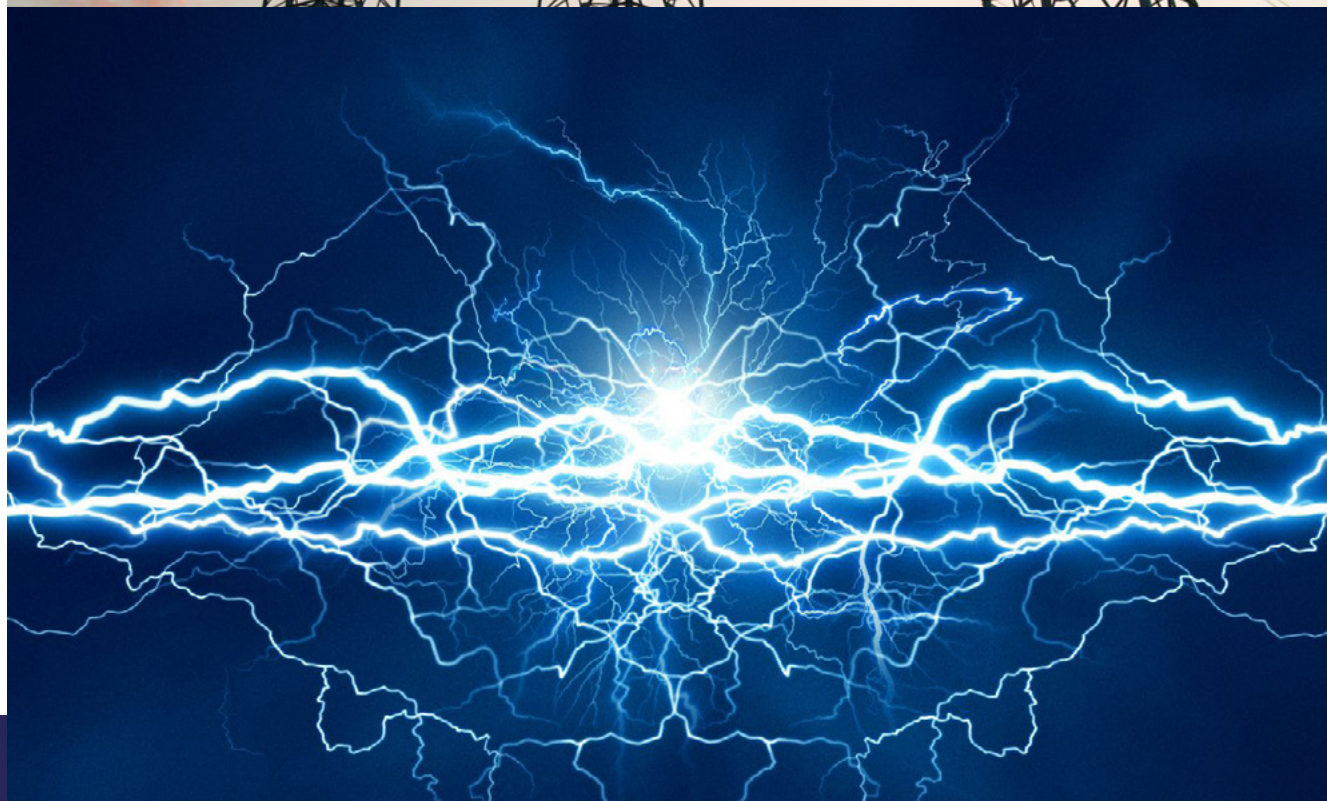
What are the dangers associated with electricity?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

There are lots of new resources in the science cupboard.

Science Oxford has a kit loan called 'Circuit Detectives'.

Following the relevant safety guidelines, take an old/unwanted electrical appliance apart (as a class) to look at the circuitry involved.



YEAR 4 Animals including Humans

PRIOR LEARNING

Children will have learnt to identify that animals need nutrition from different food sources, and that this essentially comes from eating plants and other animals.

In Year 3, pupils will have studied the skeletons of certain animals and identified that these (along with muscles) allow for movement, protection and support.

The children will also have looked at the food groups of: fruit, vegetables, carbohydrates, dairy, protein, fats and sugars.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can describe the simple functions of the basic parts of the digestive system in humans.
- I can identify the different types of teeth in humans and their simple functions.
- I can construct and interpret a variety of food chains, identifying producers, predators and prey.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can set up simple practical enquiries, comparative and fair tests.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- I can identify differences, similarities or changes related to simple scientific

HIGH FREQUENCY VOCABULARY 2

Absorb	Premolar	Organ
Decay	Carbohydrate	Saliva
Molar	Energy	Consumer
Prey	Omnivore	Incisor
Canine	Producer	Predator
Digestion	Carnivore	Vitamin
Nutrient	Herbivore	

SUBJECT SPECIFIC VOCABULARY 3

Bloodstream
The flow of blood around the body.

Blood vessel
Any of the tubes through which blood flows in the body.

Ecosystem
All the living things in an area and the way they affect each other and the environment.

Enamel
The hard, white, shiny substance that forms the covering of a tooth.

Enzyme
Any of a group of chemical substances that are produced by living cells and cause particular chemical reactions to happen while not being changed themselves (e.g. an enzyme in the saliva of the mouth starts the process of breaking down the food).

Gland
An organ of the body or of a plant that secretes (produces) liquid chemicals that have various purposes (e.g. the glands in my neck are a little bit swollen).

Large intestine
The lower part of the bowels in which water is removed from digested food before it is passed out of the body as solid waste.

Microorganism
A living thing that on its own is too small to be seen without a microscope.

Oesophagus
The tube in the body that takes food from the mouth to the stomach.

Plaque
A substance containing bacteria that forms on the surface of teeth.

Stomach acid
Gastric acid, gastric juice, or stomach acid, is a digestive fluid formed within the stomach lining.

Tertiary
Relating to a third level or stage (e.g. in a food chain).

Small intestine
The upper part of the bowels between the stomach and the large intestine.

KEY CONCEPT QUESTIONS

Explain the different jobs that different types of teeth do.

What is an omnivore?

Draw a food chain.

Sensibly explain what you think happens to our food once we have eaten it.

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

A visit from a local dentist would be fantastic.

Looking at/creating a variety of charts such as pie charts and bar charts to collect, gather and interpret data.

Comparing the teeth or digestive systems of humans and other animals.

Writing an explanatory text about the digestion of food.

YEAR 4 Living Things And Their Habitats

PRIOR LEARNING

In Year 2, children will have looked at what it is to be alive, studied habitats and microhabitats and looked at food chains when studying how animals obtain food from plants and other animals.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can recognise that living things can be grouped in a variety of ways.
- I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- I can recognise that environments can change and that this can sometimes pose dangers to living things.
- I can make systematic and careful observations.
- I can gather, record, classify and present data in a variety of ways to help in answering questions.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- I can identify differences, similarities or changes related to simple scientific ideas and processes.
- I can use straightforward scientific evidence to answer questions or to support my findings.

HIGH FREQUENCY VOCABULARY 2

Adaptation	Herbivore	Vegetation
Dependency	Organism	Consumer
Invertebrate	Source	Habitat
Omnivore	Carnivore	Offspring
Producer	Food Web	Prey
Biomes	Microhabitat	Vertebrate
Food Chain	Predator	

SUBJECT SPECIFIC VOCABULARY 3

Amphibian
An animal, such as a frog, that lives both on land and in water but must produce its eggs in water.

Arachnid
Any of a group of small animals, similar to insects but with four pairs of legs, that include spiders, scorpions, ticks, and mites.

Crustacean
Any of various types of animal that live in water and have a hard outer shell.

Exoskeleton
A hard outer layer that covers, supports and protects the body of an invertebrate animal such as an insect or crustacean.

Gill
The organ through which fish and other water creatures breathe.

Mammal
Any animal of which the female feeds her young on milk from her own body. Most mammals give birth to live young, not eggs.

Mollusc
Any animal that has a soft body, no spine, and is often covered with a shell. Many molluscs live in water.

Myriapod
One of a group of small creatures that have long bodies and many sections with legs, for example centipedes and millipedes.

Physical Characteristics
The things about an animal that might make it different (or similar) to another animal (e.g. having scales).

Reptile
An animal that produces eggs and uses the heat of the sun to keep its blood warm.

Segment
A part of an animal's body.

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Science Oxford – Woodland walk (and ponds – September 2020).

Comparing and classifying the key characteristics of a range of animals.

Visit the Oxford University Museum Of Natural History/Pitt Rivers.

KEY CONCEPT QUESTIONS

How can I classify a tiger, a lizard, an elephant, a crocodile, a human, a zebra, a polar bear, a grizzly bear, a snake and a frog?

What are the key physical characteristics of any of these animals?

Have any animals adapted to the changes in their environments over time?

How might a polar bear have to adapt in the future and why?

YEAR 4 Biodiversity

PRIOR LEARNING

Prior Learning (Year 3):
Plants: Students learn to identify and describe the functions of different parts of flowering plants. They explore the requirements of plants for life and successful growth. In addition, pupils explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Animals, Including Humans: The children come to recognise that animals have to get their food by eating plants or other animals.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can write a non-chronological report about hedgehogs, explaining how people can help to maintain their numbers.
- I can create a classification diagram of four insects.
- I can explain why bees fly in and out of flowering plants.
- I can grow some vegetables above and below the ground and explain the challenges that this brings.
- I can plan a wildflower patch.
- I can explain how we maintain a wildflower patch.
- I can collect and present data about our wildflower patch.

HIGH FREQUENCY VOCABULARY 2

Climate change	Habitat	Pollution
Colony	Nectar	Species
Global warming	Pollen	Urban

KEY CONCEPT QUESTIONS

Why are bees so important to our world?

Why might it be good for animals if you didn't mow your lawn for a few weeks?

Why might hedgehogs find it hard to survive if we build lots of houses with fences in their gardens?

SUBJECT SPECIFIC VOCABULARY 3

Biodiversity
The number and types of plants and animals that exist in a particular area or in the world generally, or the problem of protecting this.

Climate Change
Changes in the world's weather, in particular the fact that it is believed to be getting warmer as a result of human activity increasing the level of carbon dioxide in the atmosphere.

Ecosystem
All the living things in an area and the way they affect each other and the environment.

Endangered
Animals or plants that may soon not exist because there are very few now alive.

Environment
The air, water, and land in or on which people, animals, and plants live.

Locally Sourced
Items that have been purchased nearby from a farmer, fishmonger or any other fresh produce creator.

YEAR 4 States of Matter

PRIOR LEARNING

This is the first unit on states of matter. However, children should have a 'solid' grasp of the fact that water can change from a solid (ice) to a liquid (water). They should be able to discuss why this happens, relating it to a change in temperature. They may also be able to bring snow and/or steam into this conversation as well, although most children may not associate steam with a 'change of state'. Children should be able to name something else that changes from solid to liquid when its temperature is changed (e.g. chocolate or butter or an ice lolly).

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can compare and group materials together, according to whether they are solids, liquids or gases.
- I can observe that some materials change state when they are heated/cooled, and measure/research the temperature at which this happens in degrees Celsius (°C).
- I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
- I can ask relevant questions and use different types of scientific enquiries to answer them.
- I can set up simple practical enquiries, comparative and fair tests.
- I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

HIGH FREQUENCY VOCABULARY 2

Change	Steam	Melt
Gas	Cool	Water cycle
Solid	Liquid	Freeze
Condensate	Temperature	Melting point
Heat	Evaporate	Water vapour

SUBJECT SPECIFIC VOCABULARY 3

Dissolves
For a solid to be absorbed by a liquid, especially when mixed, or for a liquid to absorb a solid.

Irreversible
Not possible to change; impossible to return to a previous condition.

Particles
An extremely small piece of matter (e.g. dust particles must have got into the motor).

Permeable
If a substance is permeable, it allows liquids or gases to go through it.

Precipitation
Water that falls from the clouds towards the ground, especially as rain or snow.

Properties
A quality in a substance or material, especially one that means that it can be used in a particular way.

Reversible
If something is reversible, it can be changed back to what it was before

Soluble
Able to be dissolved to form a solution.

KEY CONCEPT QUESTIONS

Explain what can happen to water when its temperature changes.

How do you think clouds are formed?

Why do puddles sometimes disappear fairly quickly in the summer?

Why do we sometimes get water on the inside of our bathroom windows?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Begin the unit by setting up a measuring cylinder with 200ml of water in it. Create a line graph to track the water over the course of the term. Write predictions as to what will happen to the water. Repeat with a transparent container with a lid.

Use role play to look at particles.

Write an explanation of the water cycle; create bar charts or line graphs of evaporation.

Conduct an investigation into the speed at which different chocolate melts.

YEAR 5 Animals Including Humans

PRIOR LEARNING

This unit of work is taught in every year group. Children should already be able to describe the simple functions of the basic parts of the digestive system in humans - flowing from the mouth and chewing, swallowing, to the stomach, small intestine and on to the large intestine. They will have learnt to identify the different types of teeth in humans and their simple functions. They should also be able to construct and interpret a variety of food chains, identifying producers, predators and prey.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can describe the changes that develop through a human lifetime.
- I can draw a timeline to indicate stages in the growth and development of humans.
- I can learn about the changes experienced in puberty.
- I can research the gestation periods of other animals and comparing them with humans.
- I can find out and record the length and mass of a baby as it grows.
- I can describe the ways in which nutrients and water are transported within animals, including humans.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can report and present findings, in oral and written forms such as displays and other presentations.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY 2

Alive	Carnivore	Temperature
Exercise	Gestation	Environment
Hygiene	Teeth	Hormones
Backbone	Emotional	Vitamins
Germs	Health	
Omnivore	Herbivore	

SUBJECT SPECIFIC VOCABULARY 3

Digestion
The process by which your body digests food, or your ability to digest food.

Excretion
To get rid of material such as solid waste or urine from the body.

Large intestine
The lower part of the bowels in which water is removed from digested food before it is passed out of the body as solid waste.

Oesophagus
The tube in the body that takes food from the mouth to the stomach.

Small intestine
The upper part of the bowels between the stomach and the large intestine.

Stomach
An organ in the body where food is digested, or the soft front part of your body just below the chest.

Swallow
To cause food or drink to move from your mouth into your stomach by using the muscles of your throat.

KEY CONCEPT QUESTIONS

Between the ages of 20 and 70 years of age, describe some of the changes that happen to human beings.

What happens to your food once you have swallowed it?

Name some animals which you think might have a longer pregnancy than humans.

In your opinion, do humans need to eat meat? Explain your answer carefully.

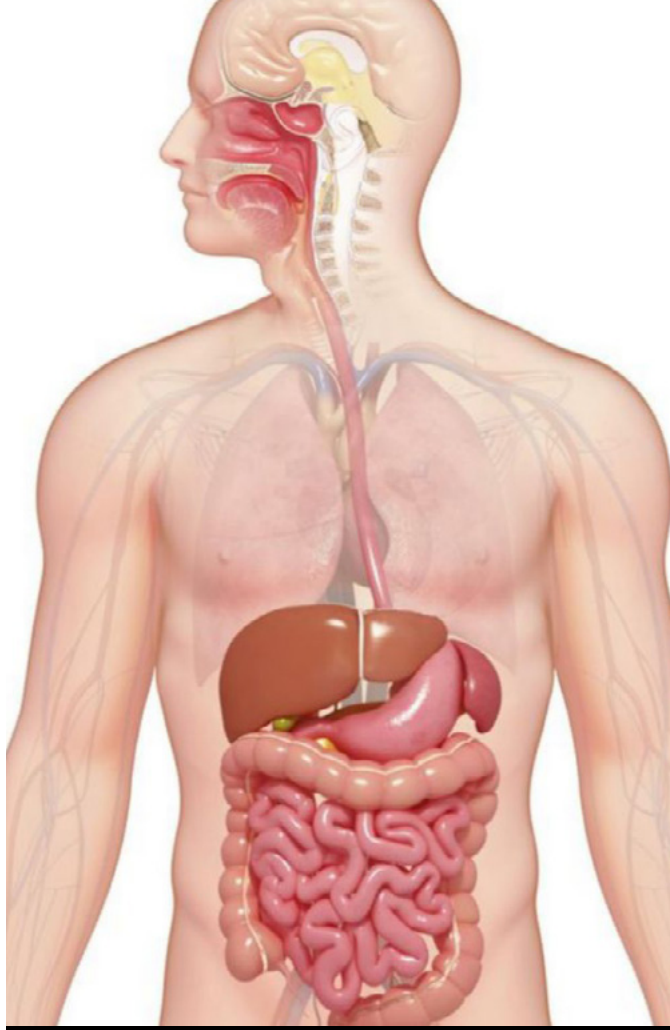
OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

A visit from a local dentist.

Invite a local doctor or dietitian in to school.

Create a model of the human digestive system.

Write an explanation of how we digest food.



YEAR 5 Forces

PRIOR LEARNING

The children will have studied forces in Year 3. This will have included looking at friction, but the main focus will have been on magnets. Pupils will have learned that magnets attract and repel, and that they have two poles. They will have identified materials that are magnetic, discussing what those materials have in common.

Therefore, the aim of this unit has to be to give our pupils a solid understanding of everyday forces (of push and pull): gravity, air resistance, friction, water resistance, upthrust.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
- I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.
- I can write a biography of Isaac Newton or Galileo Galilei.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can use test results to make predictions to set up further comparative and fair tests
- I can report and present 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.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY

Air resistance	Spring	Newton
Gear	Friction	Water
Pulley	Leaver	resistance
Balanced	Unbalanced	
Gravity	Galileo	

SUBJECT SPECIFIC VOCABULARY 3

Acceleration
The increase in something's speed, or its ability to go faster.

Aerodynamics
The science that studies the movement of gases and the way solid bodies, such as aircraft, move through them.

Buoyancy
The quality of being able to float.

Contact
The force in which an object comes in contact with another object.

Density
Density is a measure of mass per volume.

Displacement
The weight of liquid that is forced out of position by an object that is floating on or in it.

Fulcrum
The point at which a bar, or something that is balancing, is supported or balances (a seesaw balances at its fulcrum).

Interaction
Interaction is a kind of action that occurs as two or more objects have an effect upon one another.

Mechanism
A part of a machine, or a set of parts that work together.

Momentum
The force that keeps an object moving after it has started.

Upthrust
The force that pushes an object up.

Velocity
The speed at which an object is travelling.

KEY CONCEPT QUESTIONS

What is gravity? How do you know that it exists?

What is friction? Where do you see it in everyday life?

What is air resistance? Give examples of air resistance being a good thing and a bad thing.

Why do some things float and other things sink?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Could use https://www.stem.org.uk/resources/community/collection/12696/year-5-forces when planning this unit.

Look at https://www.outstandingscience.co.uk/index.php?action=view_page&page=view_unit&unit=5e to plan the unit.

Use https://www.hamilton-trust.org.uk/science/year-5-science/forces-may-forces-be-you/ as well.

YEAR 5 Earth and Space

PRIOR LEARNING

This unit of work is only taught in Year 5. Children will have studied forces in Year 3, but it would be advisable to begin by focusing on what gravity is in the first lesson of this unit. However, children should already know that we have four seasons (autumn, winter, spring and summer), that the Sun is a source of light but the Moon is not, that a shadow is caused when an object blocks light from passing through it, and the properties of a sphere. It is likely that children's existing knowledge in relation to 'Earth and Space' will actually vary quite a lot though, depending on personal interest and background reading.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can describe the movement of the Earth and other planets relative to the sun in the solar system.
- I can describe the movement of the moon relative to the Earth.
- I can describe the sun, Earth and moon as approximately spherical bodies.
- I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
- I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- I can record data and results of increasing complexity using scientific diagrams and labels, tables, bar and line graphs.
- I can report and present 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.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY 2

Earth	Star	Shadow
Mars	Gravity	Uranus
Planet	Moon/s	Leap year
Spin	Saturn	Orbit
Gas	Sun	Sphere
Mercury	Jupiter	Venus
Pluto	Neptune	

SUBJECT SPECIFIC VOCABULARY 3

Asteroid
Asteroids are small, rocky objects that orbit the sun. Although asteroids orbit the sun like planets, they are much smaller than planets.

Axis
A real or imaginary straight line going through the centre of a object that is spinning.

Black hole
A region in space where gravity is so strong that nothing, not even light, can escape.

Comet
An object that moves around the sun, usually at a great distance from it, that is seen on rare occasions from the earth as a bright line in the sky.

Constellation
Any of the groups of stars in the sky that seem from earth to form a pattern and have been given names.

Dwarf Planet
A round mass of metal and rock or gas, moving around the Sun or another star, that is not large enough to be considered a planet.

Eclipse
An occasion when the sun disappears from view, either completely or partly, while the moon is moving between it and the earth, or when the moon becomes darker while the shadow of the earth moves over it

Galaxy
One of the independent groups of stars in the universe.

Meteorite
A piece of rock or other matter from space that has landed on earth.

Satellite
A device sent up into space to travel around the earth, used for collecting information or communication. Or, a natural object moving around a larger object in space.

Solar system
The sun and the group of planets that move around it.

Time zone
One of many equal parts into which the world is divided.

Universe
Everything that exists, especially all physical matter, including all the stars, planets, galaxies, etc.

KEY CONCEPT QUESTIONS

What shape is the Earth and what evidence is there to support this?

The Sun, Earth and Moon...what orbits what?

Does the Sun move across the sky?

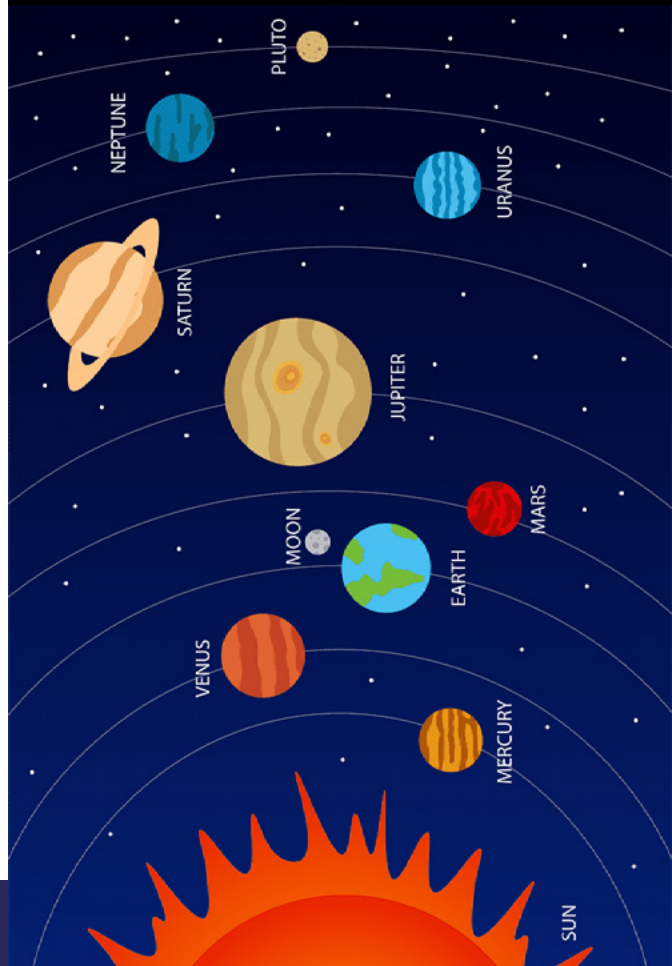
Is there gravity on the Moon?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Visit to Hill End.

Planetarium in London.

Mobile planetarium into school.



YEAR 5 Properties and Changes of Materials

PRIOR LEARNING

The children will have studied materials in Year 1 and Year 2. They will also have completed a Year 4 unit on states of matter, where they will have looked at solids, liquids and gases, heating and cooling, and evaporation and condensation.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can 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.
- I can discover that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- I can use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
- I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
- I can demonstrate that dissolving, mixing and changes of state are reversible changes.
- I can 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.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can use test results to make predictions to set up further comparative and fair tests.
- I can report and present 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.

SUBJECT SPECIFIC VOCABULARY 3

Atoms
The smallest unit of any chemical element, consisting of a positive nucleus surrounded by negative electrons. Atoms can combine to form a molecule.

Bond
The force holding atoms together in a molecule.

Compound
A chemical that combines two or more elements.

Contraction
The fact of something becoming smaller or shorter.

Diffusion
The process of spreading through or into a surrounding substance by mixing with it (of a gas or liquid).

Element
A simple substance that cannot be reduced to smaller chemical parts.

Expansion
The increase of something in size, number or importance.

Insoluble
Impossible to dissolve.

Ion
An atom or small group of atoms that has an electrical charge because it has added or lost one or more electrons.

Molecule
The simplest unit of a chemical substance, usually a group of two or more atoms.

Sublime
To change a solid directly into a gas without the solid first becoming a liquid.

HIGH FREQUENCY VOCABULARY 2

Condensate	Particles	Thermal
Evaporate	Solubility	Electrical
Materials	Substance	Magnetism
Separate	Dissolve	Reversible
State	Irreversible	Solution
Conductivity	Properties	Transparency
Filter	Soluble	

KEY CONCEPT QUESTIONS

Describe a reversible and an irreversible change of state.

What does the word 'dissolving' mean?

What are evaporation and condensation?

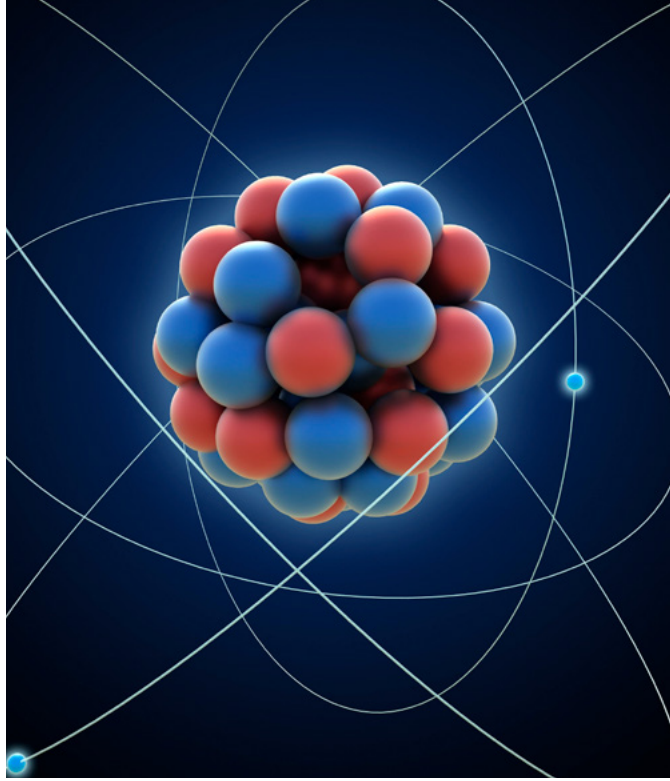
Explain how water can change state.

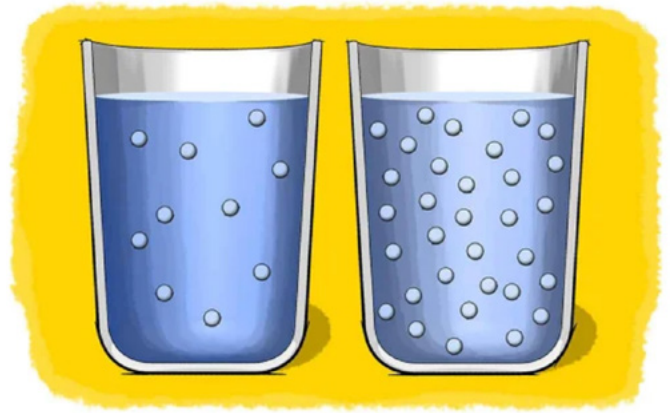
OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

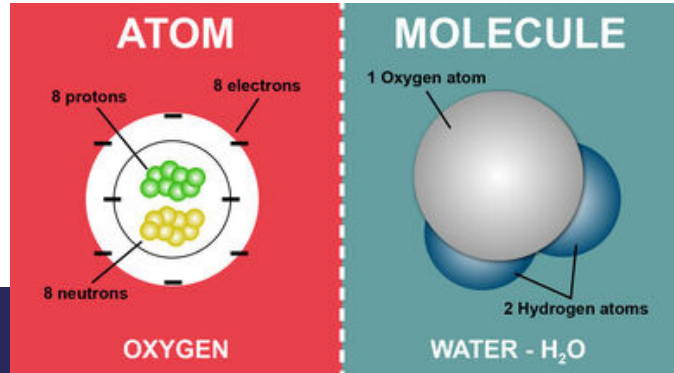
This unit offers lots of opportunities for conducting experiments in the classroom, and should be a unit where children achieve well in their key skills.

Oxford University Department of Chemistry offer outreach work with pupils.

There are numerous businesses on the outskirts of Eynsham offering expertise in this field.







YEAR 5 Living Things and their Habitats

PRIOR LEARNING

In Year 4, children will have learnt:
I can recognise that living things can be grouped in a variety of ways.
I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
I can recognise that environments can change and that this can sometimes pose dangers to living things.

KEY KNOWLEDGE & SKILLS

By the end of this unit children will have gained the following knowledge and skills:

- I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- I can describe the life process of reproduction in some plants and animals.
- I can write a biography of the life and work of David Attenborough.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

SUBJECT SPECIFIC VOCABULARY 3

Abdomen
The lower part of a person's or animal's body, containing the stomach, bowels, and other organs, or the end of an insect's body.

Aquatic
Living or growing in, happening in, or connected with water.

Caecilian
A burrowing wormlike amphibian of a tropical order distinguished by poorly developed eyes and the lack of limbs.

Cold-blooded
Cold-blooded animals can only control their body heat by taking in heat from the outside or by being very active.

Diaphragm
The muscle that separates the chest from the lower part of the body.

Exoskeleton
A hard outer layer that covers, supports and protects the body of an invertebrate animal such as an insect or crustacean.

Gill-breathing
Gills allow fish to breathe underwater.

Invertebrate
An animal with no spine.

Larval Stage
Larva, plural larvae, or larvas, stage in the development of many animals, occurring after birth or hatching and before the adult form is reached.

Milk Glands
A mammary gland is an exocrine gland in humans and other mammals that produces milk to feed young offspring.

Nourish
To provide people or living things with food in order to make them grow and keep them healthy.

Physical Characteristics
The things about an animal that might make it different (or similar) to another animal (e.g. having scales).

Thorax
In humans and animals, the middle part of the body below the neck and above the waist.

Vertebrate
Having a spine (backbone).

Viviparous
Giving birth to young that have already developed inside the mother's body, rather than producing eggs.

Warm-blooded
Having a body temperature that stays the same and does not change with the temperature of the environment.

HIGH FREQUENCY VOCABULARY 2

Absorb	Mammal	Biomes
Bird	Organism	Herbivore
Insect	Amphibian	Offspring
Omnivore	Habitat	Physical
Adaptation	Microhabitat	
Carnivore	Characteristics	

KEY CONCEPT QUESTIONS

Describe the life cycle of a butterfly.

If a human doesn't plant a seed/bulb, describe other ways in which flowers can reproduce.

What are the similarities and differences between the lives of birds and mammals?

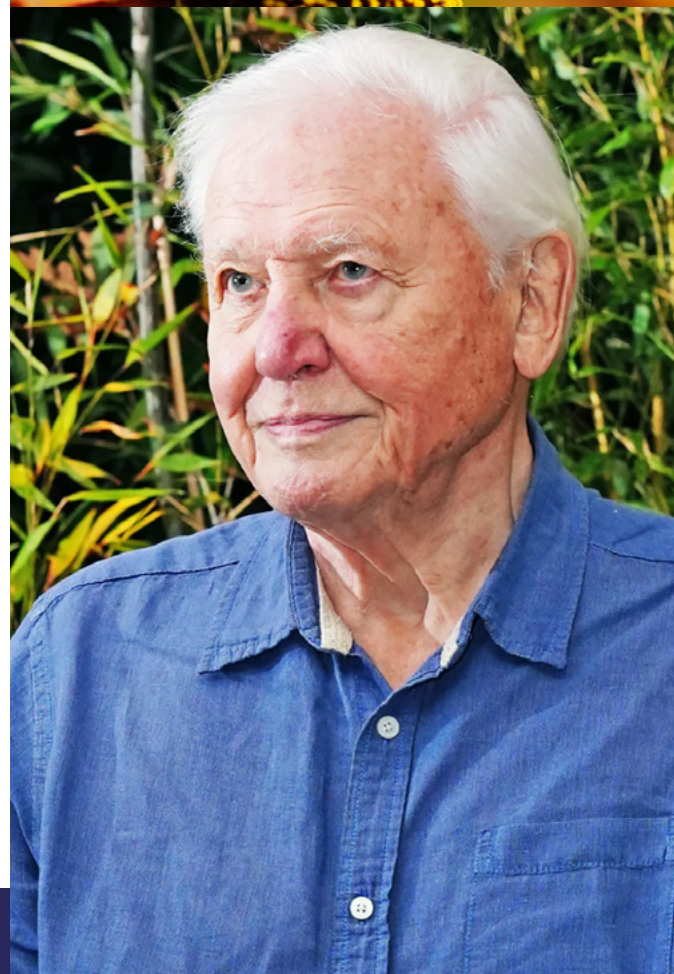
Why are bees so important to our world?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Safely, dissect, draw and label a flower.

Use video footage, books and online text to research the life of David Attenborough and evaluate the impact he has had in his field of work.

Visit the Oxford University Museum Of Natural History/Pitt Rivers.



YEAR 6 Light

PRIOR LEARNING

This unit of work is first taught in Year 3. Children will have learnt that we need light in order to see things, that light reflects off surfaces, that light can be dangerous and that opaque objects can cause shadows to be formed.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can recognise that light appears to travel in straight lines.
- I can 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.
- I can explain how the human eye works.
- I can 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.
- I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can report and present 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.

HIGH FREQUENCY VOCABULARY 2

Block	Reflect	Image
Opaque	Translucent	Pupil
Rainbow	Focus	Source
Torch	Periscope	Vision
Emit	Shadow	
Organ	Transparent	

SUBJECT SPECIFIC VOCABULARY 3

Adjustment
Your eyes adjust as they become more used to the light.

Aqueous Humour
A clear liquid that fills the space inside your eye between the cornea and the lens.

Bacteria
Small organisms that live in air, earth, water, plants and animals.

Cornea
The transparent outer covering of the eye.

Disinfectants
A substance that contains chemicals that kill bacteria.

Impulses
The retina converts the image formed by the light rays into nerve impulses.

Impurity
When something is not as clean as it could be.

Lens
The part of the eye behind the pupil that helps you to see clearly by focusing light onto the retina.

Optic Nerve
The group of nerve fibres that pass signals from the retina at the back of each eye to the brain.

Phenomena
Things that happen that are unusual or interesting (e.g. a rainbow).

Project
To cause a film, image, or light to appear on a screen or other surface.

Regulate
To control something, especially by making it work in a particular way.

Retina
The area at the back of the eye that receives light and sends pictures of what the eye sees to the brain.

Tear Gland
The tear glands (lacrimal glands), located above each eyeball, continuously supply tear fluid that's wiped across the surface of your eye each time you blink.

Tear Film
The layer of liquid that covers your eye.

Transfigured
To change the appearance of something.

Vitreous Humour
The thick, clear liquid substance inside the eye between the lens at the front and the retina at the back.

KEY CONCEPT QUESTIONS

Why do shadow sizes vary?

Why are some shadows clearer than others?

Exactly how does the human eye work?

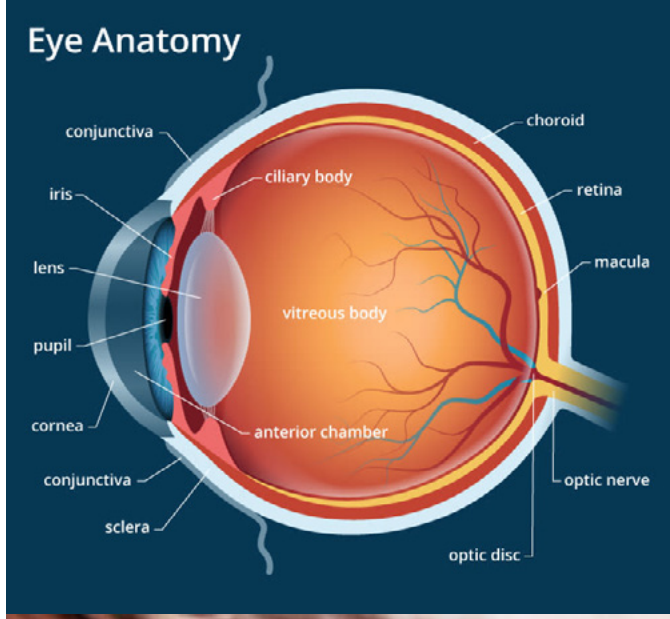
Could we survive without the Sun's light and warmth?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Science Oxford, The Light Fantastic show - https://scienceoxford.com/centre/schools/shows/

Investigation into size and clarity of shadows.

Written explanation of how we see things.



YEAR 6 Evolution and Inheritance

PRIOR LEARNING

This unit of work is only taught in Year 6. Pupils will have learnt about animals and living things in every year group they have been in so far. In Year 3 children will have studied rocks, so are likely to have engaged in some discussion about fossils. In Year 5 children will have learnt about the life cycles of human beings and some other animals.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
- I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- I can write a biography of a significant scientist, commenting on the impact of their work.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can report 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
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY 2

Adaptation	Evolution	Offspring
Ancestor	Extinct	Reproduction
Biome	Fossil	Species
Breeding	Genes	Survive
Characteristics	Generation	
Environment	Inherit	

SUBJECT SPECIFIC VOCABULARY 3

Biodiversity
The number and types of plants and animals that exist in a particular area or in the world generally, or the problem of protecting this.

Chromosomes
Any of the rod-like structures found in all living cells, containing the chemical patterns that control what an animal or plant is like.

Genetics
The study of how, in all living things, the characteristics and qualities of parents are given to their children by their genes.

Maladaptation
A maladaptation is a trait that is (or has become) more harmful than helpful, in contrast with an adaptation, which is more helpful than harmful.

Mutation
The way in which genes change and produce permanent differences.

Natural Selection
The process that results in the continued existence of only the types of animals and plants that are best able to produce young or new plants in the conditions in which they live

Palaeontology
The study of fossils as a way of getting information about the history of life on Earth and the structure of rocks.

Variation
No two humans are genetically identical.

KEY CONCEPT QUESTIONS

What are fossils?
Why are they important to humans?

Explain the similarities and differences found between siblings and their parents.

How has the polar bear adapted to its environment over the last 200,000 years?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

https://oumnh.ox.ac.uk/sensing-evolution

Science Oxford has an 'Evolution In Action' workshop.

https://www.stem.org.uk/resources/community/collection/12648/year-6-evolution-and-inheritance

YEAR 6 Living Things and their Habitats

PRIOR LEARNING

In Year 4, children will have studied some grouping/classification, naming a wide variety of animals/living things, and focused on the impact of changes to environments.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can 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.
- I can give reasons for classifying plants and animals based on specific characteristics.
- I can write a biography of the scientist Carl Linnaeus, explaining how his work came to be influential.
- I can write a detailed non-chronological report about an animal.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY 2

Adaptation	Mammal	Biomes
Carnivore	Organism	Herbivore
Invertebrate	Arachnid	Offspring
Omnivore	Gill	Vertebrate
Amphibian	Microhabitat	
Consumer	Reptile	

SUBJECT SPECIFIC VOCABULARY 3

Annelids
A type of worm whose body is divided into several parts.

Arthropods
A type of animal with no spine, a hard outer skin, legs with bones joined together, and a body divided into different parts, for example a spider, crab or ant.

Binomial Nomenclature
Binomial nomenclature is a formal system of naming species of living things by giving each a name composed of two parts, both of which use Latin grammatical forms.

Crustacean
Any of various types of animal that live in water and have a hard outer shell.

Exoskeleton
A hard outer layer that covers, supports and protects the body of an invertebrate animal such as an insect or crustacean.

Fungus
Any of various types of organisms that get their food from decaying material or other living things.

Mollusc
Any animal that has a soft body, no spine, and is often covered with a shell. Many molluscs live in water.

Myriapod
One of a group of small creatures that have long bodies and many sections with legs, for example centipedes and millipedes.

Physical Characteristics
The things about an animal that might make it different (or similar) to another animal (e.g. having scales).

Prokaryotes
Organisms whose cells do not contain a distinct nucleus, bounded by a nuclear envelope, in contrast to eukaryotic organisms that do have distinct nuclei.

KEY CONCEPT QUESTIONS

Name some ways in which we group animals (e.g. mammals), detailing the key physical characteristics, features and behaviours of some of these groups (e.g. mammals have hair/fur).

Explain why you think scientists have chosen to classify living things (including plants).

What might be different about the animal kingdom in the future? Give reasons for your answer.

In what ways is a reptile different to an amphibian?

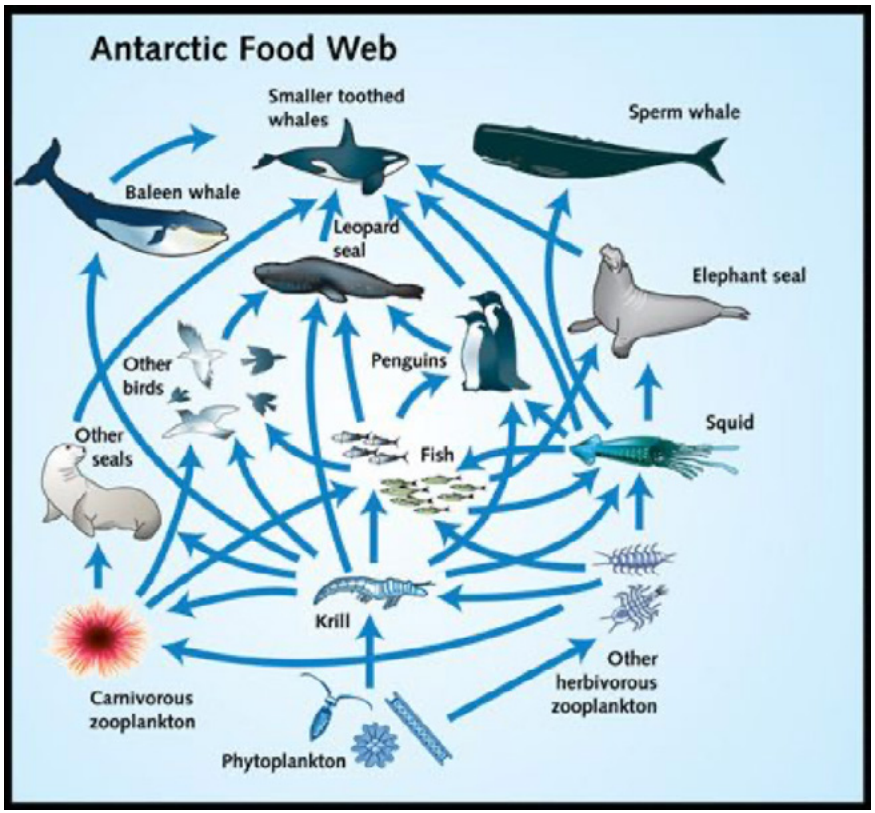
How is a food web different to a food chain?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Two pieces of extended writing.

Comparing and classifying the key characteristics of a range of animals.

Yeast experiment.



YEAR 6 Animals including Humans

PRIOR LEARNING

This unit of work is taught in every year group. Children should already have a good understanding of human teeth, changes that occur to our bodies over a lifetime, puberty and gestation periods.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
- I can recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function.
- I can compare and contrast the human skeleton with that of another animal.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can report and present 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.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- I can use test results to make predictions to set up further comparative and fair tests.
- I can identify scientific evidence that has been used to support or refute ideas or arguments.

HIGH FREQUENCY VOCABULARY 2

Aorta	Skeleton	Muscle
Diet	Atrium	Vein
Rib cage	Lungs	Chamber
Artery	Valve	Pump
Exercise	Blood	Ventricle

SUBJECT SPECIFIC VOCABULARY 3

Aortic Valve
A valve in the human heart between the left ventricle and the aorta.

Cardiovascular System
An organ system that permits blood to circulate and transport nutrients, oxygen, carbon dioxide, hormones and blood cells to and from the cells in the body.

Deoxygenated Blood
Blood without oxygen in it.

Mitral Valve
The mitral valve is a valve that lets blood flow from one chamber of the heart, the left atrium, to another called the left ventricle.

Oxygenated Blood
Blood with oxygen in it.

Pulmonary Artery
The artery carrying blood from the right ventricle of the heart to the lungs for oxygenation.

Pulmonary Valve
The valve of the heart that lies between the right ventricle and the pulmonary artery and has three cusps.

Pulmonary Veins
The pulmonary veins are the veins that transfer oxygenated blood from the lungs to the heart.

Tricuspid Valve

The tricuspid valve is one of four valves that regulate blood flow through the heart. These valves keep blood flowing in the right direction through the heart.

Veganism

Veganism is a way of living which seeks to exclude, as far as is possible and practicable, all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose.

KEY CONCEPT QUESTIONS

How does blood and oxygen make its way around our bodies?

Are there many similarities between our skeletons and those of other animals?

Which is more important, diet or exercise?

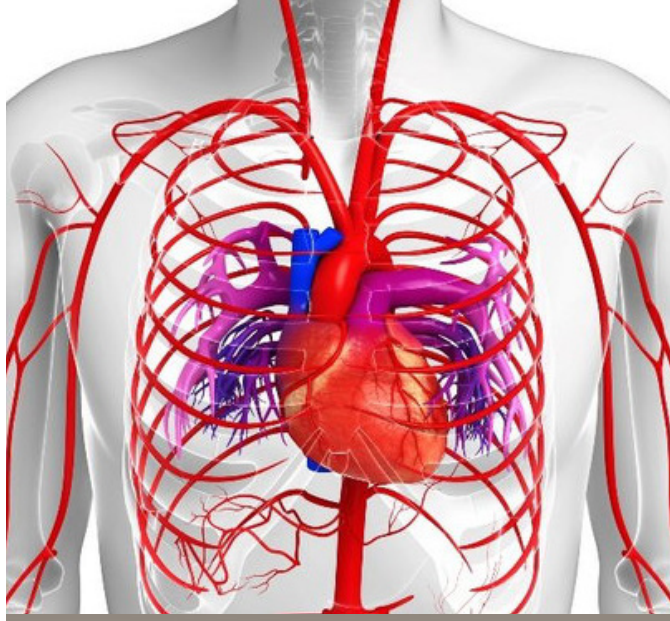
Is meat a necessity in our diet?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

Invite a local doctor, surgeon or dietitian into school.

Write an explanation as to how the human heart works.

Conduct investigations into heart rate and physical achievements.



YEAR 6 Electricity

PRIOR LEARNING

In Year 4 children will have learnt to identify common household appliances, create simple circuits, identify whether a lamp will light in a given circuit, look at the role of a switch in completing a circuit, and identify common conductors and insulators.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- I can 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.
- I can use recognised symbols when representing a simple circuit in a diagram.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can take measurements, using a range of scientific equipment (a data logger), with increasing accuracy and precision, taking repeat readings when appropriate.
- I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms.
- I can record data and results of increasing complexity using scientific diagrams and labels, tables, bar and line graphs.

HIGH FREQUENCY VOCABULARY 2

Ammeter	Conductor	Motor
Appliances	Current	Resistance
Bulb	Electricity	Resistor
Buzzer	Energy	Switch
Cell	Generate	Voltage
Circuit	Insulator	Wires
Component	Mains	

SUBJECT SPECIFIC VOCABULARY 3

Charge
The amount of electricity that an electrical device stores or that a substance carries.

Electromagnetism
The science of magnetism and electrical currents.

Electron
An extremely small piece of matter with a negative electrical charge.

Magnetism
The power of a magnet to attract other objects.

Matter
A physical substance in the universe.

Particle
An extremely small piece of matter.

Phenomenon
Something that exists and can be seen, felt, tasted, etc., especially something unusual or interesting.

KEY CONCEPT QUESTIONS

Using a ruler, create a neat, accurate circuit diagram to show a cell, wires, a bulb and an on/off switch.

What might you notice if you added an extra bulb to this circuit?

What might you notice if you added an extra cell instead?

Explain why you think the bulb in a room goes on when a switch is pressed.

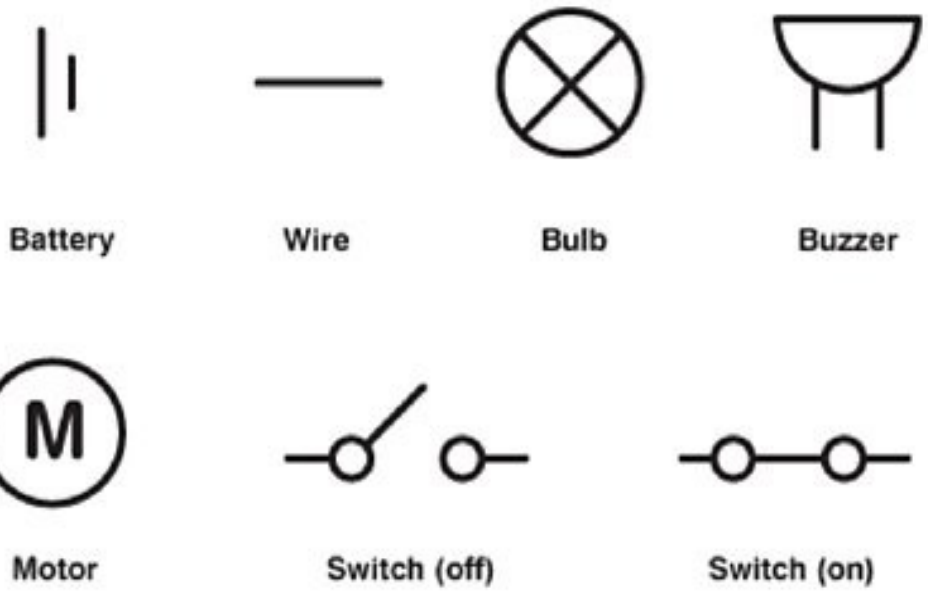
OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

There are lots of new resources in the science cupboard.

Science Oxford has upper key stage two workshops entitled 'Super Suckers' and 'Circuit Detectives'.

Following the relevant safety guidelines, take an old/unwanted electrical appliance apart (as a class) to look at the circuitry involved.

Use data loggers in an investigation into cells and bulbs.



YEAR 6 Biodiversity

PRIOR LEARNING

Living Things and their Habitats: Our pupils learn to describe the life process of reproduction in some plants and animals. They also study the life and work of David Attenborough.

KEY KNOWLEDGE & SKILLS

By the end of the unit children will have gained the following knowledge and skills:

- I can explain the importance of a particular species in relation to biodiversity (e.g. bees or whales).
- I can explain the process of photosynthesis and the role this plays in carbon capture.
- I can analyse where our food comes from and the impact that this has on our planet.
- I can plan a project to improve the carbon footprint of my school.
- I can measure the impact of a wildflower meadow using a quadrat.
- I can take part in a debate about a modern issue relating to biodiversity (e.g. HS2 or The Life Of Cows or The Building Of Houses In My Community).
- I can create a line graph to depict temperature changes on our planet.

HIGH FREQUENCY VOCABULARY 2

Algae
Bacteria
Biodiversity
Carbon dioxide
Climate change
Ecosystem
Endangered
Environment
Locally sourced
Pollination

KEY CONCEPT QUESTIONS

Why might continuous population growth on our planet lead to more and more environmental problems in the future?

What impact is the destruction of forests having on our planet?

Why are plants so important to our life on Earth?

OPPORTUNITIES FOR INVESTIGATION, CROSS CURRICULAR LINKS, VISITORS AND VISITS:

https://www.themarketgarden.co.uk/

Eynsham's Nature Recovery Network.

https://scienceoxford.com/centre/schools/outdoors/

There are several local hedgehog projects.

SUBJECT SPECIFIC VOCABULARY 3

Carbon footprint
Someone's carbon footprint is a measurement of the amount of carbon dioxide that their activities produce.

Carbon neutral
If an organisation or activity is carbon neutral, it does not add to the total amount of carbon dioxide in the atmosphere, for example by doing things such as planting trees in order to remove as much carbon dioxide as it creates.

Conservation
The protection of plants and animals, natural areas, and interesting and important structures and buildings, especially from the damaging effects of human activity.

Displacement
The situation in which animals are forced to leave the place where they normally live.

Endemic species
Endemic species are those plants and animals that exist only in one geographical region.

Hotspots
Biodiversity hotspots are places that contain at least 1,500 species of vascular plants found nowhere else on Earth (known as 'endemic' species), where there has been a loss of at least 70 percent of its primary native vegetation.

Terrestrial ecosystems
A terrestrial ecosystem is a land-based community of organisms and the interactions of biotic and abiotic components in a given area.


EYNSHAM
COMMUNITY PRIMARY SCHOOL