



## “Somewhere, something incredible is waiting to be known”

*Carl Sagan, an astronomer and astrophysicist*

Seeking  
Knowledge  
**S**

We strive to provide a high-quality science education that develops understanding of the world through the scientific disciplines of biology, chemistry and physics. Pupils will be immersed in key scientific vocabulary which supports the acquisition of scientific knowledge and understanding.

Collaborating  
**C**

Collaboration with our community, within classrooms and enrichment opportunities, support pupils to develop their science capital which enables them to make links between their learning and the world in which we live. Pupils develop confidence to talk about scientific concepts and remedy misconceptions.



Investigating  
**I**

Pupils are curious and investigations provide opportunities for them to explain what is happening, use appropriate scientific vocabulary and share their ideas. We aim to equip them with skills to work scientifically by mapping out disciplinary knowledge to ensure progression.

Enquiring  
**E**

Through the six enquiry types, pupils are encouraged to ask questions and decide how to try and find an answer. It is important children are not always directly guided to the ‘right’ answer and they realise that some of the most significant scientific advancements occurred from mistakes or someone saying ‘What if...?’

Nature  
**N**

Our fantastic outdoor environment provides opportunities for practical science, giving them experience of collecting and analysing data in the real world. With a focus on the Sustainable Development Goals, pupils are aware of the global challenges we face and learn how to achieve a better, more sustainable future. They learn to respect living organisms and the natural environment.

Cross Curricular  
**C**

Our curriculum equips pupils with the knowledge, skills and understanding to be able to analyse data, ask further questions, challenge ideas and think critically about evidence they gather.

Evaluating  
**E**

Science is a core part of the curriculum but there are also clear links between other subjects and science. These allow pupils to see science embedded into daily life as well as in other times and places.



## Reception

	Programme of Study Year	Key Vocabulary
Autumn 1	<b>Biology - Senses</b>	<b>See</b> <b>Hear</b> <b>Touch</b> <b>Smell</b> <b>Taste</b>
	<input type="checkbox"/> Name and provide examples of the 5 senses <input type="checkbox"/> Explore different objects/materials using their senses	
Autumn 2	<b>Physics – Seasonal Changes</b>	<b>Autumn</b> <b>Spring</b> <b>Summer</b> <b>Winter</b>
	<input type="checkbox"/> Explore the natural world around them. <input type="checkbox"/> Describe what they see, hear and feel whilst outside <input type="checkbox"/> Understand the effect of changing seasons on the natural world around them ELG Understand some important process and changes in the natural world around them including the seasons and changing states of matter	
Spring 1	<b>Chemistry - Everyday Materials</b>	<b>Wood</b> <b>Plastic</b> <b>Glass</b> <b>Metal</b> <b>Rock</b> <b>Water</b> <b>Freeze</b> <b>Melt</b>
	<input type="checkbox"/> Investigate where wood comes from <input type="checkbox"/> Explore collections of materials with similar and/or different properties <input type="checkbox"/> Talk about the differences between materials and changes they notice <input type="checkbox"/> Explore natural materials, indoors and outside ELG Understand some important process and changes in the natural world around them including changing states of matter	
Spring 2	<b>Biology – Keeping Healthy</b>	<b>Fruit</b> <b>Vegetables</b> <b>Dairy</b> <b>Meat</b> <b>Healthy</b> <b>Unhealthy</b> <b>Exercise</b>
	<input type="checkbox"/> Name some healthy and unhealthy foods <input type="checkbox"/> Name different ways to keep fit and healthy <input type="checkbox"/> Explain the difference between dairy, meat and fruit/vegetables based on where some different foods come from <input type="checkbox"/> Identify where different foods come from ELG managing self Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices	



Summer 1	<b>Biology - Living things and their habitats</b>	<b>Caterpillar</b> <b>Cocoon</b> <b>Butterfly</b> <b>Insect</b> <b>Mammal</b> <b>Habitat</b>
	<input type="checkbox"/> Ask questions about mini-beasts found in their environment <input type="checkbox"/> Recognise some environments that are different to the one in which they live Begin to understand the need to respect and care for the natural environment and all living things ELG The Natural World 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 to them in class. Understand some important process and changes in the natural world around them including the seasons and changing states of matter	
Summer 2	<b>Physics – Seasonal Changes</b>	<b>Autumn</b> <b>Spring</b> <b>Summer</b> <b>Winter</b>
	<input type="checkbox"/> Explore the natural world around them. <input type="checkbox"/> Describe what they see, hear and feel whilst outside <input type="checkbox"/> Understand the effect of changing seasons on the natural world around them ELG Understand some important process and changes in the natural world around them including the seasons and changing states of matter	

### Working Scientifically

ELG

Listening, attention and understanding

Making comments about what they have heard and ask questions to clarify their understanding.

Speaking

Offer explanations for why things happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate.

- Ask simple questions** which begin with does/do, how and what/which e.g. What is a bud? How do the seasons change? Does it snow in the summer? Which materials are waterproof?
- Predict** what might happen
- Observe** closely using **simple equipment** such as magnifying glasses including bug collectors and binoculars
- Explore and **perform simple tests**
- There is an ability to **sort and classify** finding similarities and differences
- Use descriptive/scientific language to **describe** and **explain** their observations
- Explain** what has been observed using appropriate vocabulary
- Use observations to **suggest reasons 'why'** something has happened



**In Science, our Reception greater depth pupils will...**

**A Reception child working at greater depth will**

- Apply what they've learned in one area of science to other areas.
- Make links between prior and current learning in a familiar relatable context.
- Apply their knowledge, skills and scientific vocabulary to other contexts.
- Connect with their learning. This is important for children because it affects how they make decisions in the future and how children can help the world.
- Generate lines of enquiry when working in groups.



## Year 1

	Programme of Study	Key vocabulary
Autumn 1	<b>Biology - Plants</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and name a variety of common wild and garden plants <b>including deciduous and evergreen trees.</b></li> <li><input type="checkbox"/> Identify and describe the basic structure of a variety of common <b>trees.</b></li> </ul>	<b>Deciduous</b> <b>Evergreen</b> <b>Blossom</b> <b>Trunk</b> <b>Roots</b> <b>Branch</b> <b>leaves</b>
	<b>Biology – Animals and Humans</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> </ul>	<b>bird</b> <b>mammal</b>
	<b>Chemistry – Everyday Materials</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Distinguish between an object and the material from which it is made.</li> <li><input type="checkbox"/> Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> <li><input type="checkbox"/> Describe the simple physical properties of a variety of everyday materials.</li> <li><input type="checkbox"/> Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<b>Hard/soft</b> <b>Stretchy/stiff</b> <b>Shiny/dull</b> <b>Rough/smooth</b> <b>Bendy/not bendy</b>
Spring 1	<b>Physics – Seasonal changes</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Observe changes across the four seasons.</li> <li><input type="checkbox"/> Observe and describe weather associated with the seasons and how day length varies.</li> </ul>	<b>Seasons</b> <b>Sunrise</b> <b>Sunset</b> <b>Day length</b> <b>Weather</b>
	<b>Biology – Humans</b>	



	<input type="checkbox"/> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	<b>Human</b> <b>Mammal</b> <b>Smell</b> <b>Hear</b> <b>Touch</b> <b>Taste</b>
Spring 2	<b>Chemistry – Everyday Materials</b>	<b>Hard/soft</b> <b>Stretchy/stiff</b> <b>Shiny/dull</b> <b>Rough/smooth</b> <b>Bendy/not bendy</b> <b>Waterproof/not waterproof</b> <b>Absorbent</b> <b>Opaque</b> <b>transparent</b>
	<input type="checkbox"/> Distinguish between an object and the material from which it is made. <input type="checkbox"/> Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. <input type="checkbox"/> Describe the simple physical properties of a variety of everyday materials. <input type="checkbox"/> Compare and group together a variety of everyday materials on the basis of their simple physical properties.	
Summer 1	<b>Biology – Animals and Humans</b>	<b>Mammal</b> <b>Amphibian</b> <b>fish</b> <b>Reptile</b> <b>bird</b> <b>Carnivore</b> <b>Herbivore</b> <b>Omnivore</b>
	<input type="checkbox"/> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. <input type="checkbox"/> Identify and name a variety of common animals that are carnivores, herbivores and omnivores. <input type="checkbox"/> Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	
Summer 2	<b>Biology - Plants</b>	<b>Petal</b> <b>Stem</b> <b>Bulb</b> <b>Root</b> <b>Leaf</b>
	<input type="checkbox"/> Identify and name a variety of <b>common wild and garden plants</b> . <input type="checkbox"/> Identify and describe the basic structure of a variety of common <b>flowering plants</b> .	



### Working Scientifically

- Ask simple questions** which begin with does/do, how and what/which e.g. What is a bud? How do the seasons change? Does it snow in the summer? Which materials are waterproof?
- Recognise that these questions could be **answered in different ways**
- Predict** an outcome of an enquiry
- Observe** closely using **simple equipment** such as magnifying glasses including bug collectors and binoculars
- Use discrete data to perform comparative tests** to gather data e.g. set up a test to see which material for mopping up water?
- Know if the test has been successful
- Gather data** in line with Year 1 measurement curriculum (non-standard units)
- Use drawings and simple tables to record results
- Explain** what has been observed using appropriate vocabulary
- Use observations to **suggest reasons 'why'** something has happened
- Say what has been learned

### In Science, our Year 1 greater depth pupils will...

#### A KS1 child working at greater depth will

- Apply what they've learned in one area of science to other areas.
- Make links between prior and current learning in a familiar relatable context and justify why they think this with accuracy.
- Apply their knowledge, skills and scientific vocabulary to other contexts including other areas of the curriculum consistently.
- Connect with their learning. This is important for children because it affects how they make decisions in the future and how children can help the world.
- Question each other effectively and challenge ideas.
- Generate lines of enquiry when working in groups.



## Year 2

Programme of Study Year 2		Key Vocabulary
Autumn 1	<b>Chemistry - Everyday Materials</b>	<b>Flexible</b> <b>Transparent</b> <b>Magnetic</b> <b>Suitable</b> <b>Unsuitable</b> <b>Properties</b>
	<input type="checkbox"/> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. <input type="checkbox"/> Find out about people who have developed useful new materials e.g. John Dunlop, Charles Macintosh or John McAdam (non statutory)	
Autumn 2	<b>Chemistry - Everyday Materials</b>	
	<input type="checkbox"/> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. <input type="checkbox"/> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	
Spring 1	<b>Biology – Animals and Humans</b>	<b>Offspring</b> <b>Life cycle</b> <b>Survival</b> <b>Food types</b> <b>Hygiene</b>
	<input type="checkbox"/> Notice that animals, including humans, have offspring, which grow into adults. <input type="checkbox"/> Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). <input type="checkbox"/> Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	
Spring 2	<b>Biology - Plants</b>	
	<input type="checkbox"/> Observe and describe how seeds and bulbs grow into mature plants. <input type="checkbox"/> Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	<b>Shelter</b> <b>Seeds</b> <b>Bulb</b> <b>Growth</b> <b>Temperature</b>



Summer 1	<b>Biology – Living things and their habitats</b>	<b>Micro habitats</b> <b>Living</b> <b>Dead</b> <b>Food chains</b>
	<ul style="list-style-type: none"><li><input type="checkbox"/> Explore and compare the differences between things that are living, dead, and things that have never been alive.</li><li><input type="checkbox"/> 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.</li><li><input type="checkbox"/> Identify and name a variety of plants and animals in their habitats, including microhabitats.</li><li><input type="checkbox"/> 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.</li></ul>	
Summer 2	<b>Biology – Living things and their habitats</b>	
	<ul style="list-style-type: none"><li><input type="checkbox"/> Explore and compare the differences between things that are living, dead, and things that have never been alive.</li><li><input type="checkbox"/> 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.</li><li><input type="checkbox"/> Identify and name a variety of plants and animals in their habitats, including microhabitats.</li><li><input type="checkbox"/> 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.</li></ul>	



### Working Scientifically

- Ask questions** beginning with would, why and where e.g. why are these seeds shaped as they are? Would plants go in the dark? Where do snails live?
- Discuss ways in which their questions could be answered e.g. through research, observations or simple tests
- Predict** outcomes and suggest reasons
- Close observations** are made independently considering which equipment would be most useful
- Use microscopes
- Suggest and perform **comparative tests**
- Understand the meaning of **discrete data**
- Independently **classify and group** things according to a given criteria or **justifying reasons** why it is grouped in this way
- Gather data** in line with Year 2
- measurement (standard units) and statistics curriculum (tally charts, pictograms, block charts) as well as labelled diagrams
- Draw conclusions** from observations, measurements and scientific knowledge
- Independently **suggest answers to questions** based on what they have found out

### In Science, our Year 2 greater depth pupils will...

#### A KS1 child working at greater depth will

- Apply what they've learned in one area of science to other areas.
- Make links between prior and current learning in a familiar relatable context and justify why they think this with accuracy.
- Apply their knowledge, skills and scientific vocabulary to other contexts including other areas of the curriculum consistently.
- Connect with their learning. This is important for children because it affects how they make decisions in the future and how children can help the world.
- Question each other effectively and challenge ideas.
- Generate lines of enquiry when working in groups.



## Year 3

Programme of Study Year 3		Key Vocabulary	
Autumn 1	<b>Chemistry - rocks</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li><input type="checkbox"/> describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li><input type="checkbox"/> recognise that soils are made from rocks and organic matter</li> </ul>	Igneous Density Sedimentary Minerals Igneous Density Sedimentary	Metamorphic Permeability Durability Metamorphic Permeability Durability Minerals
Autumn 2	<b>Biology – animals including humans</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>		Producer Consumer Prey Predator Movement Joints Endoskeleton Exoskeleton
Spring 1	<b>Physics - Forces</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Compare how things move on different surfaces.</li> <li><input type="checkbox"/> Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> </ul>	Attract Repel Poles Magnetic Newton	Force (direct and indirect) Gravity Friction
Spring 2	<b>Physics - Magnets</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Observe how magnets attract or repel each other and attract some materials and not others.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Describe magnets as having two poles.</li> <li><input type="checkbox"/> Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>		



Summer 1	<b>Biology - Plants</b>	<p>Seed dispersal Species Pollination Seed formation Photosynthesis Pollen Germination</p>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	
Summer 2	<b>Physics - Light</b>	<p>Light source Absence of light Transparent Translucent Opaque</p>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recognise that they need light in order to see things and that dark is the absence of light.</li> <li><input type="checkbox"/> Notice that light is reflected from surfaces.</li> <li><input type="checkbox"/> Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li><input type="checkbox"/> Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li> <li><input type="checkbox"/> Find patterns in the way that the size of shadows change.</li> </ul>	

### Working Scientifically

<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Ask relevant questions</b> related to prior knowledge</li> <li><input type="checkbox"/> Understand that science investigations begin with a question</li> <li><input type="checkbox"/> An awareness that there are different ways of asking scientific questions which result in <b>different types of enquiries</b></li> <li><input type="checkbox"/> Make a <b>prediction</b> which has a plausible reason</li> <li><input type="checkbox"/> Set up <b>comparative tests and fair tests</b></li> <li><input type="checkbox"/> Make careful and accurate <b>observations</b> including the use of <b>standard units</b> taking into account mathematical knowledge up to Year 3 (read time, add and subtract length, mass and capacity)</li> <li><input type="checkbox"/> With support use <b>drawings, labelled diagrams, bar charts</b> and <b>tables</b> to record findings</li> <li><input type="checkbox"/> Recognise <b>why it is important to collect data</b> in order to answer a question</li> <li><input type="checkbox"/> Draw simple <b>conclusions</b> from the data collected</li> <li><input type="checkbox"/> With prompts, <b>report findings</b> from investigations in a range of ways</li> <li><input type="checkbox"/> <b>Evaluate</b> process using straightforward scientific evidence to support findings</li> </ul>
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### In Science, our Year 3 greater depth pupils will...

<p><b>A KS2 child working at greater depth will</b></p> <ul style="list-style-type: none"> <li>• Apply what they've learned in one area of science to other areas</li> <li>• Children form a relationship with their learning. It has human significance so it's relevant to the future decisions and the active contribution children can make to the world.</li> <li>• Evaluate conclusions when working scientifically and explore a concept with a greater degree of independence</li> <li>• They are able to question each other effectively and challenge ideas.</li> <li>• Generate endless lines of enquiry when working in groups.</li> <li>• Work systematically to approach a line of enquiry.</li> <li>• Apply their knowledge, skills and scientific vocabulary to other contexts including other areas of the curriculum consistently.</li> </ul>
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## Year 4

	Programme of Study Year 4	Key Vocabulary
Autumn 1	<p align="center"><b>Biology - Animals including humans</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Describe the simple functions of the basic parts of the digestive system in humans.</li> <li><input type="checkbox"/> Identify the different types of teeth in humans and their simple functions.</li> </ul> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p><b>Digestion</b></p> <p><b>Absorption</b></p> <p><b>Muscles</b></p> <p><b>Protection</b></p> <p><b>Incisors</b></p> <p><b>Canines</b></p> <p><b>Enzyme</b></p>
	<p align="center"><b>Chemistry - States of matter</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li><input type="checkbox"/> 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).</li> <li><input type="checkbox"/> Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>	<p><b>Gases</b></p> <p><b>Particles</b></p> <p><b>State</b></p> <p><b>Evaporate</b></p> <p><b>Condense</b></p> <p><b>Condensation</b></p> <p><b>Celsius</b></p> <p><b>Fahrenheit</b></p> <p><b>Precipitation</b></p>
Spring 1	<p align="center"><b>Biology – Living things and their Habitats</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Can use classification keys to identify unknown animals.</li> <li><input type="checkbox"/> Explore and identify local animals.</li> <li><input type="checkbox"/> Can give examples of how an environment may change both naturally and due to human impact and can sometimes pose dangers to living things</li> </ul> <p>Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter.</p>	<p><b>Human impact</b></p> <p><b>Deforestation</b></p> <p><b>Nature reserves</b></p> <p><b>Extinction</b></p> <p><b>Endangered</b></p> <p><b>Classification keys</b></p> <p><b>Migrate</b></p> <p><b>Hibernate</b></p>
	<p align="center"><b>Physics – Sound</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify how sounds are made, associating some of them with something vibrating.</li> <li><input type="checkbox"/> Recognise that vibrations from sounds travel through a medium to the ear.</li> <li><input type="checkbox"/> Find patterns between the pitch of a sound and features of the object that produced it.</li> <li><input type="checkbox"/> Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li><input type="checkbox"/> Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>	<p><b>Pitch</b></p> <p><b>Volume</b></p> <p><b>Instrument</b></p> <p><b>Amplitude</b></p> <p><b>Frequency</b></p> <p><b>Ear drum</b></p> <p><b>Vibration</b></p> <p><b>Mediums</b></p>
Spring 2		



<b>Summer 1</b>	<b>Physics - Electricity</b>	<b>Conductor</b> <b>Insulator</b> <b>Circuit</b> <b>Cell</b>	<b>Switch</b> <b>Wire</b> <b>Lamp</b> <b>Appliance</b>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify common appliances that run on electricity.</li> <li><input type="checkbox"/> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> <li><input type="checkbox"/> Recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> <p><b>N.B.</b> Children should be given only one component at a time to add to circuits. Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6.</p>		
<b>Summer 2</b>	<b>Biology – Living things and their Habitats</b>	<b>Human impact</b> <b>Deforestation</b> <b>Nature reserves</b> <b>Extinction</b>	<b>Endangered</b> <b>Classification keys</b> <b>Migrate</b> <b>Hibernate</b>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can use classification keys to identify unknown plants</li> <li><input type="checkbox"/> Explore and identify local plants</li> <li><input type="checkbox"/> Can give examples of how an environment may change both naturally and due to human impact</li> </ul> <p>Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter</p>		

### Working Scientifically

- Questions** are beginning to be improved in order to clarify exactly what is being investigated
- Identify **new questions** raised from data
- Identify which **type of enquiry** they would need to use to answer their question e.g. secondary research, fair test, grouping and sorting
- Make a **prediction** which has a plausible reason
- Amend predictions** according to findings
- Plan and conduct investigations** independently to produce evidence to answer a question
- Set up a **fair test** using **continuous data** identifying a variable that can be changed and measured
- Make careful and accurate **observations** including the use of **standard units** taking into account mathematical knowledge up to Year 4 (convert units of measurements)
- Accurately read scales on a range of thermometers and know that there are two main scales used to measure temperature
- Suggest **appropriate ways** in which **to gather, record and classify**
- Present continuous data** on a **line graph** e.g. to show the temperature of a melting material changes with time
- Make sense of findings **noticing patterns, similarities** and **differences** to draw simple conclusions and answer questions



**In Science, our Year 4 greater depth pupils will...**

**A KS2 child working at greater depth will**

- Apply what they've learned in one area of science to other areas
- Children form a relationship with their learning. It has human significance so it's relevant to the future decisions and the active contribution children can make to the world.
- Evaluate conclusions when working scientifically and explore a concept with a greater degree of independence
- They are able to question each other effectively and challenge ideas.
- Generate endless lines of enquiry when working in groups.
- Work systematically to approach a line of enquiry.
- Apply their knowledge, skills and scientific vocabulary to other contexts including other areas of the curriculum consistently.



## Year 5

Programme of Study Year 5		Key Vocabulary	
Autumn 1	<b>Physics - Forces</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li><input type="checkbox"/> Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li><input type="checkbox"/> Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul>	Gravity Air resistance Water resistance Levers Gears	Pulleys Friction Mechanisms
Autumn 2	<b>Biology – Living things and their Habitats</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li><input type="checkbox"/> Describe the life process of reproduction in some plants and animals.</li> </ul>	Fertilisation Style Ovary Pistil Asexual Stigma	Stamen Metamorphosis Reproduction
Spring 1	<b>Chemistry – Properties of Materials</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li><input type="checkbox"/> Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li><input type="checkbox"/> Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul>	Solution Conductivity Acid Thermal Soluble/Insoluble Irreversible/Reversible	
Spring 2	<b>Physics - Earth and Space</b>		
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li><input type="checkbox"/> Describe the movement of the Moon relative to Earth</li> <li><input type="checkbox"/> Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li><input type="checkbox"/> Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	Rotation Celestial Orbit Solar system	Weight/Mass Geocentric Heliocentric



Summer 1	<b>Chemistry – changes of materials</b>	<p>Solution Conductivity Acid Thermal Soluble/Insoluble Irreversible/Reversible</p>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li><input type="checkbox"/> Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li><input type="checkbox"/> Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li><input type="checkbox"/> 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.</li> </ul>	
Summer 2	<b>Biology – Animals including Humans</b>	<p>Foetus Embryo Womb Gestation</p> <p>Puberty Development Adolescent Fertilised</p>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Describe the changes that occur during human gestation</li> <li><input type="checkbox"/> Identify and explain physical and mental changes that occur from birth to old age</li> <li><input type="checkbox"/> Understand the changes that happen during puberty</li> </ul>	

### Working Scientifically

<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Plan and set up</b> an investigation</li> <li><input type="checkbox"/> Understand the difference between <b>comparative</b> (discrete data) and <b>fair tests</b> (continuous data)</li> <li><input type="checkbox"/> Know what <b>variables</b> are in a given enquiry and <b>isolate</b> them</li> <li><input type="checkbox"/> Use all <b>measurements</b> set out in <b>Year 5 mathematics</b> which includes converting different units of metric measure</li> <li><input type="checkbox"/> Use <b>scientific instruments</b> accurately e.g. thermometer, rain gauge, spring scales, lux meter</li> <li><input type="checkbox"/> <b>Record and present</b> data in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs</li> <li><input type="checkbox"/> Use <b>data</b> generated to help <b>make sense of the investigation</b></li> <li><input type="checkbox"/> Use information gleaned from investigations to make <b>predictions</b> for further comparative and fair tests</li> <li><input type="checkbox"/> Create <b>new investigations</b> which take into account what has been learned previously</li> <li><input type="checkbox"/> <b>Present</b> information using IT such as power-point and iMovie</li> <li><input type="checkbox"/> Use written methods to <b>report findings</b> and include diagrams where appropriate</li> <li><input type="checkbox"/> <b>Orally present</b> findings to other students in the class</li> <li><input type="checkbox"/> <b>Evaluate</b> investigation and suggest how to improve the test, with reasons (repeatability and reproducibility).</li> <li><input type="checkbox"/> Identify <b>causal relationships</b></li> <li><input type="checkbox"/> Aware that the outcome from an enquiry needs to be supported with <b>scientific knowledge</b> and state whether the evidence <b>supports or refutes</b> an argument or theory</li> <li><input type="checkbox"/> Give an example of something that has been focused on e.g. how much easier it is the lift a heavy object using pulleys using <b>scientific theories to support this theory</b></li> </ul>
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**In Science, our Year 5 greater depth pupils will...**

**A KS2 child working at greater depth will**

- Apply what they've learned in one area of science to other areas
- Children form a relationship with their learning. It has human significance so it's relevant to the future decisions and the active contribution children can make to the world.
- Evaluate conclusions when working scientifically and explore a concept with a greater degree of independence
- They are able to question each other effectively and challenge ideas.
- Generate endless lines of enquiry when working in groups.
- Work systematically to approach a line of enquiry.
- Apply their knowledge, skills and scientific vocabulary to other contexts including other areas of the curriculum consistently.



## Year 6

	Programme of Study Year 6	Key Vocabulary
Autumn 1	<b>Biology – Animals including Humans</b>	circulatory system blood vessels vein artery oxygenated deoxygenated
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li><input type="checkbox"/> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li><input type="checkbox"/> Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>	
Autumn 2	<b>Physics- Light</b>	light rays straight lines reflect spectrum absorb
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recognise that light appears to travel in straight lines.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>	
Spring 1	<b>Physics - Electricity</b>	voltage components series circuit circuit diagram symbols cell buzzer
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <p><b>N.B.</b> Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words “cells” and “batteries” are now used interchangeably.</p>	
Spring 2	<b>Biology – Living things and their Habitats</b>	micro-organisms characteristics crustaceans vertebrates arthropods invertebrates mollusc virus bacteria
	<ul style="list-style-type: none"> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Give reasons for classifying plants and animals based on specific characteristics.</li> </ul>	



Summer 1	<b>Evolution and inheritance</b>	<b>adaption</b> <b>DNA</b> <b>evolution</b> <b>extinct</b> <b>natural selection</b>	<b>inheritance</b> <b>species</b> <b>variation</b>
	<input type="checkbox"/> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. <input type="checkbox"/> Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. <input type="checkbox"/> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		
Summer 2	<b>Evolution and inheritance</b>		
	<input type="checkbox"/> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		

### Working Scientifically

<input type="checkbox"/> Decide which type of test they will do based on the type of data collected ( <b>continuous or discrete</b> ) <input type="checkbox"/> Understand the difference between <b>dependent and independent variables</b> <input type="checkbox"/> Justify why the <b>variable</b> has been <b>isolated</b> in the investigation <input type="checkbox"/> Use all <b>measurements</b> set out in <b>Year 6 mathematics</b> which includes capacity, mass, ratio and proportion <input type="checkbox"/> Choose appropriate <b>scientific instruments</b> for particular investigations e.g. spring scales, lux meter, thermometer <input type="checkbox"/> Take <b>repeated readings</b> where necessary (finding the average) and understand the importance of doing this <input type="checkbox"/> Decide how best to <b>record and</b> present their data based on their investigation and justify their reasons why <input type="checkbox"/> Confidently use data generated to explain the possible <b>reasons for the results</b> <input type="checkbox"/> Make <b>accurate predictions</b> for further tests by referring back to the results from previous investigations <input type="checkbox"/> Create <b>new investigations</b> based on their previous findings <b>rationalising</b> why they think this is the next step <input type="checkbox"/> <b>Present</b> information using IT such as PowerPoint and iMovie <input type="checkbox"/> Use <b>diagrams</b> when necessary <input type="checkbox"/> Confidently <b>present findings</b> orally in front of the class and <b>compare findings</b> with other students <input type="checkbox"/> Explain about what has been found through the investigation and compare this to other enquiries <input type="checkbox"/> <b>Evaluate</b> investigation considering the degree in which results should be trusted (repeatability and reproducibility) <input type="checkbox"/> Explain <b>causal relationships</b> suggesting reasons why based on scientific knowledge <input type="checkbox"/> Make <b>conclusions</b> based scientific theories and decide whether the results from an investigation support or refute an argument or theory <input type="checkbox"/> Explain <b>reasons why</b> evidence could contradict scientific knowledge
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