

Gresham Primary School's Science Curriculum

Mission Statement

To inspire curious minds to ask questions about the world around them and investigate them scientifically.

Intent

- To develop in children a lifelong curiosity and interest in the sciences.
- To provide children with the opportunity, wherever possible, to learn through varied systematic investigations, leading to them being equipped for life to ask and answer scientific questions about the world around them.
- For children to build on their skills in working scientifically, as well as on their scientific knowledge, as they develop greater independence in planning and carrying out fair and comparative tests to answer a range of scientific questions.
- For children to have a varied, progressive and well-mapped-out science curriculum that provides the opportunity for progression across the full breadth of the science national curriculum for KS1 and KS2.

Implementation

- The curriculum map ensures teachers know what children have encountered before and can make links to previous learning to support children making connections and building schema.
- The majority of science lessons are taught as part of structured science units which allow concepts to be developed and explored in depth.
- Key concepts have been identified and are regularly returned to, gradually developing pupils' understanding of the most important ideas.
- Wherever possible, concepts are explored through practical investigation and children are given opportunities for hands on investigation and outdoor learning.
- Children develop their ability use scientific enquiry including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.
- Science learning is presented in the context of real-world relevance, in particular in children's own experience.
- The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.
- Retrieval tasks are used to revisit science taught to give optimum opportunities for long term learning.

Impact

Books, pupil voice, displays and collection of work to show the following:

- Pupils will have clear enjoyment of science.
- Pupils will feel increasingly aware of how to investigate questions scientifically.
- The large majority of pupils will achieve age related expectations in Science
- Pupils will show growing curiosity about Science with some exploring their questions further through reading and extracurricular activities.
- Pupils with SEND will be fully included and will progress well related to their starting points.
- Pupils from disadvantaged backgrounds will benefit from gaining foundational knowledge and vocabulary and will be well prepared for further study

The Essential Elements

The essential skills of science are the skills required for scientific investigation. These important skills are practised and developed in all areas of science. As children develop their investigative skills they should also be able to draw on an ever-expanding knowledge of biology, chemistry and physics. Teachers will strive to give children hands on experiences of investigating topics scientifically while equipping them with the vocabulary to explain their knowledge.

Types of scientific enquiry

1. Modelling

A model can be used to help children understand how a process works, or to explain ideas or a concept. Some manufactured models can be useful, for example, you could use a cut-away model of an ear to find out how the ear works, and use musical instruments to find out how different sounds are produced. In this unit, we will be making our own models of the ear and eye, and we will be making a drum.

2. Pattern seeking

This method involves observing and recording natural events, or carrying out experiments where the variables can't easily be controlled. In pattern seeking, it is still important to note and record variables. The investigator needs to try to identify patterns that result from these variables. This method is well suited to studies of physical processes. For example, the children can observe the pattern of hearing a particular sound when an object vibrates.

3. Research

Researching in the scientific sense, involves gathering and analysing other people's opinions or scientific findings in order to answer a question or to provide background information to help explain observed events. In the primary school, this might mean searching in non-fiction books, using the internet and utilising experts in the community, for example, you could ask a musician to come in to school to talk to the children and to help them compose their own sounds and music.

4. Challenges

These sorts of investigations involve some kind of design task and/or a problem to solve. Challenges are most often suited to the study of materials and physical processes. In such situations children apply their scientific knowledge, skills and understanding to make (or design) something. Challenges can be very effective and motivating assessment tasks. In this unit, the children will be faced with the challenge of finding out where sound and light come from and how to make sounds using different materials and objects.

5. Fair testing

Fair testing finds relationships between factors (variables). A single variable is changed – this is the variable you are testing. All other variables are kept the same, which is why it is said to be fair. Any differences are said to be the result of the changed variable. So, if you wanted to test which material (metal, wood, plastic)

makes the loudest sound, the variable you should change is the type of material. However, the way you carry out the test must be kept the same. Fair testing is particularly well suited to investigations that record measurements. The fair test planning board (see below) will be useful for this task.

Key Concepts
Big Ideas Revisited Across Units

Similarity and Difference	Similarity is sameness or a likeness between things and differences are a point or way in which people or things are dissimilar.
Changes	Changing from one material/state to another. Changes can be described as reversible or irreversible
Cause and effect	The relationship between events or things, where one is the result of the other or others. This is a combination of action and reaction.
Adaptation	The characteristics animals or plants have developed to help them survive and thrive in their habitat.
Fair test	An experiment that controls all but one variable when attempting to answer a scientific question. Only changing one variable allows the person conducting the test to know that no other variable has affected the results of the test.
Measuring	Measuring can involve accurately recording an aspect of something eg the size, temperature, speed, number, time, frequency etc
Observing	Watching an event/process closely to notice patterns and changes over time
Growth	The way something increases and develops over time.
Conditions	The context surrounding an event which could include temperature, speed, presence of other living things, amount of food, presence of other forces etc
Classifying	Organizing things into scientific categories based on their characteristics

EYFS Science Related Learning Goals

EYFS: Understanding the World (The World)

Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

EYFS: Physical Development (Health and Self-Care)

Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.

Key Stage 1 National Curriculum Programme of Study

Year 1

Year 2

Everyday Materials

Pupils should be taught to:

- distinguish between an object and the material from which it is made
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties

Animals, including humans

Pupils should be taught to:

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

Seasonal Changes

Pupils should be taught to:

- observe changes across the 4 seasons
- observe and describe weather associated with the seasons and how day length varies

Plants

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

Uses of everyday materials

Pupils should be taught to:

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Animals, including humans

Pupils should be taught to:

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

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Plants

Pupils should be taught to:

- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Working Scientifically

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests

- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

	Unit being taught...	Pupils will be learning...	Key Vocabulary...	Curriculum Coverage...
EYFS	Various	Communication and Language Listening, Attention and Understanding Personal, Social and Emotional		Make comments about what they have heard and ask questions to clarify their understanding. Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

		<p>Development</p> <p>Managing Self</p> <p>Understanding the World The Natural World</p>		<p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>
Year 1	Everyday Materials	<ul style="list-style-type: none"> About everyday materials including wood, plastic, metal, water and rock. How to identify and name everyday materials How to explore the properties of these materials. How to carry out a simple investigation to help them decide which material would be most suitable to use for an umbrella. How to sort objects by their properties. 	<p>glass, metal, rock, plastic, wood, transparent, opaque, materials, stiff, soft, shiny, rough, bendy, stretchy, absorbent, water, smooth, waterproof, dull, hard</p>	<p>To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock by matching a material to its name.</p> <p>To distinguish between an object and the material from which it is made by naming objects and identifying the material which they are made from</p> <p>To distinguish between an object and the material from which it is made by looking and touching different materials</p> <p>To describe the simple physical properties of a variety of everyday materials by testing different objects.</p> <p>To observe closely by watching what happens to teddy.</p> <p>To perform simple tests to find out which material would be suitable to make an umbrella from.</p> <p>To use their observations and ideas to suggest answers to questions by deciding which materials would be suitable to make an umbrella from.</p> <p>To compare and group together a variety of everyday materials on the basis of their simple physical properties by sorting objects</p>
	Seasonal Changes: autumn and winter	<ul style="list-style-type: none"> About the four seasons, particularly autumn and winter What the word weather means and how different types of weather can be measured How to use a class weather station to observe, measure and record weather across seasons How to observe changes across the seasons by exploring the signs of autumn and winter through nature and wildlife 	<p>night, autumn seasonal, rainfall, weather vane, observe, winter, changes, wind direction, day length, measure, spring, weather, thermometer, day, record</p>	<p>To observe changes across the 4 seasons in the context of the weather.</p> <p>To observe and describe how day length varies by exploring the average number of hours of day light in autumn.</p> <p>To observe and describe weather associated with the seasons by observing the weather in autumn.</p> <p>To gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in autumn</p> <p>To observe changes across the 4 seasons by going on an autumn walk.</p> <p>To observe and describe how day length varies in the context of autumn to winter</p> <p>To observe changes across the 4 seasons by looking at how trees and the clothes that we wear change from autumn to winter</p> <p>To observe and describe weather associated with the seasons by observing and recording the weather in winter.</p> <p>To gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in winter</p> <p>To observe changes across the 4 seasons by exploring how some animals adapt to survive in winter</p>
	Plants	<ul style="list-style-type: none"> The basic parts of a plant, including seeds How to plant their own seeds and to make observations of how they grow over time How to identify, name and describe a variety of garden and wild plants 	<p>grow, seeds bulb, roots, stem, leaves, flowers, trunk, tree, garden plant, wild plant, deciduous tree, evergreen tree, dandelion, daisy rose,</p>	<p>Identify and describe the basic structure of a variety of common flowering plants, including trees. Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment.</p> <p>To describe and compare plants, seeds and bulbs.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees. Observing closely, using simple equipment.</p> <p>To name and compare the parts of plants</p>

		<p>as well as evergreen and deciduous trees.</p> <ul style="list-style-type: none"> • How to identify, compare and classify plants 		<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Observing closely, using simple equipment. To identify and name some common garden and wild plants. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Observing closely, using simple equipment Identifying and classifying To identify and name some common trees. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identifying and classifying. To name, sort and compare some common fruit and vegetable plants. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Using their observations and ideas to suggest answers to questions. To name and compare some common plants and trees.</p>
<p>Animals Including Humans</p>		<ul style="list-style-type: none"> • About five of the groups that scientists use to classify animals: mammals, fish, birds, reptiles and amphibians • To identify the group an animal belongs to by its features and will classify animals according to their group • About the different diets animals eat • About the parts of the human body and have the opportunity to explore the five senses through a simple investigation. • To classify animals according to their own criteria 	<p>amphibians, birds, fish, mammals, reptiles, identify, sort, group, omnivore, carnivore, herbivore, diet, senses, sight, hearing, touch, taste, smell</p>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identifying and classifying Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). Identify and name a variety of common animals that are carnivores, herbivores and omnivores Identify, name, draw and label the basic parts of the human body. Say which part of the body is associated with each sense. To perform simple tests. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p>
<p>Seasonal Changes: spring and summer</p>		<ul style="list-style-type: none"> • About spring and summer • To use a class weather station to observe, measure and record the weather in different seasons and to make comparisons between two seasons, as well as across all four seasons • To observe changes across the seasons by exploring the signs of spring and summer through nature and wildlife • To work scientifically by collecting, recording and interpreting simple data 	<p>seasons, seasonal, changes, weather, spring, summer, autumn, winter, weather vane, rainfall, temperate, rain gauge, wind direction, day length, night, day, observe, thermometer, measure, record</p>	<p>To observe and describe how day length varies in the context of winter to spring. To observe changes across the four seasons by looking at how trees and the clothes that we wear change from winter to spring. To observe and describe weather associated with the seasons by observing the weather in spring. To gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in spring. To observe changes across the four seasons by going on a spring walk. To observe and describe how day length varies in the context of spring to summer To observe changes across the four seasons by looking at how trees and the clothes that we wear change from spring to summer. To observe and describe weather associated with the seasons by observing and recording the weather in summer To gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in summer. Observe and describe weather associated with the seasons in the context of the summer sun</p>

	<p>Scientists and Inventors</p>	<ul style="list-style-type: none"> • About famous scientists and inventors linked to the Y1 science curriculum. • About the inventions of Lego and ear muffs, and will explore the materials used to make them. investigate other materials that keep us warm, carrying out simple tests. • About the work of animal scientists, such as vets and zoo keepers. • How to identify the body parts of different animals. • To collect data when finding out about horticulturists and meteorologists. • How to create bar charts of their favourite sensory plants, and make rain gauges to gather data on rainfall. • About scientists and inventors 	<p>Lego, material, zoo, senses, sensory, plants, horticulturist, rain gauge, animals, ear muffs, Robert Hooke, Lami Phan, Ole Kirk Christiansen, George Mottershead, George James Symons, Chester Greenwood, Christopher Wren, Linda Brown Buch, Mae Jemison</p>	<p>To describe the simple physical properties of a variety of everyday materials, by identifying the properties of plastic in the context of Lego. To use observations to suggest answers to questions, by thinking about why Lego is made out of plastic. To ask simple questions and use simple secondary sources to find answers, by role playing an interview with Mae Jemison To describe and compare the structure of a variety of common animals, by sorting animals according to their features. To identify and classify animals, by sorting animals according to their features. To identify and name a variety of common wild and garden plants, by exploring a range of sensory plants To gather and record data to help in answering questions, by creating a chart showing the class' most popular sensory plants. To observe and describe weather associated with the seasons, by measuring rainfall with a rain gauge they have made. To gather and record data to help in answering questions, by measuring rainfall with a rain gauge they have made. To describe and compare the structure of a variety of common animals, including pets, by exploring the work of vets. To identify and classify, by identifying the basic parts of animals' bodies To perform simple tests, by testing the insulating properties of different materials. To compare a variety of everyday materials on the basis of their simple properties, by finding the best insulating materials To say which part of the body is associated with each sense, by finding out about the scientist who discovered how we smell things. To use their senses to identify and compare different smells, by matching smells to items</p>
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Year 2

<p>Living Things and Their Habitats</p>	<ul style="list-style-type: none"> • About a variety of habitats and the plants and animals that live there. • To tell the difference between things that are living, dead and things that have never been alive • To make observations of a local habitat and the creatures that live there, • To investigate conditions in local microhabitats and how they affect the minibeasts found within them • To research a range of global habitats and how the living things that live there are suited to their environments • About the idea of dependency between plant and animal species 	<p>living, non-living, dead, herbivore, carnivore, omnivore, urban, woodland, pond, coast, microhabitat, minibeast, ocean, Arctic, tropical, desert, consumer, producer, predator, prey</p>	<p>To explore and compare the differences between things that are living, dead, and things that have never been alive by thinking about life processes. To use their observations and ideas to suggest answers to questions by explaining how they know something is living, dead or has never been alive. To identify and name a variety of plants and animals in their habitats, by mapping a habitat and identifying its inhabitants. To identify and name a variety of plants and animals in their habitats, including microhabitats by identifying minibeasts in microhabitats. To gather and record data to help in answering questions by investigating the preferred habitat of minibeasts To 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, by researching habitats and the animals that live in them To ask simple questions and recognise that they can be answered in different ways by asking and answering questions about a range of different habitats To 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 by considering the adaptations of animals, and how living things in a habitat depend on each other. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food by making a variety of food chains.</p>
<p>Plants</p>	<ul style="list-style-type: none"> • What plants need to stay healthy • To carry out their own investigations into what plants need to grow well. • To closely observe the inside of a seed and learn about the life cycle of a plant • How plants look when they don't get the things they need • How plants have adapted to live in different environments around the world 	<p>germination, seed dispersal, life cycle, sunlight, water, temperature, nutrition, bulb, seed, flower, fruit, observe, compare, healthy unhealthy, grow</p>	<p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Performing simple tests. Using their observations and ideas to suggest answers to questions. To design and set up a test to find out what plants need to stay healthy. Observe and describe how seeds and bulbs grow into mature plants. Observing closely, using simple equipment. To look closely at the parts of a seed that will grow into a plant and explain how it will germinate Observe and describe how seeds and bulbs grow into mature plants. To describe the life cycle of a plant. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Using their observations and ideas to suggest answers to questions. To explain what plants need to grow and stay healthy Using their observations and ideas to suggest answers to questions. To describe what happens if plants don't get all the things they need. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Using their observations and ideas to suggest answers to questions. To explain how plants are suited to their habitats.</p>

<p>Animals Including Humans</p>	<ul style="list-style-type: none"> About animal young and comparing them to their adults How animals change as they grow up and be introduced to the life cycles of several varied common animals, including humans how humans change as they grow older, drawing on their own observations The three basic needs of animals for survival (water, food and air) About healthy lifestyles, including the importance of exercise, healthy eating and hygiene 	<p>adult, develop, life cycles, grow, survival, offspring, young, live young, exercise, germs, hygiene, nutrition, air, water, food, healthy, heart rate, sort, compare, observe</p>	<p>Notice that animals, including humans, have offspring which grow into adults. Identifying and classifying. To match, sort and group young animals and their adults Notice that animals, including humans, have offspring which grow into adults. Gathering and recording data to help in answering questions. To find out how animals change as they grow into adults. Asking simple questions. Using their observations and ideas to suggest answers to questions. To compare the stages of the human life cycle Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Use their observations and ideas to suggest answers to questions. To research and describe what animals, including humans, need to survive Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Perform simple tests. To test the effects of exercise on the human body. Perform simple tests. Observe closely, using simple equipment. To investigate the importance of healthy eating and hygiene.</p>
<p>The Environment</p>	<ul style="list-style-type: none"> About ecological challenges that face the modern world. About environmental issues and to understand the simple changes we can make to live more sustainable lives 	<p>environment, atmosphere, greenhouse gas, global warming, climate change, fossil fuel, energy, habitat, tropical rainforest, endangered, landfill, incineration, litter, recycle, reuse, reduce, water conservation, renewable, non renewable, extinct</p>	<p>To observe closely, using simple equipment by measuring the time taken for ice to melt in a comparative test To perform simple tests, by comparing the rate of ice melting in a comparative test To identify and classify by sorting litter into recycling groups based on their materials To use their observations and ideas to suggest answers to questions by suggesting ways that waste can be reduced, reused and recycled. Using their observations and ideas to answer questions by thinking of ways to persuade people to use less energy. Gathering and recording data to help in answering questions by taking surveys To ask simple questions and recognise that they can be answered in different ways by researching the rainforest To identify and classify by sorting rainforest animals into animal classification groups. Performing simple tests, by investigating how much water can be saved by turning off the tap while washing hands Observe closely, using simple equipment by measuring the different amounts of water used To ask simple questions and recognise that they can be answered in different ways by asking and answering questions about endangered animals.</p>
<p>Uses of Everyday Materials</p>	<ul style="list-style-type: none"> About the uses of everyday materials including wood, plastic, metal, glass, brick, paper and cardboard To compare the suitability of different everyday materials for different purposes To explore how objects made of some everyday materials can change shape and how the recycling process is able 	<p>wood, rock, metal, glass, plastic, cardboard, brick, paper, tar, tarmac, recycle, record</p>	<p>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, by identifying the uses of different materials 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, by identifying the uses of different materials To gather and record data to help in answering questions, by exploring the purposes of different objects 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, by exploring the purposes of different objects</p>

		<p>to reuse some everyday materials numerous times</p> <ul style="list-style-type: none"> About new discoveries which have been made over time with a specific focus on John McAdam To identify the uses of everyday materials in the local area 		<p>To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching, by changing the shape of objects.</p> <p>To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching, in the context of recycling</p> <p>To find out about people who have developed new materials, by learning about John McAdam.</p>
	<p>Scientists and Inventors</p>	<ul style="list-style-type: none"> About famous scientists and inventors About the invention of the waterproof coat, and will explore other waterproof materials About the work of doctors, and will learn about Elizabeth Garrett Anderson To create their own greenhouse about how germs are spread, looking at the work of Louis Pasteur About the effects of water pollution, as discovered by Rachel Carson About the development of wind turbines and how this invention is used to generate power 	<p>Greenhouse, horticulturist, Eden project, habitat, food chain, Louis Pasteur, germs, waterproof, Charles Mackintosh, raincoat, Rachel Carson, ocean, pollution, chemicals, Elizabeth Garrett Anderson, doctor, renewable, energy, turbine, wind</p>	<p>To find out how plants need water, light and a suitable temperature to grow and stay healthy in the context of exploring how plants grow in greenhouses, including in the biomes at the Eden Project.</p> <p>To identify and describe the basic structure of common flowering plants by observing and sketching a range of common plants.</p> <p>To observe closely using simple equipment by using a magnifying glass to sketch details of different plants</p> <p>To describe the importance for humans of exercise, of eating the right amounts of different types of food, and hygiene in the context of creating a poster for a doctor's surgery to explain how to stay healthy</p> <p>To describe the importance of hygiene to humans in the context of investigating Louis Pasteur's work on how germs spread.</p> <p>To use their observations and ideas to answer simple question in the context of investigating how germs spread and the effect of hand washing</p> <p>To find out about people who have developed new materials in the context of learning about Charles Macintosh</p> <p>To identify and compare the suitability of a variety of everyday materials for particular uses in the context of testing materials to find the most suitable material for a waterproof coat.</p> <p>To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain in the context of exploring Rachel Carson's study of the ocean</p> <p>To observe closely, using simple equipment in the context of investigating the effects of pesticides in water, as researched by Rachel Carson</p> <p>To use their ideas to answer questions in the context of answering questions on renewable energy and the invention of wind turbines</p>

Lower Key Stage 2 National Curriculum Programme of Study

Year 3

Plants

Pupils should be taught to:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Animals, including humans

Pupils should be taught to:

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

Rocks

Pupils should be taught to:

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

Light

Pupils should be taught to:

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

Forces and magnets

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

Year 4

Living things and their habitats

Pupils should be taught to:

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things

Animals, including humans

Pupils should be taught to:

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

States of matter

Pupils should be taught to:

- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Sound

Pupils should be taught to:

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

Electricity

Pupils should be taught to:

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

- predict whether 2 magnets will attract or repel each other, depending on which poles are facing
- recognise some common conductors and insulators, and associate metals with being good conductors

Working Scientifically

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

Year 3	Unit being taught...	Pupils will learn...	Key Vocabulary...	Curriculum Coverage...
	Rocks	<ul style="list-style-type: none"> • About different types of rocks and how they are formed • To compare and group rocks • How fossils are formed and learn about the contribution of Mary Anning • How soil is formed and investigate the permeability of different types of soil 	rocks, igneous, sedimentary, metamorphic, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, cast fossil, mold fossil, replacement fossil, Mary Anning , organic matter, topsoil, subsoil bedrock	Compare different kinds of rocks based on their appearance in the context of understanding the difference between natural and human-made rocks Making systematic and careful observations by examining different types of rocks. Group together different kinds of rocks on the basis of their simple physical properties in the context of natural rocks. Describe in simple terms how fossils are formed when things that have lived are trapped within rock by explaining the fossilisation process and by comparing fossils to the animals they belong to. Identifying changes related to simple scientific ideas in the context of theories about fossils Recognise that soils are made from rocks and organic matter by explaining how soil is formed. Making systematic and careful observations in the context of investigating the permeability of different soils Recording findings using simple scientific language. Reporting on findings from enquiries, including presentations of results and conclusions. Children will present their findings using the key science vocabulary for this lesson.
	Light	<ul style="list-style-type: none"> • About light, reflections and shadows • About different sources of light, and that we need light to see • To investigate reflective materials • About reflective surfaces. that the sun's light can be dangerous • To test which objects are opaque • How shadows change when the distance between the object and light source changes 	light, source, dark, reflect, visible, bounce, mirror, ray, beam, sun, glare, pupil, retina, travel, straight, opaque, translucent, transparent, block, shadow	To recognise that we need light in order to see things and that dark is the absence of light by taking part in a 'feely bag' investigation. To notice that light is reflected from surfaces by choosing the most reflective material for a new book bag. To notice that light is reflected from surfaces by playing mirror games. To recognise that light from the sun can be dangerous and that there are ways to protect our eyes by designing and advertising a pair of sunglasses or a sun hat. To recognise that shadows are formed when the light from a light source is blocked by a solid object by investigating the best material for curtains for a baby's bedroom. To find patterns in the way that the size of shadows change by investigating what happens when you change the distance between the object and the light source.

<p>Forces and Magnets</p>	<ul style="list-style-type: none"> • About forces, friction and magnetic attraction • About forces in the context of pushing and pulling • About friction • To identify magnetic materials and their strengths • About the way magnetic poles can attract and repel in an exciting activity 	<p>force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass</p>	<p>To notice that some forces need contact between two objects by identifying the different types of forces acting on objects</p> <p>To compare how things move on different surfaces by investigating the speed of a toy car over different surfaces.</p> <p>To notice that magnetic forces can act at a distance and attract some materials and not others by sorting materials.</p> <p>To compare and group materials according to whether they are magnetic by sorting materials.</p> <p>To observe how magnets attract or repel each other and attract some materials and not others by investigating the strength of different magnets.</p>
<p>Plants</p>	<ul style="list-style-type: none"> • The names of different parts of plants, and the jobs they do • What plants need to grow well • About the transportation of water within plants • To identify the parts of a flower • About the different stages of the life cycle of a flowering plant 	<p>flower, seed, leaf, stem, roots, petal, pollen, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, style</p>	<p>To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers by labelling the parts of a plant.</p> <p>To explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) by investigating what plants need to grow well.</p> <p>To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables by observing and recording plant growth.</p> <p>To report on findings from enquiries, including oral and written explanations and presentations of results and conclusions by presenting findings to the class.</p> <p>To investigate the way in which water is transported within plants by observing the transport of food colouring through a flower stem.</p> <p>To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal by ordering and describing the stages of the life cycle of a flowering plant</p>

	<p>Animals Including Humans</p>	<ul style="list-style-type: none"> About how animals survive and stay healthy What makes a healthy, balanced diet About the nutrients and how they help our bodies That different animals eat different types of foods and need different proportions of nutrients What food labels on packaging show About different types of skeletons Names of bones in the human body How to plan a fair test and measure and record accurately How muscles help us to move 	<p>energy, water, carbohydrates, protein, fibre, saturated fats, unsaturated fats, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton, joints, muscles, tendons, contract, relax, healthy, nutrients, vitamins, minerals, investigation, prediction, results, conclusion, measure, observe</p>	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>To sort foods into food groups and find out about the nutrients that different foods provide.</p> <p>To explore the nutritional values of different foods by gathering information from food labels.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>To sort animal skeletons into groups, discussing patterns and similarities and differences.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>To investigate an idea about how the human skeleton supports movement</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>To explain how bones and muscles work together to create movement.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>To design and carry out my own investigation</p>
	<p>Scientists and Inventors</p>	<ul style="list-style-type: none"> About famous scientists and inventors About those who risked their lives to find new plants About Sir Joseph Banks About Marie Curie What plants need to grow well through exploring the life and discoveries of George Washington Carver About William Smith and fossils about Inge Lehmann and the Earth's core How images change in convex and concave mirrors and will hear about the inventions and devices that use convex and concave mirrors. About the first electromagnets Where in the world discoveries and inventions were made 	<p>agriculture, botanist, circuit, core, concave, convex, discovery, fossil, magma, electricity, magnet, earthquake, plant, radiation, reflection, sedimentary, bones, crops, continents, x-ray</p>	<p>To identify differences, similarities or changes related to simple scientific ideas and processes by finding out about the men and women who introduced new plants to our gardens.</p> <p>To explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant by exploring the way that non-native plants have been discovered, transported and introduced.</p> <p>To identify changes related to scientific ideas by describing Marie Curie's research into x-rays.</p> <p>To identify that humans have skeletons for support, protection and movement by identifying and explaining the bones shown in x-rays.</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p> <p>To identify changes related to scientific ideas by describing the achievements of George Washington Carver</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties; describe in simple terms how fossils are formed when things that have lived are trapped within rock by exploring William Smith's principle of fossil succession</p> <p>To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties by finding out about Inge Lehmann's discovery of the Earth's solid core and how this creates igneous rocks</p> <p>To notice that light is reflected from surfaces by investigating concave and convex mirrors.</p> <p>To ask relevant questions and use evidence from scientific enquiries to answer them and support findings by investigating concave and convex mirrors.</p> <p>To gather, record, classify and present data in a variety of ways to help in answering questions by investigating concave and convex mirrors</p> <p>To observe how magnets attract some materials by exploring electromagnets.</p> <p>To make systematic and careful observations by exploring electromagnets.</p> <p>To use results to draw simple conclusions and make new predictions by exploring electromagnets.</p>

Year 4				To identify changes related to scientific ideas by finding out about inventions from all over the world.
	<p>Living Things and Their Habitats</p>	<ul style="list-style-type: none"> To identify, sort, group and classify living things how animals are split into 'vertebrates' and 'invertebrates' To consider the differences between living things within these classification To use and create classification keys to group, identify and name living things from the local habitat and beyond That environments are subject to human-made and natural changes, and that these changes can have a significant impact on living things 	<p>organism, variation, classification, vertebrates, invertebrates, reptile, bird, mammal, amphibian, fish, global, local, characteristic key, habitat, environment, wildlife, endangered, extinct, conservation</p>	<p>To recognise that living things can be grouped in a variety of ways by sorting living things into a range of groups Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions by using a range of methods to sort and group living things. To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment by generating questions to sort vertebrates in a classification key. Identifying differences, similarities or changes related to simple scientific ideas and processes by identifying vertebrates by their similarities and differences. To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment by using keys to identify invertebrates found in the local environment. Using straightforward scientific evidence to answer questions by explaining how they have identified an invertebrate. To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment by creating classification keys. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions by creating tables and keys showing the characteristics of living things. To recognise that environments can change and that this can sometimes pose dangers to living things by identifying changes and dangers in the local habitat Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and table by recording observations on a map and in a table. To recognise that environments can change and that this can sometimes pose dangers to living things by learning about environmental dangers and endangered species. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions by writing about and orally presenting findings from research.</p>
<p>Electricity</p>	<ul style="list-style-type: none"> About common electrical appliances and how to construct simple series circuits The key words linked to the topic and how to apply them appropriately About cells, wires, bulbs and buzzers and about the different types of switches To troubleshoot and identify whether or not a bulb will light in a simple series circuit and be able to identify a complete circuit About conductors and insulators and know that metals are very good electrical conductors 	<p>electricity, appliances, mains, battery, power, device, circuit, component, cell, wires, bulb, buzzer, switch, open, closed, conductor, insulator, plastic, metal, energy ball, complete circuit, incomplete circuit, series circuit, material, prediction question, results, classify, equipment, measure, conclusion, diagram,</p>	<p>Identify common appliances that run on electricity. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. To classify and present data, identifying common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Making systematic and careful observations, using a range of equipment. Recording findings using labelled diagrams. To identify circuit components and build working circuits 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. Setting up simple practical enquiries, comparative and fair tests. Using results to draw simple conclusions. To investigate whether circuits are complete or incomplete. Recognise some common conductors and insulators, and associate metals with being good conductors. Setting up simple practical enquiries, comparative and fair tests. Using results to draw simple conclusions. To investigate which materials are electrical conductors or insulators. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. To explain how a switch works in a circuit, build switches and report my findings. Using straightforward scientific evidence to answer questions or to support their findings.</p>	

		investigation, observe	Identifying differences, similarities or changes related to simple scientific ideas and processes. To discuss and solve problems about electricity using reasoning skills.
Animals Including Humans	<ul style="list-style-type: none"> About the digestive system in humans and animals and the functions of teeth About herbivores, carnivores and omnivores in the context of teeth, digestion and the food chain About understanding of food chains to more complex chains and food webs 	digestive system, mouth, tongue, teeth, oesophagus, stomach, gallbladder, small intestine, pancreas, rectum and anus, large intestine, liver, duodenum, tooth, canine, incisor, molar, premolar, producer, consumer	<p>To describe the simple functions of the basic parts of the digestive system in humans by explaining the functions of the different parts of the digestive system</p> <p>To use straightforward scientific evidence to answer questions by reading an explanation text and answering questions.</p> <p>To identify the different types of teeth in humans and their simple functions by learning about different types of teeth.</p> <p>To identify differences, similarities or changes related to simple scientific ideas and processes by comparing human and animal teeth</p> <p>To ask relevant questions and use different types of scientific enquiries to answer them by distinguishing between scientific and non-scientific questions and choosing between types of scientific enquiry.</p> <p>To set up simple practical enquiries, comparative and fair tests by setting up an enquiry or test to understand what causes tooth decay</p> <p>To make systematic and careful observations by observing the changes that occur in their enquiry or test.</p> <p>To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions by presenting findings, making predictions and raising questions about results.</p> <p>To construct and interpret a variety of food chains, identifying producers, predators and prey by understanding food chains and the role of different plants and animals within them</p>
Sound	<ul style="list-style-type: none"> About how vibrations cause sounds and how sounds travel, as well as how sounds can change pitch and loudness About how sounds are made, carrying out demonstrations of vibrations, and completing a sound survey To create a human model of the way particles pass sound vibrations on To explore pitch, and will use their understanding of how high and low sounds are made to create their own set of pan pipes To make a string telephone, and will use this to investigate how sounds change over distance and through different materials To investigate the best material for soundproofing, in the context of making a music studio quieter 	amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave	<p>To identify how sounds are made, associating some of them with something vibrating, by identifying and explaining sound sources around school.</p> <p>To identify how sounds are made, associating some of them with something vibrating, by performing a dramatisation of how sounds travel.</p> <p>To find patterns between the volume of a sound and the strength of the vibrations that produced it, by performing a dramatisation of how sounds travel.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by performing a dramatisation of how sounds travel.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by exploring how high and low sounds are created.</p> <p>To find patterns between the pitch of a sound and features of the object that produced it, by exploring and creating musical instruments, and explaining how they change pitch.</p> <p>To recognise that sounds get fainter as the distance from the sound source increases, by exploring how sounds change over distance.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by making string telephones.</p> <p>To recognise that sounds get fainter as the distance from the sound source increases, by exploring how sounds change over distance.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by making a musical instrument and explaining how it works.</p> <p>To find patterns between the pitch of a sound and features of the object that produced it, by making a musical instrument and explaining how it works.</p>

	<p>States of Matter</p>	<ul style="list-style-type: none"> • About the differences between solids, liquids and gases, classifying objects and identifying their properties • to investigate the weight of a gas • to find the ideal temperature to melt chocolate • how water changes state, exploring melting, freezing, condensing as well as a particular focus on evaporation • About the stages of the water cycle, creating mini water worlds and an interactive water wheel to represent the different stages 	<p>solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection</p>	<p>To compare and group materials together, according to whether they are solids, liquids or gases by sorting and describing materials into solids, liquids and gases.</p> <p>To compare and group materials together, according to whether they are solids, liquids or gases by investigating gases and their uses.</p> <p>To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) by investigating how heating and cooling can change a material's state.</p> <p>To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) by exploring how water can change its state to a solid, liquid or a gas.</p> <p>To associate the rate of evaporation with temperature by investigating the effect of temperature on drying washing.</p> <p>To make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions by investigating the effect of temperature on drying washing.</p> <p>To identify the part played by evaporation and condensation in the water cycle by creating a model of the water cycle</p>
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<p>Scientists and Inventors</p>	<ul style="list-style-type: none"> • About famous scientists and inventors linked to the Y4 science curriculum • About the dangers posed to living things in Madagascar, and Gerald Durrell's conservation efforts on the island • About Alexander Graham Bell and his invention of the telephone, as well as modern improvements on his invention by inventors like James West and Gerhard M. Sessler • About the life and work of Alexander Bell. About the early uses of solar energy in homes, invented and built by Maria Telkes and Eleanor Raymond, then build their own basic solar oven • The many inventions of Garrett Morgan • About the discovery of oxygen and carry out an experiment to investigate the effects of oxygen on burning objects • About Lord Kelvin and Thomas Edison • About the invention of toothpaste, and will invent their own brand of toothpaste to compare against real brands 	<p>Gerald Durrell, conservation, Garrett Morgan, traffic light, telephone, Alexander Graham Bell, phlogiston, oxygen, Antoine Lavoisier, Joseph Priestley, temperature, absolute zero, Lord Kelvin, Madagascar, Maria Telkes, deforestation</p>	<p>To recognise that environments can change and that this can sometimes pose dangers to living things by exploring Gerald Durrell's conservation work in Madagascar. To set up simple practical enquiries and report on findings from enquiries in the context of soil erosion and nutrient loss. To report on findings, including oral and written presentations and displays in the context of Alexander Graham Bell's invention of the telephone. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers in the context of building a solar oven. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit in the context of creating a traffic light. To compare and group materials together according to whether they are solids, liquids or gases by exploring the discovery of oxygen. To identify changes relating to simple scientific ideas and processes by exploring the discovery of oxygen and the theory of phlogiston. To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) by exploring Kelvin's discovery of absolute zero. To take accurate measurements using standard units and a range of equipment, including thermometers by comparing the Kelvin scale with Celsius. To identify changes related to scientific ideas and processes by exploring Thomas Edison's work with electricity. To identify common electrical appliances that run on electricity by exploring Thomas Edison's work with electricity. To identify the different types of teeth in humans and their functions by finding out about the invention of toothpaste. To use scientific evidence from comparative tests to support their findings by comparing different toothpastes.</p>
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Upper Key Stage 2 National Curriculum Programme of Study

Year 5

Year 6

Living things and their habitats

Pupils should be taught to:

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals

Animals, including humans

Pupils should be taught to:

- describe the changes as humans develop to old age

Properties and changes of materials

Pupils should be taught to:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Earth and space

Pupils should be taught to:

- describe the movement of the Earth and other planets relative to the sun in the solar system
- describe the movement of the moon relative to the Earth
- describe the sun, Earth and moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

Forces

Pupils should be taught to:

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

Living things and their habitats

Pupils should be taught to:

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

Animals including humans

Pupils should be taught to:

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

Evolution and inheritance

Pupils should be taught to:

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

Light

Pupils should be taught to:

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

Electricity

Pupils should be taught to:

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

Working Scientifically

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Unit being taught...		Learners will be finding out...	Key Vocabulary...	Curriculum Coverage...
Year 5	Animals Including Humans	<ul style="list-style-type: none"> • About changes that human beings experience as they develop to old age • About the life cycle of a human being • The development of babies; the gestation period of humans and other animals • About the body as humans get older, as well as comparing the life expectancy of different animals • About the changes experienced during puberty and why these occur 	puberty, life cycle, gestation, growth, reproduce, foetus, baby, fertilisation, toddler, child, teenager, adult, old age, life expectancy, adolescence, childhood, adulthood, womb, life, death	<p>Describe the changes as humans develop to old age by drawing a timeline to indicate stages in the growth and development of humans</p> <p>Describe the changes as humans develop to old age in the context of the development of babies in their first year</p> <p>Record data and results of increasing complexity using bar and line graphs in the context of the growth of babies in height and/or weight during their first year after birth.</p> <p>Describe the changes as humans develop to old age by comparing the changes that take place to boys and girls during puberty</p> <p>Describe the changes as humans develop to old age by understanding the changes that take place in old age</p> <p>Report findings from enquiries, including oral and written explanations of results in the context of the gestation period for animals</p> <p>Record data and results of increasing complexity using bar and line graphs, and models in the context of comparing gestation periods and life expectancies of animals.</p> <p>Reporting and presenting findings from enquiries, including causal relationships by analysing data on gestation periods and life expectancies of animals</p>
	Living Things and Their Habitats	<ul style="list-style-type: none"> • About the process of reproduction and the life cycles of plants, mammals, amphibians, insects and birds • About the reproduction in different plants, including different methods of pollination and asexual reproduction • The parts of a flower • To take cuttings from plants, creating clones of the parent plant • About different types of mammals and their different life cycles • About Jane Goodall and her work with the now-endangered chimpanzees in Africa 	Sexual, asexual, reproduction, cell, fertilisation, pollination, male, female, pregnancy, gestation, young, Jane Goodall, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant	<p>To describe the life process of reproduction in some plants and animals by exploring sexual reproduction in plants.</p> <p>To describe the life cycle of a mammal by exploring the life cycles of mammals in different habitats. To describe the life process of reproduction in some plants and animals by describing sexual reproduction in mammals</p> <p>To describe the life process of reproduction in some plants and animals by exploring Jane Goodall's work with chimpanzees.</p> <p>To describe the differences in the life cycles of an amphibian and an insect by exploring complete and incomplete metamorphosis</p> <p>To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird by describing and comparing different life cycles, including birds</p>

	<ul style="list-style-type: none"> About metamorphosis in insects and amphibians, comparing their life cycles About the life cycles of birds 		
Properties and Changes of Materials	<ul style="list-style-type: none"> About different materials, their uses and their properties, as well as dissolving, separating mixtures and irreversible changes How to sort and classify objects according to their properties About the properties of materials to find the most suitable material for different purposes About thermal insulators/conductors About electrical conductors 	<p>material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard</p>	<p>To compare and group together everyday materials on the basis of their properties, including their hardness, transparency and response to magnets by sorting and classifying materials according to their properties. To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by investigating thermal conductors and insulators To compare and group together everyday materials on the basis of their thermal conductivity by investigating thermal conductors and insulators To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by investigating the best electrical conductors. To compare and group together everyday materials on the basis of their electrical conductivity by investigating the best electrical conductors To know that some materials will dissolve in liquid to form a solution by investigating dissolving. To compare and group together everyday materials on the basis of their solubility by investigating dissolving To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating by separating different mixtures. To demonstrate that dissolving, mixing and changes of state are reversible changes by separating different mixtures. To describe how to recover a substance from a solution by separating different mixtures. To 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 by identifying and observing irreversible chemical changes.</p>
Forces	<ul style="list-style-type: none"> About types of forces such as gravity, friction, water resistance and air resistance about the use of mechanisms such as levers, gears and pulleys About forces and find out about Isaac Newton and his discoveries About the links between the mass and weight of objects, using newton meters to measure the force of gravity About air and water resistance How to conduct fair test 	<p>force, push, pull, opposing, gravity, air resistance, water resistance, fraction, Isaac Newton, Galileo Galilei, streamline, brake, gear, mechanism, lever, cog, pulley, machine</p>	<p>To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by identifying forces acting on objects. To identify the effects of air resistance, water resistance and friction by identifying forces acting on objects To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by measuring the force of gravity pulling on objects. To identify the effects of air resistance by investigating the best parachute to slow a person down. To identify the effects of water resistance by creating and racing streamlined boats. To identify the effects of friction by investigating brakes. To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect by exploring and designing a simple mechanism.</p>
Earth and Space	<ul style="list-style-type: none"> The aim is to give children a basic overview of Earth and its place in our Solar System 	<p>Earth, Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, Solar System, day, night, rotate, orbit, axis,</p>	<p>Describing the Sun, Earth and Moon as approximately spherical bodies by understanding how this knowledge has been attained. Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of how ideas changed from a flat earth view Describing the movement of the Earth, and other planets, relative to the Sun in the solar system by learning the order of the planets and how they move in the solar system. Describing the movement of the Earth, and other planets, relative to the Sun in the solar system by examining the geocentric and heliocentric theories.</p>

			spherical, geocentric, heliocentric	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the shift from heliocentric models of the solar system to geocentric models.</p> <p>Using the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by examining why the sun appears to move and the arguments for the Earth's rotation.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the evidence for the Earth's rotation.</p> <p>Using the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by predicting night and day in different places on Earth.</p> <p>Reporting and presenting findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations in the context of investigating night and day</p> <p>Describing the movement of the Moon relative to the Earth by explaining how the Moon orbits the Earth.</p>
	Scientists and Inventors	<ul style="list-style-type: none"> About David Attenborough, Margaret Hamilton, Neil deGrasse Tyson, Eva Crane, Stephanie Kwolek, Leonardo da Vinci 	David Attenborough, documentary, naturalist, CSI, evidence, support, refute, Margaret Hamilton, Apollo 11, moon, software, Leonardo da Vinci, proportions, Eva Crane, bee, Stonehenge, astronomy, sun, eclipse, chromatography	<p>To identify scientific evidence that has been used to support or refute ideas or arguments in the context of how CSI technicians use evidence to solve crimes.</p> <p>To use knowledge of solids, liquids and gases to decide how mixtures might be separated in the context of using chromatography to solve a 'crime'</p> <p>To describe how scientific ideas have changed over time in the context of Margaret Hamilton's development of the software for the Apollo Moon missions.</p> <p>To describe the movement of the Earth, and other planets, relative to the Sun in the solar system in the context of classifying and ordering planets based on their sizes, surface and orbits.</p> <p>To describe the life process of reproduction in some plants and animals in the context of Eva Crane's research into the life cycle of bees.</p> <p>To compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets in the context of finding materials appropriate for a particular use</p> <p>To plan different types of scientific enquiries to answer questions in the context of checking the accuracy of the proportions described in da Vinci's Vitruvian Man.</p> <p>To use test results to make predictions in the context of making predictions about height and length based on their results about the proportions of the human body.</p> <p>To identify scientific evidence that has been used to support or refute ideas in the context of the theories surrounding the alignment of the stones at Stonehenge.</p>
Year 6	Light	<ul style="list-style-type: none"> About light, how we see, shadows, reflection and refraction How light travels and how this enables us to see objects About mirrors and the angles of reflection and incidence About refraction and the visible spectrum About Isaac Newton and his theory of light and colour 	shadow, light, filter, colour, reflect, absorb, refract, spectrum, wavelength, prism, visible, lens, angle, incidence, straight, ray, beam, wave, photon, energy	<p>To recognise that light appears to travel in straight lines by creating a model of light travelling.</p> <p>To 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 by creating a model of light travelling.</p> <p>To 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 by creating a light documentary.</p> <p>To recognise that light appears to travel in straight lines by investigating the angles of incidence and reflection. To 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 by creating a periscope and explaining how it works.</p> <p>To 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 by creating a periscope and explaining how it works.</p> <p>To recognise that light appears to travel in straight lines by investigating refraction.</p> <p>To recognise that light appears to travel in straight lines by exploring prisms and creating colour wheels.</p> <p>To 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 by investigating how we see colours.</p> <p>To 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 by investigating how we see colours.</p> <p>To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them by performing a shadow puppet show about Isaac Newton.</p>

			To identify scientific evidence that has been used to support or refute ideas or arguments by performing a shadow puppet show about Isaac Newton.
Electricity	<ul style="list-style-type: none"> How to represent circuits using symbols in a diagram About two of the most important scientific inventors in the field of electricity – Thomas Edison and Nikola Tesla About what electricity is and how to measure it 	Marie Van Brittan Brown, electric current, Thomas Edison, Nikola Tesla, Alessandro Volta, alternating current, direct current, battery, call, bulb, Lewis H. Latimer, wire, open switch, closed switch, motor, buzzer, circuit, voltage, brightness, Florence Parpart	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the major discoveries made by scientists in the field of electricity</p> <p>Use recognised symbols when representing a simple circuit in a diagram by observing and explaining the effect of different volts in a circuit.</p> <p>Associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit by observing and explaining the effect of different volts in a circuit.</p> <p>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</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary by investigating the relationship between wire length and the brightness of bulbs or the loudness of buzzers</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations by conducting an investigation, presenting and report findings on the effect of wire length on the brightness of bulbs or the loudness of buzzers.</p> <p>Using test results to make predictions to set up further comparative and fair tests by planning and conducting a further investigation.</p>
Evolution and Inheritance	<ul style="list-style-type: none"> About variation and adaptation How both Charles Darwin and Alfred Wallace separately developed their theories of evolution About plants and animals that support the theory of evolution 	evolution, adaptation, inherited traits, inheritance, adaptive traits, natural selection, Charles Darwin, Alfred Wallace, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living things	<p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents in the context of inheritance.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways in the context of environmental variation.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments; Identify how adaptation may lead to evolution by examining the theories of evolution constructed by Darwin and Wallace.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments; Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of the evolution of plants and animals</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments; Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of the evolution of human beings</p> <p>Identify how adaptation may lead to evolution by examining the advantages and disadvantages of specific adaptations and the role of human intervention in the process of evolution.</p>
Animals Including Humans	<ul style="list-style-type: none"> About the different systems within the body About the parts and functions of the circulatory system How nutrients are transported around the human body How a healthy lifestyle supports the body to function 	Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco	<p>To identify and name the main parts of the human circulatory system by recalling prior knowledge of systems in the human body and labelling a diagram.</p> <p>To describe the functions of the heart, blood vessels and blood by investigating how the different parts of the circulatory system work.</p> <p>To describe the ways in which nutrients and water are transported within animals, including humans in the context of the human body</p> <p>To recognise the impact of diet and exercise on the way their bodies function by describing the effects of a healthy lifestyle.</p> <p>To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurement with increasing accuracy and precision, taking repeat</p>

	and how different types of drugs affect the body		<p>readings when appropriate by creating an enquiry that compares and categorises different forms of exercise and by taking accurate pulse measurements to gather data.</p> <p>To record data and results of increasing complexity using classification keys, tables, scatter graphs, bar and line graphs.</p> <p>To report findings from enquiries, including conclusions and degree of trust in results, in written forms by reporting and presenting the findings of their enquiry</p> <p>To recognise the impact of drugs on the way their bodies function in the context of drugs and alcohol</p> <p>To identify scientific evidence that has been used to support or refute ideas or arguments in the context of changing attitudes to smoking.</p>
Living Things and Their Habitats	<ul style="list-style-type: none"> About the classification of living things, including micro-organisms How to sort animals into groups based on their similarities and differences About the standard system of classification first developed by Carl Linnaeus About micro-organisms 	<p>classify, compare, Carl Linnaeus, bacteria, characteristics, classification, microorganism, organism, invertebrates, vertebrates, flowering, non-flowering, Linnaean</p>	<p>To give reasons for classifying plants and animals based on specific characteristics in the context of sorting and grouping animals for a zoo.</p> <p>To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals by finding out about the Linnaean System of classification.</p> <p>To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals by identifying the characteristics of mammals, birds, insects, reptiles, amphibians, fish, arachnids, annelids, crustaceans, echinoderms and molluscs.</p> <p>To give reasons for classifying plants and animals based on specific characteristics by exploring unusual creatures and designing their own curious creature</p> <p>To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals by exploring helpful and harmful microorganisms</p> <p>To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals I can identify the characteristics of different types of microorganisms.</p> <p>To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals by grouping organisms found in the local habitat</p> <p>To give reasons for classifying plants and animals based on specific characteristics by creating a field guide to the organisms found in the local habitat.</p>
Scientists and Inventors	<ul style="list-style-type: none"> About Stephen Hawking, Libbie Hyman, Marie Maynard Daly, Alexander Fleming, Mary Leakey, Dr Daniel Hale Williams and Steve Jobs 	<p>Stephen Hawking, astrophysicist, black hole, Libbie Hyman, zoologist, invertebrate, Alexander Fleming, penicillin, Mary Leakey, fossil, Marie Maynard Daly, Dr Daniel Hale Williams, cholesterol, Steve Jobs, technology, computer, circulatory system, classification, evolution, taxonomy</p>	<p>To report and present findings from enquiries, including causal relationships, in oral and written forms such as displays and other presentations in the context of Stephen Hawking and his findings on black holes.</p> <p>To give reasons for classifying plants and animals based on specific characteristics in the context of Libbie Hyman's work on classifying vertebrates and invertebrates.</p> <p>To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function in the context of exploring Marie Maynard Daly's findings on diet and heart-health.</p> <p>To record data using scatter graphs in the context of Fleming's discovery of penicillin</p> <p>To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of Mary Leakey's fossil findings in the Olduvai Gorge</p> <p>To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood in the context of finding out about Dr Daniel Hale Williams, then labelling the parts and functions of the circulatory system.</p> <p>To use recognised symbols when representing a simple circuit in a diagram in the context of the invention of Apple computers and the life of Steve Jobs.</p>

Curriculum Expectations and Guidance

What pupils should know, be able to do and understand

	Years 1 and 2	Years 3 and 4	Years 5 and 6
Asking Questions and Carrying Out Fair and Comparative Tests	<p>KS1 Science National Curriculum</p> <p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Performing simple tests. Children can:</p> <ul style="list-style-type: none"> a explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b begin to recognise ways in which they might answer scientific questions; c ask people questions and use simple secondary sources to find answers; d carry out simple practical tests, using simple equipment; e experience different types of scientific enquiries, including practical activities; talk about the aim of scientific tests they are working on. 	<p>Lower KS2 Science National Curriculum</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Children can:</p> <ul style="list-style-type: none"> a start to raise their own relevant questions about the world around them in response to a range of scientific experiences; b start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c recognise when a fair test is necessary; d help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; e set up and carry out simple comparative and fair tests. 	<p>Upper KS2 Science National Curriculum</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Children can:</p> <ul style="list-style-type: none"> a with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c explore and talk about their ideas, raising different kinds of scientific questions; d ask their own questions about scientific phenomena; e select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; g plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary; h use their test results to identify when further tests and observations may be needed; i use test results to make predictions for further tests.
Observing and Measuring Changes	<p>KS1 Science National Curriculum</p> <p>Observing closely, using simple equipment.</p> <p>Children can:</p> <ul style="list-style-type: none"> a observe the natural and humanly constructed world around them; b observe changes over time; c use simple measurements and equipment; d make careful observations, sometimes using equipment to help them observe carefully. 	<p>Lower KS2 Science National Curriculum</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Children can:</p> <ul style="list-style-type: none"> a make systematic and careful observations; b observe changes over time; c use a range of equipment, including thermometers and data loggers; d ask their own questions about what they observe; 	<p>Upper KS2 Science National Curriculum</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Children can:</p> <ul style="list-style-type: none"> a choose the most appropriate equipment to make measurements and explain how to use it accurately; b take measurements using a range of scientific equipment with increasing accuracy and precision; c make careful and focused observations;

		<p>e where appropriate, take accurate measurements using standard units using a range of equipment.</p>	<p>d know the importance of taking repeat readings and take repeat readings where appropriate.</p>
Identifying, Classifying, Recording and Presenting Data	<p>KS1 Science National Curriculum</p> <p>Identifying and classifying.</p> <p>Gathering and recording data to help in answering questions. Children can:</p> <ul style="list-style-type: none"> a use simple features to compare objects, materials and living things; b decide how to sort and classify objects into simple groups with some help; c record and communicate findings in a range of ways with support; d sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. 	<p>Lower KS2 Science National Curriculum</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> a talk about criteria for grouping, sorting and classifying; b group and classify things; c collect data from their own observations and measurements; d present data in a variety of ways to help in answering questions; e use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; f record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. 	<p>Upper KS2 Science National Curriculum</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> a independently group, classify and describe living things and materials; b use and develop keys and other information records to identify, classify and describe living things and materials; c decide how to record data from a choice of familiar approaches; d record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.
Drawing Conclusions, Noticing Patterns and Presenting Findings	<p>KS1 Science National Curriculum</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice links between cause and effect with support; b begin to notice patterns and relationships with support; c begin to draw simple conclusions; d identify and discuss differences between their results; e use simple and scientific language; f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1; g talk about their findings to a variety of audiences in a variety of ways. 	<p>Lower KS2 Science National Curriculum</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a draw simple conclusions from their results; b make predictions; c suggest improvements to investigations; d raise further questions which could be investigated; e first talk about, and then go on to write about, what they have found out; f report and present their results and conclusions to others in written and oral forms with increasing confidence. 	<p>Upper KS2 Science National Curriculum</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice patterns; b draw conclusions based in their data and observations; c use their scientific knowledge and understanding to explain their findings; d read, spell and pronounce scientific vocabulary correctly; e identify patterns that might be found in the natural environment; f look for different causal relationships in their data; g discuss the degree of trust they can have in a set of results; h independently report and present their conclusions to others in oral and written forms.

Lower KS2 Science National Curriculum

Identifying differences, similarities or changes related to simple scientific ideas and processes.

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

Children can:

- a make links between their own science results and other scientific evidence;
- b use straightforward scientific evidence to answer questions or support their findings;
- c identify similarities, differences, patterns and changes relating to simple scientific ideas and processes;
- d recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.

Upper KS2 Science National Curriculum

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

Children can:

- a use primary and secondary sources evidence to justify ideas;
- b identify evidence that refutes or supports their ideas;
- c recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact;
- d use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas;
- e talk about how scientific ideas have developed over time.