

Level Expected at the End of EYFS

We have selected the Early Learning Goals that link to the Science National Curriculum. For more detail about linked subject progression within the EYFS Framework, please refer to [these documents](#).

The Natural World:

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- 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
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Key Stage 1 National Curriculum Expectations

- The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice.
- Pupils should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information.
- In KS1, pupils should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.
- 'Working scientifically' is taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.
- Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.

Lower Key Stage 2 National Curriculum Expectations

- The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions.
- Pupils should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information.
- They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- 'Working scientifically' is taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.
- Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.

Upper Key Stage 2 National Curriculum Expectations

- The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.
- At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.
- They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.
- Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.
- 'Working and thinking scientifically' is taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.
- Pupils should read, spell and pronounce scientific vocabulary correctly.

For further information about the specific objectives for each phase from Key Stage 1 to Upper Key Stage 2, please click the following link:

[Key stage 1 and 2 programme of study](#)

Intent

Every child at Cookridge Primary School will develop the scientific knowledge and conceptual understanding to succeed in becoming confident, enthusiastic and capable scientists of the future. Science at Cookridge has a 'hands on' and interactive approach which not only inspires all children to achieve their best, but allows them to speculate, enquire and hypothesise about the world and all of its wonders. We provide all our pupils with the opportunity to succeed and to reach the highest level of personal achievement in science. We do this by ensuring equality of access for all pupils in science and preparing them for life in a diverse society. We do this by providing opportunities for pupils to appreciate their own culture and celebrate the diversity of other cultures, ensuring all scientific equipment and materials are inclusive, supporting protected characteristics of students and staff. The children will become respectful members of an ever-diversifying world, respecting all people's protected characteristics, as required by law. We will make reasonable adjustment to make sure all children can access the curriculum whatever their need.



Implementation

Science at Cookridge Primary School will cover the National Curriculum objectives through the implementation of the following:

- From Year 1 to Year 6, science frameworks have been developed to ensure teaching occurs in a way that allows children to build on their prior knowledge in a logical order. It is our belief that each step of the framework underpins the following objectives. These frameworks are clearly evident on the science subject guidance page for each year group which allows all stakeholders of Cookridge Primary School access.
- From KS1 to UKS2, the curriculum has been adapted to ensure all children thoroughly explore the 'Working Scientifically' objectives in the first half term of each school year. This is to ensure a foundation for learning key scientific skills is engrained in our pupils every year, before they are utilized across every science topic.
- Pupils take part in short fluency sessions regularly, which recap previous learning, and include the use of Kahoot to ensure a strong foundation in the basics.
- At Cookridge Primary School, our science planning is based around Twinkl's schemes of work. We follow the Twinkl *Plan It: Unit Overviews* to ensure pitch and order of teaching is accurate. We then build on these using other resources to ensure there are elements of enquiry, investigation and exploration throughout our curriculum.
- We have developed our medium-term planning across each phase to ensure a depth of teaching occurs for each topic. These have been expanded from the national curriculum statements. Teachers produce tabletops that allow pupils to independently access all science learning and teaching. Support staff then target children when additional support is needed. Improvement Challenges (ICs) are used to address misconceptions that have been identified and Mastery Challenges (MCs) are used to challenge children who have successfully met the objectives.
- Through regular book scrutiny, observations and assessment, we are able to ensure that science is being pitched and taught accurately across the primary phase and that all of the above is in place for all children. This ensures that there is a consistency in the approach to teaching science and therefore provides pupils with the best opportunity to succeed.
- The science leads work collaboratively, with other members of the trust where we are able, to moderate and share new strategies.



Impact

- Measure against last national data (Considering impact of COVID-19) - 2019 KS1 results above national - Science - 84%
- Measure against last national data (Considering impact of COVID-19) - 2019 KS2 results above national – Science - 91%,
- What is the subject performance like? – Data and triangulation activities – internal and external
- Analyse performance of different group using the Subject crib sheet
- Who are your children of focus and why? – Subject crib sheet
- Can you measure impact and clearly state the subject Intent as a truth? – Our intent for this subject is a reality because...

KS1 Science framework: Cycle 1 and 2

Cycle 1:

Cycle 2:

Key Learning for Secure (Expected)			Key Learning for Secure (Expected)		
Scientific Enquiry	ScIn1.1	I can ask simple questions and recognise that they can be answered in different ways.	Scientific Enquiry	ScIn1.2	I can ask simple questions and recognise that they can be answered in different ways.
	ScIn2.1	I can use simple equipment to observe scientific investigation closely.		ScIn2.2	I can use simple equipment to observe closely scientific investigation.
	ScIn3.1	I can perform simple tests.		ScIn3.2	I can perform simple tests.
	ScIn4.1	I can identify and classify scientifically.		ScIn4.2	I can identify and classify scientifically.
	ScIn5.1	I can use my observations and ideas to suggest answers to questions.		ScIn5.2	I can use my observations and ideas to suggest answers to questions.
	ScIn6.1	I can gather and record data to help in answering questions.		ScIn6.2	I can gather and record data to help in answering questions.
Everyday Materials	SC1.1	I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (Y1)	Animals including Humans	SC1.2	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1)
	SC2.1	I can distinguish between an object and the material from which it is made (Y1)		SC2.2	I notice that animals, including humans, have offspring which grow into adults. (Y2)
	SC3.1	I can describe the simple physical properties of everyday materials (Y1)		SC3.2	I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2)
	SC4.1	I can compare and group together materials on the basis of their simple physical properties (Y1)		SC4.2	I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2)
Use of Everyday materials	SC5.1	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Y2)	Seasonal changes	SC5.2	I can observe changes across the four seasons. (Y1)
	SC6.1	I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2)		SC6.2	I can observe and describe weather associated with the seasons and how day length varies. (Y1)
Animals including humans	SC7.1	I identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (Y1)	Plants	SC7.2	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1)
	SC8.1	Identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1)		SC8.2	I can identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1)
	SC9.1	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) (Y1)		SC9.2	I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2)
Living things and their habitats	SC10.1	I can explore and compare the differences between things that are living, dead and things that have never been alive (Y2)	SC10.2	I can observe and describe how seeds and bulbs grow into mature plants. (Y2)	
	SC11.1	I can identify and name a variety of plants and animals in their habitats, including microhabitats (Y2)			
	SC12.1	I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (Y2)			
	SC13.1	I can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (Y2)			

LKS2 Science framework: Cycle 1 and 2

Cycle 1:

Cycle 2:

Key Learning for Secure (Expected)		
Scientific Enquiry	ScIn1.1	I can ask relevant questions and I can set up simple practical enquiries, comparative and fair tests in order to find answers.
	ScIn2.1	I can gather and record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
	ScIn3.1	I can gather, record, classify and present data in a variety of ways to help in answering questions.
	ScIn4.1	I can report on findings using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
	ScIn5.1	I can identify differences, similarities or changes related to simple scientific ideas and processes.
	ScIn6.1	I can use straightforward scientific evidence to answer questions or to support my findings.
States of matter	SC1.1	I can compare and group solids, liquids and gasses (Y4)
	SC2.1	I can observe that materials change state depending on temperature, and measure or research the temperature at which this happens in degrees Celsius (°C) (Y4)
	SC3.1	I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (Y4)
Sound	S1.1	I can identify how sounds are made, associating some of them with something vibrating (Y4)
	S2.1	I can recognise that sounds get fainter as the distance from the sound source increases (Y4)
	S3.1	I can recognise that vibrations from sounds travel through a medium to the ear (Y4)
	S4.1	I can find patterns between the volume of a sound and the strength of the vibrations that produced it (Y4)
Light	SC8.1	I can recognise that we need light in order to see things and that dark is the absence of light (Y3)
	SC9.1	I can recognise that shadows are formed when the light from a light source is blocked by an opaque object (Y3)
	SC10.1	I can notice that light is reflected from surfaces (Y3)
	SC11.1	I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes (Y3)
	SC12.1	I can find patterns in the way that the size of shadows change (Y3)
Electricity	SC13.1	I can identify common appliances that run on electricity (Y4)
	SC14.1	I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers(Y4)
	SC15.1	I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery (Y4)
	SC16.1	I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit (Y4)
	S17.1	I can recognise some common conductors and insulators, and associate metals with being good conductors (Y4)
Forces and Magnets	S18.1	I can compare how things move on different surfaces (Y3)
	S19.1	I can notice that some forces need contact between two objects, but magnetic forces can act at a distance (Y3)
	S20.1	I can observe how magnets attract or repel each other and attract some materials and not others (Y3)
	SC21.1	I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials (Y3)
	SC22.1	I can describe magnets as having two poles (Y3)
	SC23.1	I can predict whether two magnets will attract or repel each other, depending on which poles are facing (Y3)

Key Learning for Secure (Expected)		
Scientific Enquiry	ScIn1.2	I can ask relevant questions and I can set up simple practical enquiries, comparative and fair tests in order to find answers.
	ScIn2.2	I can gather and record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
	ScIn3.2	I can gather, record, classify and present data in a variety of ways to help in answering questions.
	ScIn4.2	I can report on findings using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
	ScIn5.2	I can identify differences, similarities or changes related to simple scientific ideas and processes.
	ScIn6.2	I can use straightforward scientific evidence to answer questions or to support my findings.
Rocks and Fossils	SC1.2	I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (Y3)
	SC2.2	I can describe in simple terms how fossils are formed when things that have lived are trapped within rock (Y3)
	SC3.2	I can recognise that soils are made from rocks and organic matter (Y3)
Animals including humans	SC4.2	I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.(Y3)
	SC5.2	I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. (Y3)
	SC6.2	I can describe the simple functions of the basic parts of the digestive system in humans (Y4)
	SC7.2	I can identify the different types of teeth in humans and their simple functions (Y4)
	SC8.2	I can construct and interpret a variety of food chains, identifying producers, predators and prey.(Y4)
Living things and their habitats	SC9.2	I can recognise that living things can be grouped in a variety of ways (Y4)
	SC10.2	I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4)
	SC11.2	I can recognise that environments can change and that this can sometimes pose dangers to living things. (Y4)
	SC12.2	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (Y3)
Plants	SC13.2	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 (Y3)
	SC14.2	Investigate the way in which water is transported within plants (Y3)
	SC15.2	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (Y3)

UKS2 Science framework: Cycle 1 and 2

Cycle 1:

Cycle 2:

Key Learning for Secure (Expected)		
Scientific Enquiry	ScIn1.1	I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
	ScIn2.1	I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
	ScIn3.1	I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
	ScIn4.1	I can use test results to make predictions to set up further comparative and fair tests.
	ScIn5.1	I can report and present 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.
	ScIn6.1	I can identify scientific evidence that has been used to support or refute ideas or arguments.
Properties and changes of materials	SC1.1	I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5)
	SC2.1	I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution and demonstrate that dissolving, mixing and changes of state are reversible changes. (Y5)
	SC3.1	I use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. (Y5)
	SC4.1	I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. (Y5)
	SC5.1	I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (Y5)
Evolution & inheritance	SC6.1	I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6)
	SC7.1	I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6)
	SC8.1	I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6)
Animals including humans	SC9.1	I can describe the changes as humans develop to old age. (Y5)
	SC10.1	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. (Y6)
	SC11.1	I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6)
	SC12.1	I can describe the ways in which nutrients and water are transported within animals, including humans. (Y6)

Key Learning for Secure (Expected)		
Scientific Enquiry	ScIn1.2	I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
	ScIn2.2	I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
	ScIn3.2	I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
	ScIn4.2	I can use test results to make predictions to set up further comparative and fair tests.
	ScIn5.2	I can report and present 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.
	ScIn6.2	I can identify scientific evidence that has been used to support or refute ideas or arguments.
Electricity	SC1.2	I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit, comparing and giving reasons for variations. (Y6)
	SC2.2	I can use recognised symbols when representing a simple circuit in a diagram. (Y6)
	SC3.2	I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. (Y6)
Forces	SC4.2	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Y5)
	SC5.2	I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. (Y5)
	SC6.2	I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Y5)
Earth, space and light	SC7.2	I describe the movement of the Earth, and other planets, relative to the Sun in the solar system. (Y5)
	SC8.2	I can describe the movement of the Moon relative to the Earth. (Y5)
	SC9.2	I can describe the Sun, Earth and Moon as approximately spherical bodies. (Y5)
	SC10.2	I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. (Y5)
	SC11.2	I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. (Y6)
Living things and their habitats	SC12.2	I can use idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. (Y6)
	SC13.2	I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them (Y6).
	SC14.2	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5)
Living things and their habitats	SC15.2	I can describe the life process of reproduction in some plants and animals. (Y5)
	SC16.2	I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals (Y6)
	SC17.2	I can give reasons for classifying plants and animals based on specific characteristics. (Y6)

Science at Cookridge

Every child at Cookridge Primary School will develop the scientific knowledge and conceptual understanding to succeed in becoming confident, enthusiastic and capable scientists of the future. Science at Cookridge has a 'hands on' and interactive approach which not only inspires all children to achieve their best, but allows them to speculate, enquire and hypothesise about the world and all of its wonders. We provide all our pupils with the opportunity to succeed and to reach the highest level of personal achievement in science. We do this by ensuring equality of access for all pupils in science and preparing them for life in a diverse society. We do this by providing opportunities for pupils to appreciate their own culture and celebrate the diversity of other cultures, ensuring all scientific equipment and materials are inclusive, supporting protected characteristics of students and staff. The children will become respectful members of an ever-diversifying world, respecting all people's protected characteristics, as required by law. We will make reasonable adjustment to make sure all children can access the curriculum whatever their need.

Lessons are varied, fun and child led.

Science is memorable, with varied experiences, including: experiments, trips and discussions.

Children are encouraged to ask questions, use enquiry skills and think about the 'big questions'.

Science is interwoven with links to outdoor learning and Forest



Science is underpinned and linked with key reading and mathematical skills.

Science is taught using a mix of substantive and disciplinary knowledge.

Children are inspired by and learn about real scientists of all demographics.

Science is contextualised in the world of the children.

Science is linked with other topics across the curriculum.

Science is accessible to all children, regardless of protected characteristics.

Science is taught through practical lessons, alongside theoretical ones.

Science planning and teaching is guided by the school framework.

Equalities statement:

We provide all our pupils with the opportunity to succeed and to reach the highest level of personal achievement in science. We do this by:
Ensuring equality of access for all pupils in science and preparing them for life in a diverse society.

- *Diminishing stereotypes within science, by exploring the contributions of marginalised and historically excluded groups such as women, LGBT+, Black, Asian, Minority and Ethnic and disabled scientists.*
- *Providing opportunities for pupils to appreciate their own culture and celebrate the diversity of other cultures*

Using materials that reflect the diversity of the school, population and local community without stereotyping

- *Ensuring all scientific equipment and materials are inclusive, supporting protected characteristics of students and staff.*

Promoting attitudes and values that challenge any discriminatory behaviour or prejudice

- *Raise awareness of current and historical issues, and address and challenge preconceptions facing marginalised groups in science.*

Seeking to involve all parents in supporting their child's education

- *Proactively engage with all parents and carers, including those with protected characteristics, through regular posts and updates on the school website.*

Utilising teaching approaches appropriate for the whole school population which are inclusive and reflective of our pupils.

- *Ensure all science lessons are accessible to all learners, through targeted planning and provision.*

Substantive Knowledge

Substantive knowledge sets out the knowledge-based content pupils will learn. In science, this is stipulated in our frameworks, and divided into the following topics:

KS1 (cycle 1):

- **Everyday materials**
- **Uses of everyday materials**
- **Animals including humans**
- **Living things and their habitats**

KS1 (cycle 2):

- **Animals including humans**
- **Seasonal changes**
- **Plants**

LKS2 (cycle 1):

- **States of matter**
- **Sound**
- **Light**
- **Electricity**
- **Forces and magnets**

LKS2 (cycle 2):

- **Rocks and fossils**
- **Animals including humans**
- **Living things and their habitats**
- **Plants**

UKS2 (cycle 1):

- **Properties of everyday materials**
- **Evolution and inheritance**
- **Animals including humans**

UKS2 (cycle 2):

- **Electricity**
- **Forces**
- **Earth, space and light**
- **Living things and their habitats**

Disciplinary knowledge:

This is how children's scientific knowledge is enhanced by practical skills. It is through disciplinary knowledge that children become more skillful and confident when working scientifically.

KS1 – Year 1 and 2 (Cycle 1)

Everyday materials	a. I can identify and name a variety of everyday materials including: wood, plastic, glass, metal, water and rock.	Substantive Knowledge	<ul style="list-style-type: none"> Understand that there are a variety of everyday materials including: wood, plastic, glass, metal, water and rock Name different types of materials, including: wood, plastic, glass, metal, water and rock. Understand that objects differ from the material they are made from. Know the different properties of everyday materials Understand that different materials have different properties.
	b. I can distinguish between an object and the material from which it is made.		<ul style="list-style-type: none"> Identifying similarities and differences. Use observations and ideas to suggest answers to questions Identify and classify objects and materials Test a hypothesis to answer a scientific question (Which material is the best for making a blanket?)
Uses of everyday materials	c. I can describe the simple physical properties of everyday materials.	Disciplinary Knowledge	<ul style="list-style-type: none"> Identifying similarities and differences. Use observations and ideas to suggest answers to questions Identify and classify objects and materials Test a hypothesis to answer a scientific question (Which material is the best for making a blanket?)
	d. I can compare and group together the materials on the basis of their simple physical properties.		
Animals including humans	a. I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	Substantive Knowledge	<ul style="list-style-type: none"> Understand that there are a variety of everyday materials including: wood, plastic, glass, metal, water and rock Name different types of materials, including: wood, plastic, glass, metal, water and rock. Understand that different materials are suited for different things. Understand what a solid object is. Understand the action of squashing, bending, twisting and stretching. Understand the impact of squashing, bending, twisting and stretching on different materials
	b. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		<ul style="list-style-type: none"> Identifying similarities and differences. Use observations and ideas to suggest answers to questions Identify and classify objects and materials Test a hypothesis to answer a scientific question (Which material is the best for making a blanket?)
Animals including humans	c. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).	Disciplinary Knowledge	<ul style="list-style-type: none"> Identifying similarities and differences. Identify and classify a variety of common animals Ask simple questions and recognise they can be answered in different ways (How can these animals be grouped?)
	a. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.		<ul style="list-style-type: none"> Know the five main vertebrae groups. Name common examples from the five vertebrae groups. Know that animals can be classified into carnivores, herbivores and omnivores. Name common examples of carnivores, herbivores and omnivores. Know the structure of the five main vertebrae groups. Understand that the structure of the five main vertebrae groups differ. Understand what a classification key is.
Animals including humans	b. Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Substantive Knowledge	<ul style="list-style-type: none"> Know the five main vertebrae groups. Name common examples from the five vertebrae groups. Know that animals can be classified into carnivores, herbivores and omnivores. Name common examples of carnivores, herbivores and omnivores. Know the structure of the five main vertebrae groups. Understand that the structure of the five main vertebrae groups differ. Understand what a classification key is.
	c. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).		<ul style="list-style-type: none"> Identifying similarities and differences. Identify and classify a variety of common animals Ask simple questions and recognise they can be answered in different ways (How can these animals be grouped?)
Living things and their habitats	a. I can explore and compare the differences between things that are living, dead, and things that have never been alive.	Substantive Knowledge	<ul style="list-style-type: none"> Understand what makes something living. Understand what makes something dead. Understand that some things have never been alive. Know common examples of living things and dead things. Know common examples of things that have never been alive. Know common examples of plants Know common examples of animals Understand what a habitat is. Understand what a microhabitat is. Understand the meaning of the word inhabitants Know some inhabitants of common habitats and microhabitats
	b. I can identify and name a variety of plants and animals in their habitats, including microhabitats.		
Living things and their habitats	c. I can identify that most living things live in habitats		<ul style="list-style-type: none"> Understand what makes something living. Understand what makes something dead. Understand that some things have never been alive. Know common examples of living things and dead things. Know common examples of things that have never been alive. Know common examples of plants Know common examples of animals Understand what a habitat is. Understand what a microhabitat is. Understand the meaning of the word inhabitants Know some inhabitants of common habitats and microhabitats

	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. d. I can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		<ul style="list-style-type: none"> • Know common examples of habitats and microhabitats. • Understand that different living things have different basic needs. • Understand how the basic needs of a living thing explains its habitat. • Know how different living things (animals and plants) can depend on each other. • Understand what a food chain is. • Name some common examples of food sources • •
		Disciplinary Knowledge	<ul style="list-style-type: none"> • Identifying similarities and differences. • Identify and classify a variety of living, dead and things that have never been alive. • Answer simple questions and recognise they can be answered in different ways (How does a squirrel survive?) • Use observations and ideas to suggest answers to questions

KS1 – Year 1 and 2 (Cycle 2)

Animals including humans	<p>a. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p> <p>b. I notice that animals, including humans, have offspring which grow into adults.</p> <p>c. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>d. I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know the basic parts of the human body. • Know the location of the basic parts of human body. • Know that humans have five senses • Understand which body part is associated with each sense • Understand the meaning of the words: offspring, reproduction, growth, baby, toddler, child, teenager, adult and old person. • Understand the names of animals and their babies (e.g. chick/chicken) • Know what a lifecycle is • Name the process and stages of some common lifecycles (animals including humans) • Understand that different animals have different lifecycles • Know that animals including humans have basic needs for survival. • Understand the impact of exercise on humans. • Know that humans need exercise to stay healthy • Understand the impact of eating the right amounts of different types of food on humans • Know that humans need to eat the right amounts of different types of food to stay healthy • Understand the impact of hygiene on humans • Know that humans need to maintain good hygiene to stay healthy.
		Disciplinary Knowledge	<ul style="list-style-type: none"> • Represent findings using a range of diagrams • Label diagrams with key information • Identify and classify parts of the body and its uses. • Identify and classify animals and their offspring • Use observations and ideas to suggest answers to questions • Identifying similarities and differences.
Seasonal changes	<p>a. I can observe changes across the four seasons</p> <p>b. I can observe and describe weather associated with the seasons and how day length varies.</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know that there are four seasons • Know which months occur in each season • Know that the four seasons are: autumn, spring, winter, summer • Understand that each season has its own individual characteristics • Know the meaning of day length • Understand that daylength varies between months
		Disciplinary Knowledge	<ul style="list-style-type: none"> • Observe and describe the changes between seasons • Observe and describe the weather in each season • Identify and classify the seasons by their characteristics • Identify and classify the seasons using months • Complete simple tests to observe changes in the weather • Use simple equipment to observe changes in weather
Plants	a. I can identify and name a variety of common wild and	Substantive	<ul style="list-style-type: none"> • Name a variety of common wild and garden plants • Understand the difference between deciduous and evergreen trees

	<p>garden plants, including deciduous and evergreen trees</p> <p>b. I can identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>c. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>d. I can observe and describe how seeds and bulbs grow into mature plants.</p>	Knowle dge	<ul style="list-style-type: none"> • Know the basic structure of a variety of common flowering plants, including trees (stem, petal, roots, leaves, flower, seed, trunk, bud, stalk, fruit, berry, blossom, branch) • Understand the characteristics of healthy plants, including trees. • Know that plants need water, light and a suitable temperature to grow and stay healthy. • Understand how a lack of water, light and suitable temperature effects the health of plants. • Know what a seed and bulb is • Know the difference between mature and young plants (seedlings, shoots) • Understand that seeds and bulbs grow into mature plants • Understand the process of plant growth from a seed or bulb
		Discipli nary Knowle dge	<ul style="list-style-type: none"> • Label diagrams with key information • Identify and classify parts of plants, including trees, and their uses. • Observe and describe the changes as plants grow • Use observations and ideas to suggest answers to questions • Identifying similarities and differences.

LKS2 – Year 3 and 4 (Cycle 1)

States of matter	<p>a. I can compare and group solids, liquids and gasses</p> <p>b. I can observe that materials change state depending on temperature, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>c. I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	Substan tive Knowle dge	<ul style="list-style-type: none"> • Know what a solid is. • Know what a gas is. • Know what a liquid is. • Know that solids, liquids and gasses have different characteristics. • Understand what changing state means • Understand that materials change state depending on temperature. • Know at what temperature, materials can change state. • Understand the process of condensation • Understand the process of evaporation • Understand the water cycle • Explain that changes of state occur in the water cycle
		Discipli nary Knowle dge	<ul style="list-style-type: none"> • Observe and describe the changes between states of matter • Label diagrams with key information • Use observations and ideas to suggest answers to questions • Identifying similarities, differences and changes related to scientific ideas and processes • Set up and conduct comparative and fair tests • Gather and record findings using simple scientific language • Gather and record findings using labelled diagrams • Predict the state of a material depending on external factors e.g. temperature, pressure, position
Sound	<p>a. I can identify how sounds are made, associating some of them with something vibrating</p> <p>b. I can recognise that sounds get fainter as the distance from the sound source increases</p> <p>c. I can recognise that vibrations from sounds travel through a medium to the ear</p> <p>d. I can find patterns between the volume of a sound and the strength of the vibrations that produced it</p>	Substan tive Knowle dge	<ul style="list-style-type: none"> • Know the meaning of a 'sound'. • Understand what a vibration is. • Understand how sounds are made from vibrations. • Understand which object is making a sound and how it is linked to vibrations. • Understand that vibrations from a sound travel through a medium to the ear. • Know the meaning of 'wavelength' and 'frequency'
		Discipli nary Knowle dge	<ul style="list-style-type: none"> • Identify similarities and differences between a high pitch and a low pitch. • Identify similarities and differences between a loud and quiet volume. • Gather, record, classify and present data in a variety of ways to help in answering questions • Identify patterns between vibrations and sounds • Set up and conduct comparative and fair tests • Gather and record findings using simple scientific language • Make predictions and raise further questions. • Label diagrams with key information • Use keys to record simple scientific language
Light	<p>a. I can recognise that they need light in order to see</p>	Substan tive	<ul style="list-style-type: none"> • Understand the difference between light and dark. • Understand the meaning of vocabulary such as: light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous, opaque.

	<p>things and that dark is the absence of light</p> <p>b. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>c. I can notice that light is reflected from surfaces</p> <p>d. I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>e. I can find patterns in the way that the size of shadows change</p>	<p>Knowledge</p>	<ul style="list-style-type: none"> • Know that we need light in order to see things. • Understand that dark is the absence of light. • Understand that shadows are formed when an opaque object blocks the light source. • Understand that light is reflected from different surfaces. • Know which surfaces are reflective and which are not. • Know the dangers of the sun and ways to be protected. • Understand that shadows change dependent on the size of an object.
		<p>Disciplinary Knowledge</p>	<ul style="list-style-type: none"> • Identify similarities and differences between light sources • Identify similarities and differences between surfaces • Gather, record, classify and present data in a variety of ways to help in answering questions • Identify patterns between light and dark • Identify patterns in shadows • Set up and conduct comparative and fair tests • Gather and record findings using simple scientific language • Make predictions and raise further questions. • Label diagrams with key information
Electricity	<p>a. I can identify common appliances that run on electricity</p> <p>b. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>c. I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>d. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>e. I can recognise some common conductors and insulators, and associate metals with being good conductors</p>	<p>Substantive Knowledge</p>	<ul style="list-style-type: none"> • Understand the meaning of an appliance. • Name some common appliances. • Understand the meaning of electricity. • Name some common appliances that run on electricity. • Know the basic parts of a simple circuit, including: cell/battery, wires, bulb/lamp, buzzer and switches. • Understand the position of each basic part of a simple circuit. • Know the definition of a simple circuit • Understand that circuits need to be complete to work • Know that a switch dictates whether a circuit is open/closed • Know what an electrical conductor is • Give examples of electrical conductors • Know what an electrical insulator is • Give examples of electrical insulators • Understand metals are good conductors
		<p>Disciplinary Knowledge</p>	<ul style="list-style-type: none"> • Build a circuit using basic components, including: wires, batteries/cells, bulbs, buzzers • Identify similarities and difference between open/closed and complete/incomplete circuits • Ask relevant questions to set up practical enquiries • Gather and record findings using simple scientific language, labelled diagrams and keys • Report on findings to draw simple conclusions using results • Use scientific evidence to answer questions and support my findings •
Forces and magnets	<p>a. I can compare how things move on different surfaces</p> <p>b. I can notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>c. I can observe how magnets attract or repel each other and attract some materials and not others</p> <p>d. I can compare and group together a variety of everyday materials on the</p>	<p>Substantive Knowledge</p>	<ul style="list-style-type: none"> • Know that friction is a force that acts between surfaces. • Understand that different surfaces interact in different ways • Understand that some forces need contact • Understand that magnetic forces can act at a distance • Understand the difference between attract and repel • Know that magnets have two poles (north and south) • Know that opposite magnetic poles attract • Know that the same magnetic poles repel • Understand the term magnetic • Know that the earth has magnetic poles in the north and south • Know that these poles create magnetic fields • Understand that some materials are attracted by magnets • Understand that some materials do not attract magnets • Name some common materials that are attracted by magnets

	<p>basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>e. I can describe magnets as having two poles</p> <p>f. I can predict whether two magnets will attract or repel each other, depending on which poles are facing</p>	Disciplinary Knowledge	<ul style="list-style-type: none"> Identify similarities and difference between magnetic materials Ask relevant questions to set up practical enquiries Gather and record findings using simple scientific language, labelled diagrams and tables Report on findings to draw simple conclusions using results Use scientific evidence to answer questions and support my findings Make predictions, suggest improvements and raise further questions.
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LKS2 – Year 3 and 4 (Cycle 2)

Rocks and fossils	<p>a. I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>b. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>c. I can recognise that soils are made from rocks and organic matter</p>	Substantive Knowledge	<ul style="list-style-type: none"> Know there are different types of rocks Name different types of rocks Understand there are three main types of rocks: metamorphic, sedimentary, igneous Understand the basic physical properties of rocks Know that different types of rocks have different properties Name the different properties of the three main rock types Understand what fossils are Know how fossils are formed Understand what soil is Know the different types of soil Know that soils are made from rocks and organic matter Understand what is meant by organic matter
		Disciplinary Knowledge	<ul style="list-style-type: none"> Identify similarities and difference between soils, rocks and characteristics Ask relevant questions to set up practical enquiries Gather and record findings using simple scientific language, labelled diagrams and tables Make predictions and raise questions using enquiry skills.

Animals including humans	<p>a. I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>b. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>c. I can describe the simple functions of the basic parts of the digestive system in humans</p> <p>d. I can identify the different types of teeth in humans and their simple functions</p> <p>e. I can construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	Substantive Knowledge	<ul style="list-style-type: none"> Understand what is meant by nutrition Understand what is needed for effective nutrition (food groups and eat well plate) Know that humans cannot create their own food Understand that nutrition comes from food that animals including humans eat. Know what a skeleton is Know what muscles are Understand the function of the skeleton and muscles Understand that the relationship between the skeleton and muscles helps move, protect and support the body Understand the term digest Know that the system responsible for digestion is the digestive system Know the basic parts of the digestive system in humans Understand the function of the basic parts of the digestive system. Name the four different types of teeth in humans Understand the simple functions of each type of tooth Understand food chains Know the difference between producers, predators and prey Understand the difference between producers predators and prey
		Disciplinary Knowledge	<ul style="list-style-type: none"> Identify similarities and difference between food types for nutrition (eat well plate) Ask relevant questions to enhance knowledge Gather and record findings using simple scientific language, labelled diagrams and tables Make predictions and raise questions using enquiry skills. Gather record, classify and present data in a variety of ways to help answer questions

Living things and their habitats	<p>a. I can recognise that living things can be grouped in a variety of ways</p> <p>b. I can explore and use</p>	Substantive Knowledge	<ul style="list-style-type: none"> Understand what a living thing is Understand how living things can be grouped. Know when classification keys are used to group Identify and name a variety of living things in local and wider environments
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	classification keys to help group, identify and name a variety of living things in their local and wider environment		<ul style="list-style-type: none"> • Know that environments can change • Understand the reasons why environments change • Know some dangers caused by environmental change • Understand how this can pose dangers to living things
	c. I can recognise that environments can change and that this can sometimes pose dangers to living things.	Disciplinary Knowledge	<ul style="list-style-type: none"> • Identify similarities and differences between living things • Ask relevant questions to enhance knowledge • Gather and record findings using simple scientific language, labelled diagrams and tables • Make predictions and raise questions using enquiry skills. • Gather record, classify and present data in a variety of ways to help answer questions
Plants	a. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Substantive Knowledge	<ul style="list-style-type: none"> • Name parts of flowering plants • Understand their functions • Know the requirements of plants for life and growth • Understand how these vary from plant to plant • Understand the ways water is transported within plants • Understand the lifecycles of flowering plants, including: pollination, seed formation and seed dispersal • Know that different flowering plants may have different life cycles
	b. 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		
	c. Investigate the way in which water is transported within plants	Disciplinary Knowledge	<ul style="list-style-type: none"> • Identify similarities and differences between living things • Ask relevant questions to enhance knowledge • Gather and record findings using simple scientific language, labelled diagrams and tables • Make predictions and raise questions using enquiry skills. • Gather record, classify and present data in a variety of ways to help answer questions •
	d. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.		

UKS2 – Year 5 and 6 (Cycle 1)

Properties of everyday materials	a. I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.	Substantive Knowledge	<ul style="list-style-type: none"> • Name different types of everyday materials • Understand that everyday materials can be grouped due to their characteristics • Know the different types of properties materials can possess: their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know what dissolve means • Understand the difference between: solutions and mixtures • Know that a substance can be recovered from a solution. • Know the meaning of changing state • Know what a reversible change is • Know what an irreversible change is • Understand the difference between reversible and irreversible changes • Understand that dissolving, mixing and changes of state are reversible changes. •
	b. I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution and demonstrate that dissolving, mixing and changes of state are reversible changes.		
	c. I use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	Disciplinary Knowledge	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions including recognizing and controlling variable • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests. • Report and present 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 • Identify scientific evidence that has been used to support or refute ideas or arguments.
	d. I can explain that some		

	<p>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.</p> <p>e. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>		
Evolution and inheritance	<p>a. I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>b. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p> <p>c. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know what makes a living thing • Understand the concept of evolution • Understand what a fossil is and how they are formed • Know the meaning of inhabitant • Understand the concept of pre-history • Understand how fossils can indicate events from prehistory. • Know the meaning of the word adapt • Name a variety of environments and animals/plants that live there • Understand how different plants/animals are adapted to their environments • Understand that adaptations can lead to evolution • Know the meaning of offspring • Know that parents produce offspring of the same kind • Understand that offspring are not identical to their parents
		Disciplinary Knowledge	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions including recognizing and controlling variable • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests. • Report and present 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 • Identify scientific evidence that has been used to support or refute ideas or arguments.
Animals including humans	<p>a. I can describe the changes as humans develop to old age.</p> <p>b. I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>c. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>d. I can describe the ways in which nutrients and water are transported within animals, including humans</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know the stages of the human lifecycle • Understand the different characteristics of each stage of the human lifecycle • Know and name the main parts of the human circulatory system • Understand the function of these parts, including: heart, blood and blood vessels. • Understand the impact of diet, exercise, drugs and lifestyle on the way human bodies function. • Know what nutrients are • Understand why nutrients and water are important • Understand how nutrients and water are transported within animals including humans. •
		Disciplinary Knowledge	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions including recognizing and controlling variable • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests. • Report and present 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 • Identify scientific evidence that has been used to support or refute ideas or arguments.
UKS2 – Year 5 and 6 (Cycle 1)			
Electricity	<p>a. I can associate the brightness of a lamp or the volume of a buzzer with the</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know the components of simple series circuits • Know how buzzers and lamps indicate a circuit is complete • Understand that voltage has an impact on the brightness of a bulb/volume of a buzzer

	<p>number and voltage of cells used in the circuit, comparing and giving reasons for variations.</p> <p>b. I can use recognised symbols when representing a simple circuit in a diagram</p> <p>c. I can compare and give reasons for variations in how components function, including: brightness of bulbs, loudness of buzzers and the on/off position of switches.</p>	dge	<ul style="list-style-type: none"> Understand why voltage impacts the brightness of a bulb/volume of a buzzer Know the symbols used to represent circuit components in diagrams. Understand how circuit diagrams represent closed/open or complete/incomplete circuits Understand the different reasons for the brightness of bulbs, loudness of buzzers and the on/off position of switches.
		Disciplinary Knowledge dge	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions including recognizing and controlling variable Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present 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 Identify scientific evidence that has been used to support or refute ideas or arguments
Forces	<p>a. I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>b. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>c. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	Substantive Knowledge dge	<ul style="list-style-type: none"> Know what a force is Know what forces act on falling objects Understand how the Earth's mass effects an object via gravity Know what air resistance, water resistance and friction are. Understand how these forces impact moving surfaces Know what mechanisms are Understand the effect of levers, pulleys and gears Understand how these can have a greater effect using a smaller force.
		Disciplinary Knowledge dge	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions including recognizing and controlling variable Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present 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 Identify scientific evidence that has been used to support or refute ideas or arguments
Earth, space and light	<p>a. I describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>b. I can describe the movement of the Moon relative to the Earth.</p> <p>c. I can describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>d. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>e. I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>f. I can use idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>g. I can use the idea that light</p>	Substantive Knowledge dge	<ul style="list-style-type: none"> Know the names of the planets Know the arrangement of the moon, earth and sun Know the meaning of orbit Understand how the earth orbits the sun (alongside other planets) Know what a moon is Understand how the moon orbits the earth Know the moon, earth and sun are roughly spherical Understand how this effects the relationship between the earth, moon and sun Know that the sun remains stationary Know the meaning of rotation Understand how the rotation of the earth generates night and day Understand the 'apparent movement of the sun' is due to the earth's rotation. Know the light travels in straight lines from light sources Understand that objects reflect light into eyes to be seen Know that shadows have the same shape as the object that cast them Understand that opaque objects block light, to generate shadows
		Disciplinary Knowledge dge	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions including recognizing and controlling variable Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present 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 Identify scientific evidence that has been used to support or refute ideas or arguments

	travels in straight lines to explain why shadows have the same shape as the objects that cast them		
Living things and their habitats	<p>a. I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>b. I can describe the life process of reproduction in some plants and animals.</p> <p>c. I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p>	Substantive Knowledge	<ul style="list-style-type: none"> • Know that there is a difference between the lifecycle of mammals, amphibians, insects and bird • Understand the difference between the lifecycle of mammals, amphibians, insects and bird • Know the meaning of reproduction • Know that living things reproduce • Understand the different types of reproduction, asexual and sexual • Know the meaning of classification • Understand that living things are classified according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Understand why plants and animals are characterised in these groups using specific characteristics
	<p>d. I can give reasons for classifying plants and animals based on specific characteristics</p>	Disciplinary Knowledge	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions including recognizing and controlling variable • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests. • Report and present 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 • Identify scientific evidence that has been used to support or refute ideas or arguments