



Shenley Science Curriculum

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The intent of Science at Shenley

At the centre of our curriculum are our core school values - self-belief, teamwork, aspiration, respect and strength in kindness - which shape everyday life in our school. Our topics are guided by the National Curriculum and are responsive to children's interests and the local context. Through our science teaching, we aim for our pupils to:

- Experience a broad and balanced Science curriculum.
- Confidently explore and investigate the world around them, developing a deeper understanding of the environment in which we live.
- Gain secure scientific knowledge, concepts, skills, and positive attitudes.
- Build and progress the key knowledge identified within each unit and year group, applying scientific skills with increasing confidence.
- Develop a sense of excitement and curiosity about natural phenomena.
- Foster respect for living organisms and the physical environment.

Curriculum Intent

Our Science curriculum intent is rooted in a structured, progressive approach that ensures pupils:

- Become confident scientists who can ask questions, plan and carry out investigations, observe carefully, and draw conclusions based on evidence.
- Build secure knowledge of key scientific concepts and vocabulary, applying this understanding consistently across the curriculum.
- Use precise scientific language to explain ideas, justify predictions, and communicate findings clearly in both spoken and written forms.
- Develop accuracy, curiosity, and enjoyment in scientific enquiry through high-quality practical experiences that build understanding, reasoning, and critical thinking.
- Engage with a broad range of scientific topics and real-world contexts to deepen understanding of the natural world and its impact on society.
- Record observations and results clearly and consistently using appropriate formats such as diagrams, tables, graphs, and written explanations.

Scientific concepts are introduced and developed through a balance of modelled, shared, guided, and independent learning, ensuring pupils build strong foundations before progressing to more complex scientific thinking and enquiry skills.

Inclusive Intent

We intend for Science to be accessible to all learners, regardless of background, language, or ability. Our inclusive approach ensures that every pupil is effectively supported and appropriately challenged through adaptive teaching strategies, targeted interventions, and the use of high-quality scientific resources and texts.

We aim to create a classroom culture where mistakes are valued as an essential part of scientific enquiry and where perseverance, curiosity, and collaboration are actively encouraged. All pupils are supported to see themselves as confident scientists who can question, investigate, and communicate their understanding effectively.

Cross-Curricular Intent

We recognise the importance of meaningful cross-curricular links in Science to deepen understanding and make learning purposeful and relevant. Wherever possible, science learning is connected with other curriculum areas such as mathematics, literacy, geography, computing, and design technology. Pupils are given opportunities to apply scientific knowledge and skills through data handling, reading and writing for different purposes, problem-solving, and real-world contexts. These links help pupils to see science as an integral part of everyday life and support the development of transferable skills across the curriculum.

Personal Development Intent

Science lessons play a key role in supporting pupils' personal development by fostering curiosity, confidence, and resilience. Through enquiry-based learning, discussion, and practical investigation, pupils are encouraged to ask questions, share ideas, and reflect on their learning. They develop perseverance when experiments do not go as planned and learn to work collaboratively, showing respect for others' views. Science also helps pupils to build independence, problem-solving skills, and a sense of responsibility as they consider the impact of scientific advances on people, society, and the environment.

Outcomes

By the end of their primary education, our intent is that pupils will:

- Work scientifically by asking questions, planning and carrying out investigations, observing carefully, and drawing conclusions based on evidence.
- Use scientific vocabulary accurately to explain ideas, record findings, and communicate conclusions in a range of written and oral formats.
- Show curiosity, resilience, and confidence when exploring scientific ideas and solving problems.
- Apply scientific skills and understanding across the curriculum and to real-life contexts.
- Be well-prepared for the next stage of their education with a strong foundation in scientific enquiry and thinking.



The implementation of Science at Shenley

At Shenley Primary, we draw on both the Grammarsaurus and White Rose Science schemes as springboards for our teaching. We use PLAN Science resources to support and guide our scientific enquiries. Our School Curriculum incorporates the National Curriculum while also extending beyond it to include the wider learning opportunities available at Shenley Primary School.

Enrichment

Each year, we dedicate a full week to British Science Week. During this time, lessons centre around fun, practical, and engaging activities linked to the annual theme. Pupils explore scientific ideas through exciting, hands-on experiences and whole-school events. We also invite visitors from external organisations to work with the children, and we organise science-focused trips to provide stimulating, real-world learning opportunities.

- Units of work are planned to build on pupils' prior knowledge and skills, and we aim to make meaningful cross-curricular links with other subjects.
- A skills progression map has been developed for each Key Stage to ensure that children continue to build and deepen their scientific skills over time.
- To support pupils in knowing more and remembering more, regular retrieval activities are incorporated to review and revisit previous learning.
- At the start of each unit, children receive a knowledge organiser outlining key information and vocabulary. This is not used for assessment but serves as a reference tool to support their understanding.
- Children have access to key vocabulary and are encouraged to use it in both written and oral work, helping them to become confident in using scientific terminology accurately and precisely.
- A range of resources is used to help children develop their knowledge and understanding, particularly in relation to working scientifically.
- Pupils are supported in building on prior learning and making connections between ideas, enabling them to question and make sense of the world around them.
- We make full use of our outdoor learning areas, providing opportunities for pupils to observe the natural world and conduct enquiries and experiments outside.

The impact of Science at Shenley

The impact of our Science curriculum is that pupils leave primary school as confident, capable, and enthusiastic scientists who are curious about the world around them, can think critically, apply scientific knowledge and skills effectively, and communicate their ideas and findings with clarity and confidence.

By the time children leave Shenley Primary School, they will have developed:

- Confidence in their scientific knowledge and skills, enabling them to apply these across the curriculum.
- A secure foundation of understanding that prepares them for further study in Secondary School and beyond.
- The ability to question, analyse, and evaluate evidence within an ever-changing scientific world.
- An enriched scientific vocabulary that allows them to clearly articulate their understanding of key concepts.
- Practical skills that support effective investigation and experimentation.



Working Scientifically

In addition to the topics taught, a significant part of the National Curriculum for Science focuses on working scientifically. This involves equipping children with the skills required for scientific enquiry—such as logical thinking, questioning, planning and carrying out investigations, and drawing conclusions. This area of learning is organised into the following five strands:

Observing over time

Pattern Seeking

Identifying, Classifying and Grouping

Comparative and Fair Testing (controlled investigations)

Researching using secondary sources

How do we Assess Science at Shenley?

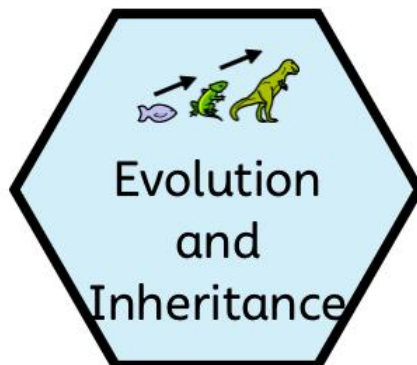
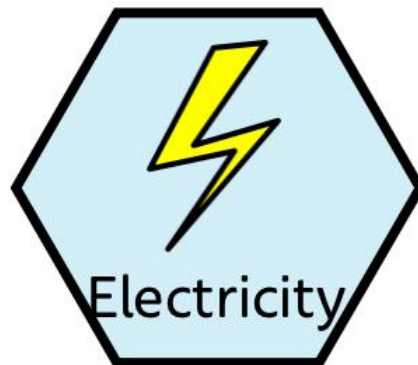
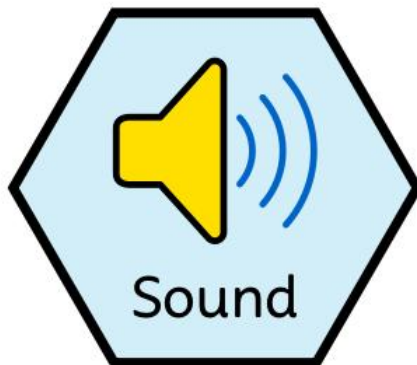
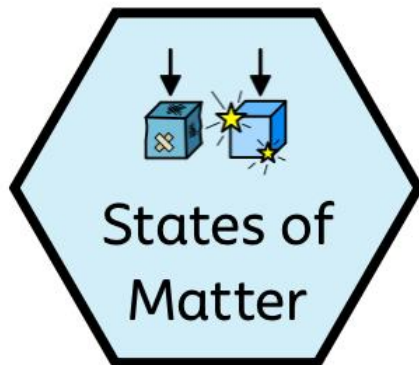
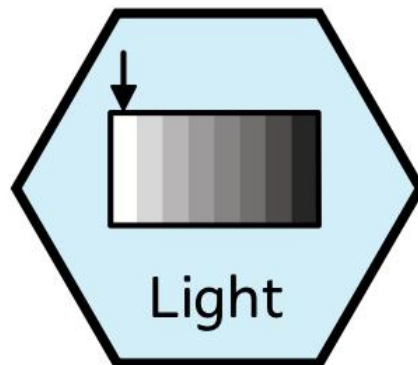
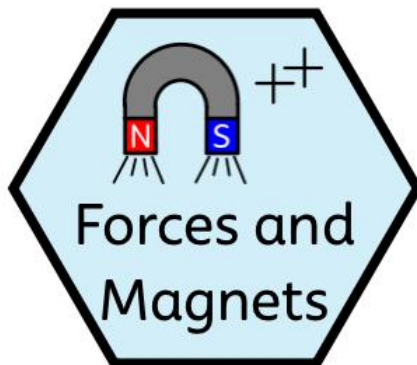
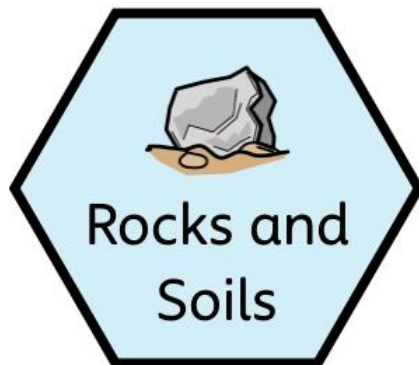
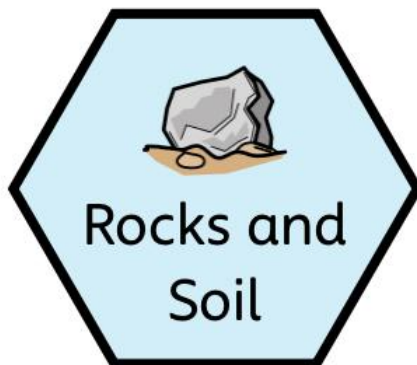
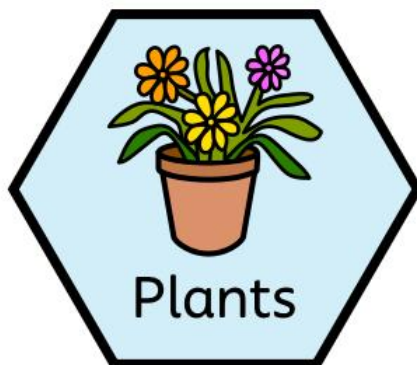
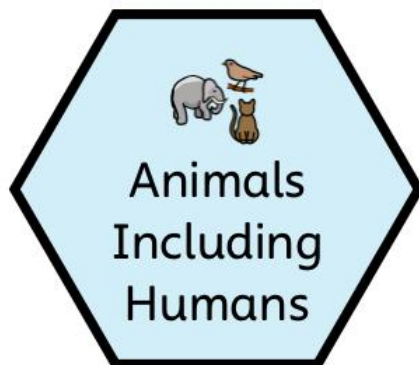
At Shenley Primary, we use a variety of strategies in Science to effectively assess pupils' knowledge, understanding, and skills. By identifying gaps in learning, we can promptly address pupils' needs and correct any misconceptions through targeted support.

Each lesson uses a *Pit Stop/Hinge* question that helps check pupils' understanding of the concepts taught. At the start of every lesson, prior learning is revisited through a *Flashback* to ensure that new content builds securely on what children already know.

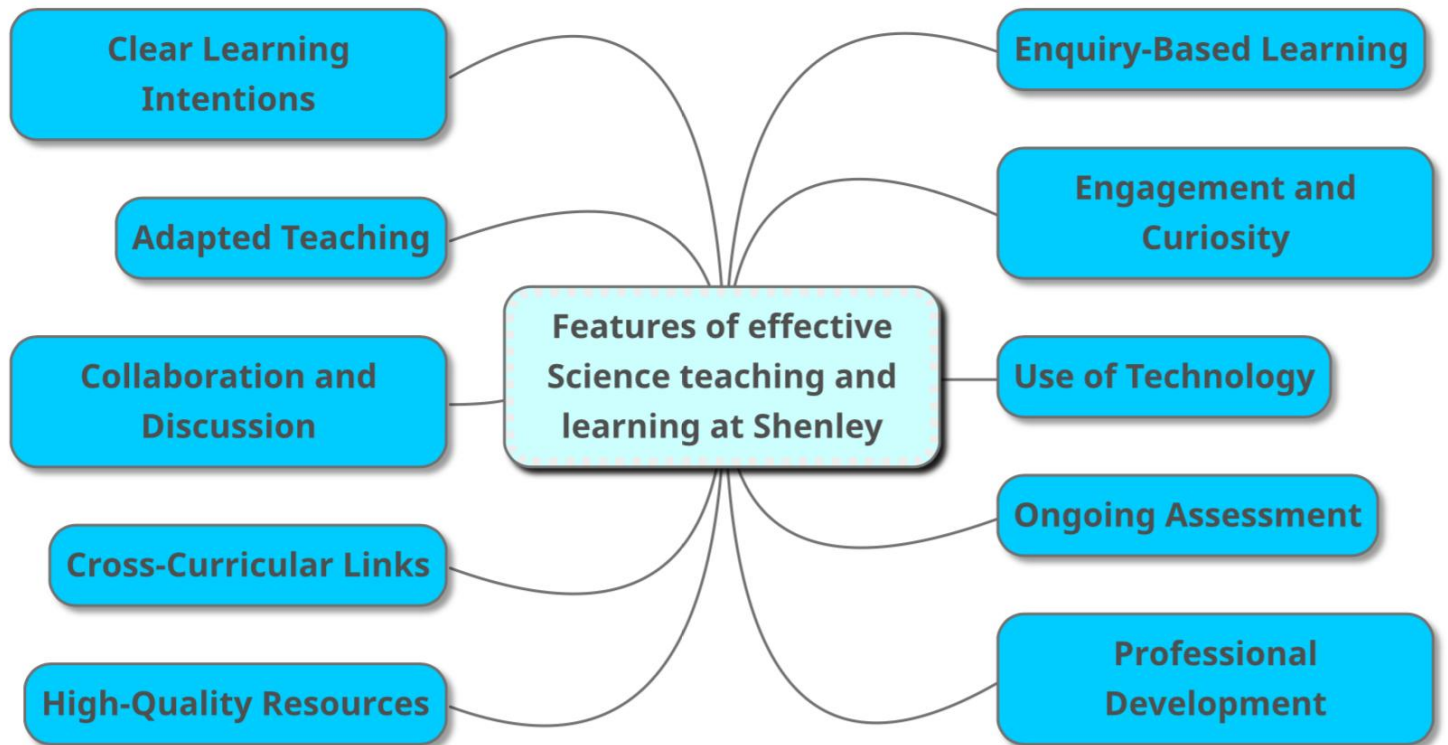
At the end of each unit, pupils may complete an end of topic assessment to evaluate how well they have retained the key concepts covered throughout the topic. Children will respond to the enquiry question through writing, drawing, labelling or speaking.



Our Science Topics are:



Features of effective Science teaching and Learning



Marking and feedback

At our school, marking and feedback are integral to supporting children's learning and encouraging progress in science. We use a clear, consistent system that allows both teachers and pupils to understand how well learning intentions have been met. Each piece of work is linked to specific learning intentions, which are highlighted to reflect the child's achievement: fully highlighted in green when the learning intention has been met, dashed in green when it has been partially met, and left unhighlighted when the learning intention has not yet been achieved. This visual system enables pupils to quickly see their progress and understand the next steps in their learning.

In addition to this, we use green pen challenges to extend and deepen learning. This provides children with opportunities to think critically, reflect on their work, and demonstrate their understanding at a higher level. This approach fosters resilience, independent thinking, and a growth mindset, as children are motivated to engage with the challenge and improve their work.

Feedback is both formative and constructive, aiming to guide pupils towards achieving their learning intentions. Teachers provide comments, questions, or prompts that support children in reflecting on their science learning, developing their skills, and building confidence. By combining clear marking, visual cues, and targeted challenges, we ensure that feedback is meaningful, actionable, and encourages continuous progress in science. Learning intention labels will be stuck at the top left of a new page. This will include the long date, learning intention starting with "To" and the mini enquiry question.

Monday 12th January 2026

L.I: To understand that animals, including humans, need the right type of nutrition.

What types of nutrition do we need?

Oracy

Oracy is a central part of learning in science, as it allows pupils to articulate their ideas, explain their thinking, and reason scientifically. In lessons, pupils are encouraged to discuss predictions, observations, and conclusions with their peers, using accurate scientific vocabulary. Structured talk activities, such as think-pair-share, group discussions, and debates, help pupils clarify their understanding and deepen their conceptual knowledge.

Science lessons provide regular opportunities for pupils to develop confidence in expressing their ideas orally. Pupils are supported to construct explanations, justify answers, and ask scientific questions. Teachers model precise scientific language and provide sentence starters or discussion prompts where needed, ensuring all pupils, including those with EAL or additional needs, can participate meaningfully in discussions.

Oracy in science also develops critical thinking and collaborative skills. By explaining their reasoning, listening to alternative viewpoints, and building on the ideas of others, pupils strengthen their understanding of scientific concepts and develop important communication and social skills. Regular opportunities to present findings, share investigations, or lead discussions help pupils gain confidence and fluency in using scientific language in both formal and informal contexts.

Adaptive Teaching

Science at Shenley is designed to be accessible to all pupils, regardless of background, language, or ability. Lessons are carefully planned to remove barriers to learning and to ensure that all pupils can engage meaningfully with scientific concepts and enquiry. Key ideas are broken down into manageable steps, with clear learning intentions and success criteria shared so pupils understand what they are working towards.

Adaptive teaching strategies are used routinely in science lessons to meet the needs of pupils with additional needs. These include the use of concrete resources, visual supports, structured practical activities, and pre-teaching of key vocabulary. Tasks are scaffolded where appropriate, and adults provide targeted support to help pupils access learning while maintaining high expectations and opportunities for challenge.

For pupils with English as an Additional Language (EAL), science lessons provide rich opportunities for language development alongside conceptual understanding. Scientific vocabulary is explicitly taught, modelled, and reinforced through visuals, hands-on investigation, talk, and repetition. Opportunities for discussion, paired work, and oral rehearsal enable pupils to develop confidence in using scientific language in a supportive environment.

Targeted interventions and flexible grouping are used where necessary to ensure pupils with additional needs make progress in science. Progress is closely monitored, and teaching is adapted in response to assessment and pupil needs. By valuing curiosity, celebrating effort, and promoting a culture where mistakes are seen as part of learning, we ensure that all pupils are supported to see themselves as capable and confident scientists.

Book expectations

Students are expected to maintain their science books with care and attention, reflecting pride in their work. All written work should be neat, legible, and completed using a pencil or blue pen where appropriate. Corrections should be made neatly, avoiding scribbles or messy crossings-out.

Tables, charts, and any structured data should always be drawn in pencil. This ensures clarity and allows for corrections to be made easily without affecting the presentation of the work. All diagrams, illustrations, or more detailed drawings should first be created on plain paper. Once complete, these diagrams should be carefully cut out and stuck into the science book. Diagrams should **not** be drawn directly onto the lined pages to maintain the neatness and readability of both the written work and illustrations.

Students are encouraged to label all diagrams clearly, use rulers where appropriate, and ensure that all work is presented in an organized manner. This approach helps students develop good scientific recording habits and ensures that their books are a clear and accurate record of their learning.

Science in Nursery and Early Years

Children explore scientific ideas by making predictions, using their senses, and investigating different materials and their properties. Science is delivered through the *Understanding the World* strand and is closely connected to the other areas of learning within the EYFS framework.

Teachers and teaching assistants help pupils build a secure understanding of the everyday phenomena they experience. Children are encouraged to be creative, curious, and actively engaged in a range of activities. Their natural inquisitiveness is nurtured through exploratory play, both in dedicated scientific areas and across the wider EYFS learning environment.

Science in KS1

In Key Stage One, pupils observe, explore, and ask questions about living things, materials, and the wider world. They begin working collaboratively to gather evidence, identify patterns, classify and group objects, research using a range of sources, and carry out simple fair tests.

Pupils use reference materials to deepen their understanding of scientific concepts, and they communicate their ideas using scientific vocabulary, drawings, charts, and tables. Science lessons in Key Stage One are taught either as discrete sessions or, where appropriate, linked to other curriculum areas. Outdoor spaces are frequently used to enrich pupils' scientific learning.

Science in KS2

Children are encouraged to deepen and extend the scientific questions they ask and answer about the world around them. They engage in a wide range of scientific enquiries, including observations over time, pattern seeking, classifying and grouping, and researching using a variety of sources, including digital tools. In Key Stage Two, pupils learn to plan investigations by changing only one variable to ensure a fair test, and they are supported to plan and carry out their enquiries with increasing independence. Wherever possible, pupils are given opportunities to learn and investigate in outdoor environments.

Working Scientifically Progression

	Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
Working Scientifically	<p>Recognise that questions can be answered in different ways</p> <p>Ask simple questions</p> <p>Use simple scientific language</p> <p>Talk about what you have found out</p> <p>Gather and record simple data in different ways</p> <p>Perform simple tests</p> <p>Compare, sort and group things</p> <p>Observe closely</p> <p>Use simple equipment to make measurements</p>	<p>Suggest improvements and raise further questions</p> <p>Use relevant scientific vocabulary</p> <p>Draw simple conclusions and make predictions for new values</p> <p>Explain what you have found out using speaking and writing</p> <p>Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts and tables</p> <p>Use different equipment to measure accurately in standard units</p> <p>Make careful observations</p> <p>Set up your own simple tests</p> <p>Ask your own questions and use different ways to answer them</p>	<p>Ask different kinds of questions</p> <p>Use results to make predictions and set up more tests (including fair tests)</p> <p>Use relevant scientific language and illustrations</p> <p>Report and present findings using speaking and writing including displays and presentations</p> <p>Decide how to record data and results. Use scientific diagrams, labels, classifications, keys, tables, scatter, bar and line graphs</p> <p>Plan different types of scientific enquiries to answer questions</p> <p>Set up fair tests when necessary</p> <p>Decide what observations and measurement to make</p> <p>Use different scientific equipment to measure with predictions. Take repeat readings when appropriate</p>



Early Years - Science at Shenley

Science in EYFS is woven into play, exploration, and activities, focusing on the Understanding The World area through hands-on experiences like observing seasons, growing plants, exploring materials, and asking questions.

Children build curiosity and foundational skills such as observation, prediction, and using senses for future scientific learning.

	Understanding the World	Communication and Language	Personal, Social and Emotional Development
Nursery	<p>Use all their senses in hands-on exploration of natural materials.</p> <ul style="list-style-type: none"> ● Explore collections of materials with similar and/or different properties. ● Talk about what they see, using a wide vocabulary. ● Begin to make sense of their own life-story and family's history. ● Explore how things work. ● Notice the weather and changes in the different seasons. ● Plant seeds and care for growing plants. ● Understand the key features of the life cycle of a plant and an animal - sunflower, caterpillar ● Begin to understand the need to respect and care for the natural environment and all living things around them. ● Explore and talk about different forces they can feel. ● Talk about the differences between materials 	<p>Respond to how and why questions.</p> <ul style="list-style-type: none"> ● Ask simple questions. ● Learn new vocabulary. 	<p>Observe what happens to our bodies when we exercise.</p> <ul style="list-style-type: none"> ● Have an awareness of what to eat and drink in order to keep our body healthy. ● Have an awareness of how to keep our teeth healthy.
Reception	<ul style="list-style-type: none"> ● Use all their senses in hands-on exploration of natural materials and name the five senses - sight, touch, smell, hearing, taste. ● Group collections of materials with similar and/or different properties. ● Talk about what they see, using a wide vocabulary and build on existing vocabulary and knowledge. ● Explore how things work and how and why things work and happen. ● Understand the effect of changing seasons on the natural world around them - naming the seasons and noticing the different features - Spring, 	<ul style="list-style-type: none"> ● Ask how and why questions. ● To share prior knowledge. ● Build upon, learn and use new vocabulary. ● Describe events in some detail. ● Use talk to help work out problems, organise thinking and activities and to explain how things work and why they might happen. 	<ul style="list-style-type: none"> ● Observe and talk about what happens to our bodies when we exercise. ● Have an awareness and understanding of what to eat and drink in order to keep our body healthy. ● To know about different food groups. ● Have an awareness and understanding of how to keep our teeth healthy.

	<p>Summer, Autumn, Winter.</p> <ul style="list-style-type: none"> ● Plant seeds, care for growing plants and observe changes over time. ● Understand the need to respect and care for the natural environment and all living things in the wider world. ● Understand the key features of the life cycle of a plant and an animal - vegetable, ladybird ● Explore, experiment and talk about different forces they can feel. ● Talk about the differences between materials and changes they notice. 		
ELG	<p>ELG: The Natural World Children at the expected level of development will:</p> <ul style="list-style-type: none"> ● Explore the natural world around them, making observations and drawing pictures of animals and plants. <p>ELG: Past and Present Children at the expected level of development will:</p> <ul style="list-style-type: none"> ● 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. 	<p>ELG: Listening, Attention and Understanding Children at the expected level of development will:</p> <ul style="list-style-type: none"> ● Make comments about what they have heard and ask questions to clarify their understanding. <p>Spring</p>	<p>ELG: Managing Self Children at the expected level of development will:</p> <ul style="list-style-type: none"> ● Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.



Year 1/2 Cycle A - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the final lesson children will complete an end of unit assessment (cumulative quiz or summative piece of work)

Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn	Spring	Summer		Throughout the year
Everyday Materials	Animals Including Humans	Plants	Living Things and their Habitats	Seasonal Changes
Enquiry Question: How are materials chosen in design?	Enquiry Question: Why do we need to keep healthy?	Enquiry Questions: How do seeds and bulbs grow into healthy plants?	Enquiry Questions: How do we know something is alive?	Enquiry Question: What changes occur throughout the seasons?
<p>Lesson 1: To Distinguish between an object and the material from which it is made (Y1). What are materials?</p> <p>Lesson 2: To name and identify a variety of everyday materials. Focus materials: wood, plastic, metal, paper (Y1). How are materials different?</p> <p>Lesson 3: To describe and compare the physical properties of these materials (Y1). What are objects made from?</p> <p>Lesson 4: To identify and compare the uses of a variety of everyday materials. Investigations: What is the best material for keeping an egg safe? - Durability, protection (Y2).</p> <p>Lesson 5: To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2). How can we sort materials?</p>	<p>Lesson 1: To Identify and name a variety of common animals including fish, mammal, reptiles, birds and amphibians (Y1). What is this animal?</p> <p>Lesson 2: To identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1). How are animals different?</p> <p>Lesson 3: To notice that animals, including humans, have offspring which grow into adults (Y2). What are offspring?</p> <p>Lesson 4: To find out about and describe the basic needs of animals, including humans, for survival - water, food and air (Y2). What do humans need?</p> <p>Lesson 5: To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene (Y2). Why do we need exercise</p>	<p>Plants topic is explored through Forest School – Working Scientifically Skills (Y1)</p> <p>Lesson 1: To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Y1 - identify and describe the basic structure of a variety of common flowering plants, including trees (Y1). What is a plant?</p> <p>Lesson 2: 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 (Y2). Are all seeds the same?</p>	<p>Lesson 1: To explore and compare the differences between things that are living, dead, and things that have never been alive (Y2). Is it living, dead or never been alive?</p> <p>Lesson 2: 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(Y2). What is a microhabitat?</p> <p>Lesson 3: To 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] (Y2). Y1s could over learn where animals live and Y2's focus on food chains. How are habitats different?</p>	<p>Autumn:</p> <p>Observe changes across the four seasons (Y1). When is Autumn?</p> <p>Observe and describe weather associated with the seasons and how day length varies. Focus: on clothing and protection. Weather symbols, weather reports (Y1). What is the weather like in Autumn?</p> <p>Winter:</p> <p>Observe changes across the four seasons (Y1). When is Winter?</p> <p>Observe and describe weather associated with the seasons and how length varies. Focus on clothing and protection (Y1). What is the weather like in Winter?</p> <p>Summer:</p> <p>Observe changes across the four seasons (Y1). When is Summer?</p> <p>Observe and describe weather associated with the seasons and how length varies. Focus on clothing and protection. Assessment opportunity – recapping all seasons (Y1). What is the weather like in Summer?</p>

<p>Vocabulary: material, fabric, object, fragile, waterproof, hard, soft, rough, smooth, flexible</p>	<p>Vocabulary: basic needs, diet, exercise hygiene, illness, medicine</p>	<p>Vocabulary: plant, tree, flower, root, stem, leaf, seed, bulb</p>	<p>Vocabulary: alive, dead, living, habitat, microhabitat, conditions, adapted, food chain</p>	<p>Vocabulary: spring, summer, Autumn, winter, change, daylight hours, temperature</p>
<p>Prior Learning: Children will have looked at different objects and the material from which they are made.</p>	<p>Prior Learning: Children will have looked at different parts of the human body and the related senses.</p>	<p>Prior Learning: Children learnt about different plants and trees and described the basic structure.</p>	<p>Prior Learning: Children studied different animals and grouped them based on their features and diet.</p>	<p>Prior Learning: Children will have learnt about the changing weather conditions during each season, how the day length varies.</p>
<p>Future Learning: Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)</p> <p>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 - Properties and changes of materials)</p>	<p>Future Learning: 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 - Animals, including humans)</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)</p>	<p>Future Learning: Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. (Y3 - Plants)</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. (Y3 - Plants)</p>	<p>Future Learning: Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats)</p>	<p>Future Learning: The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. (KS3)</p>



Year 1/2 Cycle B - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the first lesson children will complete an end of unit assessment (cumulative quiz/answer the Enquiry Question) Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn	Spring	Summer		Throughout the year
Everyday Materials	Animals Including Humans	Plants	Living Things and their Habitats	Seasonal Changes
<p>Enquiry Question: Why do we use different materials for different things?</p>	<p>Enquiry Question: How can we group animals?</p>	<p>Enquiry Question: How can we identify different plants and trees?</p>	<p>Enquiry Questions: How do we know something is alive?</p>	<p>Enquiry Question: What are the seasons?</p>
<p>Lesson 1: To distinguish between an object and the material from which it is made (Y1). <i>What are materials?</i></p> <p>Lesson 1: To name and identify a variety of everyday materials -Focus Materials: glass, water, rock, fabric (Y1). <i>How are materials different?</i></p> <p>Lesson 1: To describe and compare the physical properties of these materials (Y1). <i>What are objects made from?</i></p> <p>Lesson 1: To identify and compare the uses of a variety of everyday materials. Investigations: <i>What is the best material for a raincoat for a teddy?</i> – Waterproofing, absorbing (Y2).</p> <p>Lesson 1: To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Lesson 1: To identify and name a variety of common animals including fish, mammal, reptiles, birds and amphibians (Y1). <i>What is this animal?</i></p> <p>Lesson 2: To identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1). <i>How are animals different?</i></p> <p>Lesson 3: To describe and compare the structure of a variety of common animals - fish, amphibians, reptiles, birds, mammals including pets (Y1). <i>Do all animals eat the same food?</i></p> <p>Lesson 4: To 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). <i>What are our body parts called?</i></p>	<p>Plants topic is explored through Forest School – Working Scientifically Skills</p> <p>To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1). <i>What is a plant?</i></p> <p>To identify and describe the basic structure of a variety of common flowering plants, including trees (Y1). <i>What are the parts of a plant called?</i></p> <p>To observe and describe how seeds and bulbs grow into mature plants (Y1). <i>Are all seeds the same?</i></p> <p>To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (Y2). <i>What do plants need?</i></p>	<p>Lesson 1: To explore and compare the differences between things that are living, dead, and things that have never been alive (Y2). <i>Is it living, dead or never been alive?</i></p> <p>Lesson 2: 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 (Y2). <i>What is a microhabitat?</i></p> <p>Lesson 3: To 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 (Y2) – Y1s could over learn where animals live and Y2's focus on food chains. <i>How are</i></p>	<p>Autumn:</p> <p>To observe changes across the four seasons (Y1). <i>When is Autumn?</i></p> <p>To observe and describe weather associated with the seasons and how length varies (Y1). Focus: on celebrations and what we do in each season. Rain gauge, temperatures, weather diary. What is the weather like in Autumn?</p> <p>Spring:</p> <p>To observe changes across the four seasons (Y1). <i>When is Spring?</i></p> <p>To observe and describe weather associated with the seasons and how length varies (Y1). Focus: on celebrations and what we do in each season. Rain gauge, temperatures, weather diary. What is the weather like in Spring?</p>

<p>(Y2). How can we change the shape of materials?</p>			<p>habitats different?</p>	<p>Summer:</p> <p>To observe changes across the four seasons (Y1). When is Summer?</p> <p>To observe and describe weather associated with the seasons and how length varies (Y1). Focus: on celebrations and what we do in each season. Rain gauge, temperatures, weather diary. Assessment opportunity – recapping all seasons. What is the weather like in Summer?</p>
<p>Vocabulary: material, fabric, object, fragile, waterproof, hard, soft, rough, smooth</p>	<p>Vocabulary: animals, herbivore, omnivore, carnivore, mammal, bird, fish, reptile, amphibian</p>	<p>Vocabulary: plant, tree, deciduous, evergreen, flower, roots, stem, leaf</p>	<p>Vocabulary: alive, dead, living, habitat, microhabitat, conditions, adapted, food chain</p>	<p>Vocabulary: Spring, Summer, Autumn, Winter, rain, sun, change, daylight hours</p>
<p>Prior Learning: Children may have explored different materials in EYFS. They may have discussed the textures of different materials and used different materials during model making activities.</p>	<p>Prior Learning: Children may have explored different animals during EYFS. They may have learnt the names of different animals and their features and similarities and differences between themselves and their classmates.</p>	<p>Prior Learning: Children may have explored different plants during EYFS. They may have learnt the names of different plants and their features. They may also have grown their own plants from seeds and watched the different stages of plant growth.</p>	<p>Prior Learning: Children studied different animals and grouped them based on their features and diet.</p>	<p>Prior Learning: Children may have explored different seasons and learnt about the different characteristics and weather associated with each season.</p>
<p>Future Learning: 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 - Uses of everyday materials)</p>	<p>Future Learning: 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 - Living things and their habitats)</p>	<p>Future Learning: Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Plants) Identify and describe the functions of different parts of flowering plants:</p>	<p>Future Learning: Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) Explore and use classification keys to help group, identify and name a variety of living things</p>	<p>Future Learning: Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) Use the idea of the Earth's rotation to explain day and night and the apparent movement</p>

<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)</p>	<p>Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)</p>	<p>roots, stem/trunk, leaves and flowers. (Y3 - Plants)</p>	<p>in their local and wider environment. (Y4 - Living things and their habitats)</p>	<p>of the Sun across the sky. (Y5 - Earth and space)</p>
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Year 3 - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the final lesson children will complete an end of unit assessment (cumulative quiz or summative piece of work)

Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn		Spring	Summer	
Rocks and Soil	Forces and Magnets	Animals Including Humans	Light	Plants
Enquiry Question: How can we classify rocks?	Enquiry Question: Which materials are magnetic?	Enquiry Question: How do the systems inside our body work to make a healthy human?	Enquiry Question: What is light?	Enquiry Question: How does each part of the plant fulfil its function?
<p>Lesson 1: To compare and group together different kinds of rocks on the basis of their appearance. What are rocks?</p> <p>Lesson 2: To compare and group together different kinds of rocks on the basis of their physical properties. Are all rocks the same?</p> <p>Lesson 3: To explain how some rocks are formed. How are rocks formed?</p> <p>Lesson 4: To explain how the different layers of rocks Earth is made up of and soils. Which rocks make up the Earth?</p> <p>Lesson 5: To investigate different soils. What are soils?</p> <p>Lesson 6: To describe how fossils are formed when things that have lived are trapped within rock. How are fossils formed?</p>	<p>Lesson 1: To compare how different things move. What can forces do?</p> <p>Lesson 2: To plan and conduct a fair test to compare how objects move on different surfaces. How do surfaces affect movement?</p> <p>Lesson 3: To explore how magnetic forces act at a distance. Which materials are magnetic?</p> <p>Lesson 4: To compare and group various everyday materials based on whether they are attracted to a magnet. How do magnetic forces work?</p> <p>Lesson 5: To predict whether two magnets will attract or repel each other, depending on which poles are facing. Are all magnets the same?</p> <p>Lesson 6: To record my findings using simple scientific vocabulary and use my results to draw simple conclusions. Are all magnets the same strength?</p>	<p>Lesson 1: To identify that humans have bones for support, protection and Movement. How does our skeleton help us?</p> <p>Lesson 2: To set up a simple practical enquiry and communicate my results. Do our bones affect what we can do?</p> <p>Lesson 3: To identify that humans have muscles for support, protection and Movement. What do our muscles do?</p> <p>Lesson 4: To identify that some other animals have bones for support, protection and movement. Do all animals have the same skeleton?</p> <p>Lesson 5: To understand that animals, including humans, need the right type of nutrition. What types of nutrition do we need?</p>	<p>Lesson 1: To recognise that there needs to be light in order to see things and that darkness is the absence of light. What is light?</p> <p>Lesson 2: To notice that light is reflected from surfaces. What is reflected light?</p> <p>Lesson 3: To recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun. Is the sun dangerous?</p> <p>Lesson 4: To recognise that shadows are formed when light from a light source is blocked by an opaque object. What is a shadow?</p> <p>Lesson 5: To find patterns in the way that the length of shadows change. Does moving the light source change the shadow?</p> <p>Lesson 6: To know that light is reflected from surfaces (mirrors). How do mirrors work?</p>	<p>Lesson 1: To explore the requirements of plants for life and growth. What do plants need?</p> <p>Lesson 2: To identify, locate and describe the function of different parts of flowering plants. Do the different parts of a plant have a function?</p> <p>Lesson 3: To identify, locate and describe the function of the roots in plants. What are roots?</p> <p>Lesson 4: To investigate the way in which water is transported within plants. How do plants transport water?</p> <p>Lesson 5: To explore the part that flowers play in the life cycle of flowering plants, including pollination. How do plants reproduce?</p> <p>Lesson 6: To explore the part that flowers play in the life cycle of flowering plants, including seed formation and seed dispersal. How are seeds dispersed?</p>
Vocabulary: rock, soil, fossil, appearance, physical properties, igneous rock	Vocabulary: force, magnet, contact, non-contact, attract, repel	Vocabulary: nutrition, skeleton, muscles, healthy, unhealthy, diet, bones	Vocabulary: light source, dark, reflect, shadow, opaque, translucent, transparent	Vocabulary: plant, tree, flower, roots, stem, leaf, seed, pollination

<p>Prior Learning: Rocks and soils are only covered briefly in other topics in KS1. Children will have learnt about soil during plant topics.</p>	<p>Prior Learning: Children have explored different forces before, during the 'Uses of everyday materials' topic in Year 2 whilst investigating how some materials can be changed by bending, squashing, twisting and stretching.</p>	<p>Prior Learning: Children looked at how to group animals based on their diet. Year 2 – Children studied animals and their offspring and the basic needs that animals need to survive.</p>	<p>Prior Learning: As part of seasonal changes topic, children will have observed and talked about changes in the weather and the seasons and will have talked about the dangers of looking at the Sun directly.</p>	<p>Prior Learning: Children studied how plants grow from seeds and bulbs in more detail. They will also look at what plants need to grow and stay healthy.</p>
<p>Future Learning: 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 - Evolution and inheritance) The composition of the Earth. (KS3)</p>	<p>Future Learning: Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Y5 - Forces) Magnetic fields by plotting with compass, representation by field lines. (KS3)</p>	<p>Future Learning: Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans) Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6 - Animals, including humans)</p>	<p>Future Learning: Recognise that light appears to travel in straight lines. (Y6 - Light) 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. (Y6 - Light)</p>	<p>Future Learning: Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. (KS3)</p>



Year 4 - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the final lesson children will complete an end of unit assessment (cumulative quiz or summative piece of work)

Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn		Spring		Summer		
Group and Classify Living Things	States of Matter	Sound	Electricity	Habitats	The Digestive System	Food Chains
Enquiry Questions: How many different ways can we group living things?	Enquiry Questions: Why is water described as a liquid?	Enquiry Questions: How does a drum produce sound when it is hit?	Enquiry Questions: How can you keep safe when around electricity?	Enquiry Questions: What does a living need to survive?	Enquiry Questions: How are carnivores' teeth suited to their diet?	Enquiry Questions: What would happen if producers were not in a food chain?
<p>Lesson 1: To group animals. How can we sort animals into different groups based on their similarities and differences?</p> <p>Lesson 2: To explore vertebrates and invertebrates. How can living things be grouped and classified? How can we use the presence or absence of a backbone to classify living things?</p> <p>Lesson 3: To understand classification keys (animals). How can we use a classification key to identify and name animals?</p> <p>Lesson 4: To group different plants. How can we group plants based on their observable features?</p>	<p>Lesson 1: To explore solids, liquids and gases. How can we describe and compare solids, liquids and gases?</p> <p>Lesson 2: To think differently - solids, liquids and gases. Are solids always hard and liquids always runny?</p> <p>Lesson 3: To explore changing states. How and why do materials change from one state of matter to another?</p> <p>Lesson 4: To Use equipment. How can we use scientific equipment accurately to measure temperature and time?</p> <p>Lesson 5: To plan a melting experiment. How can we plan a fair test to find out what affects melting?</p>	<p>Lesson 1: To explore vibration. How are sounds made?</p> <p>Lesson 2: To understand the ear. How does sound travel from a sound source to our brain?</p> <p>Lesson 3: To investigate sounds. How does sound travel through different materials?</p> <p>Lesson 4: To explore volume. What makes a sound louder or quieter?</p> <p>Lesson 5: To explore pitch. What makes a sound high or low?</p> <p>Lesson 6: To plan a volume experiment. How can we fairly test what affects the loudness of a sound?</p>	<p>Lesson 1: To explore common appliances that use electricity. How is electricity used in our everyday lives?</p> <p>Lesson 2: To build and draw series circuits. How can we make a simple series circuit work?</p> <p>Lesson 3: To spot errors in a circuit. Why might a circuit not work?</p> <p>Lesson 4: To explore conductors and insulators. Which materials allow electricity to flow, and which do not?</p> <p>Lesson 5: To understand conductivity within a circuit. How does the type of material in a circuit affect how well it works?</p>	<p>Lesson 1: To explore living things and their habitats. How are living things suited to the habitats they live in?</p> <p>Lesson 2: to use classification keys (animals). How can we group and identify animals using a classification key?</p> <p>Lesson 3: To use classification keys (plants). How can we use a classification key to identify different plants?</p> <p>Lesson 4: To understand human impact on habitats. How do humans affect habitats and the living things within them?</p>	<p>Lesson 1: To explore teeth (carnivore, herbivores and omnivores). How are animals' teeth adapted to their diet?</p> <p>Lesson 2: To explore human teeth. What different types of teeth do humans have and what are their functions?</p> <p>Lesson 3: To understand the layers of teeth. What is inside a tooth and how does it protect itself from damage?</p> <p>Lesson 4: To plan a tooth decay experiment. How can we investigate what causes tooth decay?</p> <p>Lesson 5: To complete a tooth decay experiment. What do our results show about what affects tooth decay?</p>	<p>Lesson 1: To understand what a food chain is. What is a food chain and what does it show us?</p> <p>Lesson 2: To interpret food chains. What can we learn by reading a food chain?</p> <p>Lesson 3: To draw food chains. How can we construct an accurate food chain?</p> <p>Lesson 4: To understand how humans can change a food chain. How can changes in a habitat — including human actions — affect a food chain?</p>

<p>Lesson 5: To understand classification keys (plants). How can we create and use a classification key to identify plants?</p> <p>Lesson 6: To collect data. What living things do we have in our local area and how does this change over the year? What living things can we find in our local area, and how do they change throughout the year?</p>	<p>Lesson 6: To investigate a melting experiment. What factors affect how quickly a solid melts?</p> <p>Lesson 7: To understand the water cycle. How does water change state as it moves through the water cycle?</p>	<p>Lesson 7: To complete a volume experiment. What do our results tell us about what affects volume?</p>			<p>Lesson 6: To explore the digestive system. How does food travel through the human digestive system?</p>	
<p>Vocabulary: mammal, bird, fish, amphibian, reptile, flowering plant</p>	<p>Vocabulary: solid, liquid, gas, volume, states of matter</p>	<p>Vocabulary: vibration, ear, sound, volume, pitch</p>	<p>Vocabulary: appliances, plug, socket, cell, circuit, switch</p>	<p>Vocabulary: habitat, rural, urban, biodiversity, classification key</p>	<p>Vocabulary: teeth, carnivore, herbivore, omnivore, incisors,</p>	<p>Vocabulary: food chain, producer, predator, prey, consumer</p>
<p>Prior Learning: Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans)</p>	<p>Prior Learning: Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</p>	<p>Prior Learning: Describe what they see, hear and feel whilst outside. (Reception – Sound) 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 - Animals, including humans)</p>	<p>Prior Learning: Explore how things work. (Nursery - Electricity)</p>	<p>Prior Learning: Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)</p>	<p>Prior Learning: Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) 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 - Animals, inc. humans)</p>	<p>Prior Learning: Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) 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 - Animals, inc. humans)</p>

<p>Future Learning: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. (Y6 - Animals, including humans)</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6 - Animals, including humans)</p>	<p>Future Learning: Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. (Y5 - Properties and changes of materials)</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including filtering, sieving and evaporating. (Y5 - Properties and changes of materials)</p>	<p>Future Learning: Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. (KS3)</p> <p>Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. (KS3)</p>	<p>Future Learning: 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 - Electricity)</p> <p>Use recognised symbols when representing a simple circuit in a diagram. (Y6 - Electricity)</p>	<p>Future Learning: Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. (Y6 - Living things and their habitats)</p>	<p>Future Learning: The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. (KS3)</p> <p>The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. (KS3)</p>	<p>Future Learning: The mechanism of breathing to move air in and out of the lungs. (KS3)</p> <p>The impact of exercise, asthma and smoking on the human gas exchange system. (KS3)</p>
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Year 5 - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the final lesson children will complete an end of unit assessment (cumulative quiz or summative piece of work)

Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn		Spring		Summer		
Forces	Space	Properties of Materials	Animals Including Humans	Life Cycles	Reproduction	Reversible and Irreversible Changes
Enquiry Questions: Does the size of a parachute affect the time it takes for it to fall to the ground?	Enquiry Questions: How have ideas about the solar system changed over time?	Enquiry Questions: Which material is the best insulator of heat?	Enquiry Questions: Are there patterns linking gestation periods and lifespans?	Enquiry Questions: How are the life cycles of animals similar and how are they different?	Enquiry Questions: Which plant cutting produces the tallest plant?	Enquiry Questions: Which changes are reversible and which are irreversible?
Lesson 1: To explore friction. How does friction affect the way objects move? Lesson 2: To explore air resistance. How does air resistance affect falling objects? Lesson 3: To plan a parachute experiment. How can we design a fair test to investigate air resistance? Lesson 4: To investigate a parachute experiment. How does parachute design affect air resistance?	Lesson 1: To explore the solar system. What is in our solar system? Lesson 2: To use modelling. How can models help us understand the solar system? Lesson 3: To look at the motion of the Earth and planets. How do the Earth and other planets move? Lesson 4: To investigate ideas about the solar system over time. How have ideas about the solar system changed over time?	Lesson 1: To test materials (magnetic, transparent). How can we group materials based on their properties? Lesson 2: To test materials (electrical conductivity). Which materials conduct electricity and why? Lesson 3: To plan an insulating heat experiment. How can we fairly test which material is the best thermal insulator? Lesson 4: To investigate heat (experiment). Which material keeps heat in the best?	Lesson 1: To explore the human life cycle. What stages make up the human life cycle? Lesson 2: To identify characteristics of babies and children. How do humans change during infancy and childhood? Lesson 3: To identify characteristics of Adolescence and puberty. What changes happen during adolescence and puberty? Lesson 4: To identify characteristics of adults and the elderly. How do humans change during adulthood and old age?	Lesson 1: To describe life cycles of mammals. What are the stages of a mammal's life cycle? Lesson 2: To describe life cycles of amphibians. How is an amphibian life cycle different from a mammal's? Lesson 3: To describe life cycles of insects. What happens during complete and incomplete metamorphosis? Lesson 4: To describe life cycle of birds. What are the stages in a bird's life cycle?	Lesson 1: To understand sexual reproduction in mammals. How does sexual reproduction happen in mammals? Lesson 2: To understand reproductive parts in plants. What are the functions of the male and female parts of a flower? Lesson 3: To explore pollination. How does pollination lead to fertilisation in plants? Lesson 4: To explore asexual reproduction. How can plants reproduce without seeds?	Lesson 1: To understand dissolving. What happens when a solid dissolves in a liquid? Lesson 2: To separate materials by sieving and filtering. How can mixtures be separated? Lesson 3: To explore solutions and evaporating. How can we recover a dissolved solid? Lesson 4: To understand reversible changes. What makes a change reversible?

<p>Lesson 5: To evaluate a parachute experiment. What do our results tell us about air resistance?</p> <p>Lesson 6: To Investigate water resistance. How does water resistance affect movement through water?</p> <p>Lesson 7: To explore gravity. How does gravity affect objects on Earth?</p> <p>Lesson 8: To use small forces for greater effect. How can simple mechanisms make a small force have a bigger effect?</p>	<p>Lesson 5: To find out about planet Earth. What makes Earth unique in our solar system?</p> <p>Lesson 6: To explore the moon. How does the Moon move in relation to the Earth?</p>	<p>Lesson 5: To evaluate investigating heat experiment. What do our results tell us about thermal insulation?</p> <p>Lesson 6: To evaluate investigating heat. How can we improve our investigation into thermal insulation?</p> <p>Lesson 7: Explore the uses of everyday materials. Why are certain materials chosen for specific uses?</p>	<p>Lesson 5: To describe gestation periods of mammals. How do gestation periods vary between mammals?</p>		<p>Lesson 5: To plan a cloning plants investigation. How can we investigate asexual reproduction in plants?</p> <p>Lesson 6: To complete a cloning plant investigation. What do our results show about plant cloning?</p>	<p>Lesson 5: To understand irreversible changes by burning. What happens during an irreversible change like burning?</p> <p>Lesson 6: To understand irreversible changes with acid. How can some chemical reactions create irreversible changes?</p>
<p>Vocabulary: non-contact force, contact force, friction, air resistance</p>	<p>Vocabulary: solar system, planets, orbit, sun</p>	<p>Vocabulary: transparent, translucent, opaque, magnetism</p>	<p>Vocabulary: adolescence, baby, foetus, life cycle</p>	<p>Vocabulary: monotreme, offspring, mammal, life-cycle</p>	<p>Vocabulary: fertilisation, embryo, sperm cell, sexual reproduction</p>	<p>Vocabulary: dissolve, soluble, insoluble, solution</p>

<p>Prior Learning: Compare how things move on different surfaces. (Y3 - Forces and magnets)</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)</p>	<p>Prior Learning: Observe changes across the four seasons. (Y1 - Seasonal changes)</p> <p>Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)</p>	<p>Prior Learning: Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)</p> <p>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 - Forces and magnets)</p>	<p>Prior Learning: Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</p>	<p>Prior Learning: Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>	<p>Prior Learning: Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</p>	<p>Prior Learning: Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter)</p> <p>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). (Y4 - States of matter)</p>
<p>Future Learning: Forces as pushes or pulls, arising from the interaction between two objects. (KS3)</p> <p>Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. (KS3)</p>	<p>Future Learning: The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. (KS3)</p> <p>The light year as a unit of astronomical distance. (KS3)</p>	<p>Future Learning: Chemical reactions as the rearrangement of atoms. (KS3)</p> <p>Representing chemical reactions using formulae and using equations. (KS3)</p>	<p>Future Learning: Can explain the changes that takes place in boys and girls during puberty</p> <p>Can explain how a baby changes physically as it grows, and also what it is able to do</p>	<p>Future Learning: Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. (KS3)</p>	<p>Future Learning: Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. (KS3)</p>	<p>Future Learning: Defining acids and alkalis in terms of neutralisation reactions. (KS3)</p> <p>The pH scale for measuring acidity/alkalinity; and indicators. (KS3)</p>



Year 6 - Science at Shenley

Before the first lesson, Children will complete a pre-unit assessment (for example a KWL grid)

After the final lesson children will complete an end of unit assessment (cumulative quiz or summative piece of work)

Knowledge Organisers to be used and ticked/highlighted at the beginning and end of every lesson.

Autumn		Spring			Summer		
Living Things and their Habitats	Electricity	Light	The Circulatory System	Diet, Drugs and Lifestyle	Variation	Adaption	Fossils
Enquiry Questions: How do you know if something is living?	Enquiry Questions: What is a series circuit?	Enquiry Questions: What is a natural light source?	Enquiry Questions: What is the function of the circulatory system?	Enquiry Questions: What is a balanced diet?	Enquiry Questions: What are offspring?	Enquiry Questions: What are the conditions of a polar habitat?	Enquiry Questions: How are fossils formed?
Lesson 1: To explore conditions for life. What conditions are needed for life?	Lesson 1: To construct and draw a series of circuits using symbols. How can we represent a series circuit accurately using symbols?	Lesson 1: To understand how we see. How do we see objects? Lesson 2: To explore light and straight lines. How does light travel in straight lines?	Lesson 1: The circulatory system. How does the circulatory system help keep the body alive? Lesson 2: To learn about the functions of blood. What are the functions of blood in the body? Lesson 3: To learn about the functions of the heart. What does the heart do and how does it work?	Lesson 1: To compare diets. How do different types of diets affect our health and energy levels? Lesson 2: To understand drugs. What effects do different drugs have on the human body and mind? Lesson 3: To understand cigarettes. How does smoking affect the heart, lungs, and overall health?	Lesson 1: To explore variation. What causes variation between individuals? Lesson 2: To explore inheritance and characteristics. How are characteristics inherited from parents to offspring?	Lesson 1: To describe animal adaption. How are animals adapted to survive in their environments? Lesson 2: To describe plant adaptations. How are plants adapted to survive in their environments? Lesson 3: To describe evolution. How does evolution explain changes in species over time?	Lesson 1: To understand fossil formation. How are fossils formed over time? Lesson 2: To explore fossils. What can fossils tell us about past life and environments? Lesson 3: To research Mary Anning. Who was Mary Anning and what did she contribute to the study of fossils?
Lesson 2: To group organisms. How can we group organisms based on their characteristics?	Lesson 2: To complete and incomplete circuits. What makes a circuit complete or incomplete?	Lesson 3: To explore shadow formation. How are shadows formed?	Lesson 4: To explore blood flow in the heart. How does blood flow through the heart?				
Lesson 3: To classify animals. How can animals be classified into different groups?	Lesson 3: To compare variation within circuits. How does changing components in a circuit affect how it works?	Lesson 4: To plan a shadow investigation. How can we plan an investigation to find out what affects shadow size?					
Lesson 4: To Classify plants. How can plants be classified into different groups?							

<p>Lesson 5: To explore micro-organisms. What are micro-organisms and where do they live?</p> <p>Lesson 6: To classify micro-organisms. How can micro-organisms be classified?</p> <p>Lesson 7: To research Carl Linnaeus. Who was Carl Linnaeus and how did he influence classification?</p>	<p>Lesson 4: To plan a voltage experiment. How can we plan a fair test to investigate voltage in a circuit?</p> <p>Lesson 5: To complete a voltage experiment. How does voltage affect the components in a circuit?</p> <p>Lesson 6: To evaluate a voltage experiment. What do our results tell us about the effect of voltage in a circuit?</p>	<p>Lesson 5: To complete a shadow investigation. What happens when we investigate shadows?</p> <p>Lesson 6: To evaluate a shadow investigation. What do our results tell us about shadows?</p> <p>Lesson 7: To understand Refraction. What is refraction and how does it affect light?</p> <p>Lesson 8: To explore light. How can we explore the behaviour of light?</p>	<p>Lesson 5: To compare oxygenated and deoxygenated blood. What is the difference between oxygenated and deoxygenated blood?</p> <p>Lesson 6: To explore dissection of the heart. How can we explore the structure of a heart through dissection?</p>	<p>Lesson 4: To plan a heart experiment. How can we design a safe experiment to investigate factors that affect heart rate?</p> <p>Lesson 5: To complete a heart experiment. How does our heart rate change under different conditions, and what patterns can we observe?</p> <p>Lesson 6: To evaluate a heart experiment. What do the results of our heart experiment tell us about the factors affecting heart rate?</p>		<p>Lesson 4: To research Charles Darwin. Who was Charles Darwin and what were his contributions to science?</p> <p>Lesson 5: To explore natural selection. How does natural selection drive changes in species?</p> <p>Lesson 6: To research Darwin's finches. What can Darwin's finches teach us about adaptation and evolution?</p>	
<p>Vocabulary: organism, excretion, reproduction,</p>	<p>Vocabulary: series circuit, cell, battery, bulb</p>	<p>Vocabulary: light source, iris, retina, pupil</p>	<p>Vocabulary: circulatory system, blood vessels, veins</p>	<p>Vocabulary: balanced diet, calories, saturated and unsaturated fats</p>	<p>Vocabulary: organism, variation, species, offspring</p>	<p>Vocabulary: characteristic, adaptation, habitat</p>	<p>Vocabulary: fossil, rock, decompose</p>

<p>Prior Learning: Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats)</p>	<p>Prior Learning: Identify common appliances that run on electricity. (Y4 - Electricity)</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity)</p>	<p>Prior Learning: Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light)</p> <p>Notice that light is reflected from surfaces. (Y3 - Light)</p>	<p>Prior Learning: Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)</p> <p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans)</p>	<p>Prior Learning: Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans)</p> <p>Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)</p>	<p>Prior Learning: Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>	<p>Prior Learning: Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</p>	<p>Prior Learning: Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</p>
<p>Future Learning: Differences between species. (KS3)</p>	<p>Future Learning: Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. (KS3)</p>	<p>Future Learning: The similarities and differences between light waves and waves in matter. (KS3)</p> <p>Light waves travelling through a vacuum; speed of light. (KS3)</p>	<p>Future Learning: The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. (KS3)</p> <p>The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. (KS3)</p>	<p>Future Learning: The mechanism of breathing to move air in and out of the lungs. (KS3)</p> <p>The impact of exercise, asthma and smoking on the human gas exchange system. (KS3)</p>	<p>Future Learning: Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3)</p>	<p>Future Learning: The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. (KS3)</p>	<p>Future Learning: Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. (KS3)</p>

	Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. (KS3)				A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. (KS3)		
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