# St John's Science Whole School Long Term Plan (2023-2024)

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| **EYFS** | Fruit<br>Autumn | Space<br>Light and Dark<br>Baking | Winter<br>Hibernation<br>Healthy food<br>Planting fruit/veg<br>Freezing and melting | Spring<br>Plants and flowers<br>Climate change and environmental issues | Animals and their babies/homes<br>Caterpillars and tadpoles<br>Dinosaurs and fossils | Summer<br>Keeping healthy<br>Sea creatures |
| **Year 1** | Seasonal change throughout the year | | | | | |
| | Plants | Animals and Humans | Plants | Animals and Humans | Materials | Plants and Animals and Humans |
| **Year 2** | Animals and Humans | Materials | Animals and their habitats | Animals and their habitats | Plants | Plants |
| **Year 3** | Materials - Rocks<br>END POINT | Animals and Humans | Forces and Magnets | Light | Plants | Plants |
| **Year 4** | Animals and Humans<br>Teeth and Digestive System | Living Things and Habitats<br>Classification | Sound<br>END POINT | States of Matter | Electricity | Revisit |
| **Year 5** | Animals and Humans<br>Growths and puberty | Living Things and Life Cycles | Forces and Magnets<br>END POINT | Materials- Changes in Materials | Earth and space<br>END POINT | Revisit |
| **Year 6** | Evolution and Inheritance | Living Things and Classifications | Light | Animals and Humans<br>Circularity System | Animals and Humans<br>Water System | Electricity |

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**Science Domains**

| Biology | Chemistry | Physics |
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| is the study of living things (organisms), their structure and environments. | is the study of the composition, behaviour and properties of matter, and of the elements of the Earth and its atmosphere. | is the study of matter, forces and motion, sound, light and waves, electricity and magnetism and Earth in Space. |
| In the Primary Curriculum it is the study of Animals, including humans<br>Plants<br>Living things and their habitats<br>Evolution and inheritance | In the Primary Curriculum it is the study of Everyday materials<br>Uses of everyday materials<br>Rocks<br>States of matter<br>Properties and changes of materials | In the Primary Curriculum it is the study of<br>Seasonal changes<br>Light<br>Forces and magnets<br>Electricity<br>Sound<br>Forces<br>Earth in Space |

**Science Curriculum Narrative**

| Early Years |
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| In the Early Years; children explore the world around them, making observations and drawing pictures of animals and plants. They 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.<br>Science activities tap into children's curiosity and develop the desire to explore and experiment; this ultimately strengthens their problem-solving and analytical skills. Science gets children to question how things work and develop an understanding of their environment. |
| **Key Stage 1** |
| Pupils study the **Seasons** and develop an early conceptual understanding of how **day becomes night**. An understanding of change over time connects to the study of **Plants, including trees**. This focus enables children to associate trees as belonging to the plant kingdom and notice the changes deciduous trees go through connected to the seasons.<br><br>Contrasting that study, pupils learn about **Animals, including humans.** Non-examples of plants are used to contrast the features of an animal.<br><br>Pupils are introduced to **identifying and classifying materials**. Scientific terms, such as transparent, translucent and opaque are taught explicitly through vocabulary instruction and pupils make further sense by applying it to what they know and then to working and thinking scientifically tasks. This substantive knowledge is enriched by pupils' use of disciplinary knowledge through scientific enquiry. |

To sophisticate their understanding, Year 1 pupils revisit the study **Animals, including humans** as a retrieval module and deepen their knowledge through revisiting and thinking hard through increasingly challenging tasks.

As pupils progress through KS1, new knowledge is integrated with pre-existing understanding. For example, in Year 2, the **study of Living things and their habitats** and **Uses of everyday materials,** engages pupils to integrate and draw upon their knowledge of **Animals, including humans** as well as **Plants**, and the study of **Materials**. New substantive knowledge is constructed and made sense of through **Working and Thinking scientifically** tasks

**Lower Key Stage 2**

The unit on **Rocks** is studied and connected with prior knowledge from 'Everyday materials' in KS1. A study of **Animals, including humans** is built upon from KS1 and contrasts the physical features with the functions they perform, including the skeleton and muscles. **Rocks** is revisited again to sophisticate and deepen pupils' knowledge, advancing their understanding.

**Forces and magnets** are introduced and connect with KS1 materials, including twisting, bending and squashing. Contact and non-contact forces are taught and understanding applied through Working and Thinking Scientifically. The abstract concept of Light is made concrete through knowing about light sources and shadows. Plants are studied to develop a more sophisticated understanding of their parts and functions, including pollination.

A study of **Living things and their habitats** pays close attention to classification and is directly taught using prior knowledge to ensure conceptual frameworks are secure. Explicit vocabulary instruction supports pupils to deconstruct words for their component meaning, for example invertebrate. Animals, plants and environments are connected in this study with a summary focusing on positive and negative change.

**Electricity** is introduced. Substantive knowledge is taught so that pupils acquire understanding about electrical sources, safety and components of a single loop circuit. Practical tasks give pupils the opportunity to think using disciplinary knowledge in the context of variables. Pupils make sense of what they know by testing, proving and disproving hypotheses.

**Animals, including humans** focuses on the sequence of **digestion,** from the mouth to excretion. Misconceptions, such as digestion begins in the stomach, are pre-empted, limited and represented as non-examples.

**States of matter** and **Sound** are taught using knowledge of the particle theory. Acquiring substantive knowledge about 'states' of matter supports pupils to understand how solids, liquids and gases behave. This knowledge is connected further to geographical studies of the Water cycle and life processes. Practical scientific tasks and tests help pupils build a coherent understanding of the particle theory by applying what they know through structured scientific enquiry. Misconceptions, such as 'liquid particles are slightly more separated than gas and less compacted than solids' are addressed.

**Upper Key Stage 2**

In the study of **Properties and changes of materials,** it is important that pupils reuse and draw upon their understanding of states of matter. This prior content eases the load on the working memory to process and make sense of new knowledge, including solutions, mixtures, reversible and irreversible changes.

Change is also studied within **Animals, including humans**, focusing on growth and development of humans and animals.

**Earth in Space** develops the conceptual understanding of our place in the universe. This study unwraps misconceptions, including the Moon changing shape, the Sun moving across the sky and how seasons occur.

A study of **Forces** sophisticates the substantive knowledge acquired in KS1 and LKS2. New content, including air resistance and water resistance is studied. Force multipliers, such as levers are studied to understand how we can be efficient with effort. For example, a spanner with a long handle multiplies the force and makes it easier to turn a bolt than spanner with a shorter handle. Simple machines, such as pulleys are also studied as force multipliers – they move the load through a greater distance with the same energy being used. Enhancing this study of Forces, pupils learn about Galileo Galilei 1564 - 1642 (considered the father of modern science).

**Living things and their habitats** focuses on differences in life cycles of living things and how they reproduce. This study also contrasts previous scientific thinking. Pupils contrast how people in the past thought and constructed understanding, in the absence of scientific evidence, to explain things they didn't understand. Maria Merion is the significant scientist studied, she observed closely and carefully drew insects undergoing biochemical metamorphosis. David Attenborough describes Maria Merion as one of the most important contributors to the field of entomology.

A further study of **Living things and their habitats** enables pupils in UKS2 to revisit and add to their understanding of classification through the taxonomy created by Carl Linnaeus. More complex animals are studied, including invertebrates such as Myriapods and Echinodermata (starfish and Sea urchins) as well as Arthropods such as Crustacea, Arachnids, and Insects.

**Light** is revisited and taught with advanced substantive knowledge. This is physics study with a focus on the properties of light, not the biology of the eye

# Science in EYFS

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| **Subject:** | Science |
| **Year Group:** | Reception |

**Prior/Background Knowledge:**
Children should start school:
-Having had experience of hands on exploration of natural materials. They should be able to talk about what they see and explore how things work. Children should have had experience of planting seeds, lifecycles and caring for the environment. They should talk about forces they feel and differences between materials.


**Autumn 1:**
After reading Handa's surprise children investigate making a fruit salad- talking about the taste and texture of the food.
Children will learn about **Autumn** and go on an Autumn walk to investigate.
**Autumn 2:**
As part of our transport topic children learn about space travel and the astronaut Tim Peake. They learn about Earth, Sun, Moon, planets and stars.
Linked to Mr Gumpy's Outing; children will investigate **floating and sinking.** They will see how many small world people can fit into a boat before it sinks.
**Light and dark:** children will investigate making shadows and will use our light box.
As part of our preparations for Christmas; children will **bake** Christmas biscuits and see how heat changes the ingredients'.

**The Natural World ELG**

Children at the expected level of development will:

- Explore the world around them, making observations and drawing pictures of animals and plants.

- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

**Spring 1:**
Children will learn about **Winter** and go on a Winter walk to investigate. As part of the winter topic we will learn about **hibernating animals.**
Children will learn about **healthy** and **unhealthy** food. They will **plant** some fruit/veg in our EYFS garden.
During a snowy/icy week children will experiment with **freezing** and **melting.** They will leave ice in different places to see which position melts it first. They will also leave small toys in water overnight to see if they will become frozen.

**Spring 2:**
We learn all about **plants** and **flowers.** Children plant their own **bean seed** and watch it grow. They learn about the **parts of a flower and tree.**
During this half term we look at **climate change** and **environmental issues** linked to a relevant news story.
Children will learn about **Spring** and go on a Spring walk to investigate.

**Summer 1**
We look after our very own **caterpillars** and **tadpoles.** We learn about their lifecycles and monitor their growth and change.
We learn the names of **animals, their babies and their homes**.
We learn that **dinosaurs** are extinct and look at **fossils linked to Mary Anning**
Children make their own **bird hide** and **bird feeders**- learning the names of some garden birds.
We do a lot of gardening in this half term and learn how to take care of our plants and flowers.

**Summer 2:**
Children will learn about **Summer** and go on a summer walk to investigate. Children learn how to keep healthy in Summer.
Children learn about sea creatures and their habitats.

## Key history vocabulary:

**Seasons- autumn, winter, spring and summer**
**Floating and sinking**
**Light and dark**
**Materials, change, heat, freezing, melting**
**Animals and baby names**
**Hibernating**
**Healthy/unhealthy**
**Plant, flower and tree names. Parts of a plant and tree**

# St John's Science Medium Term Planning (using CUSP resources)

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
|---|---|---|---|---|---|
| Y1<br><br>Everyday materials | Chemistry | EYFS - The Natural World<br>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<br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br><br>EYFS Creating with materials<br>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; Share their creations, explaining the process they have used; Make use of props and materials when role playing characters in narratives and stories. | Pupils should be taught to:<br>• distinguish between an object and the material from which it is made<br>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock<br>• describe the simple physical properties of a variety of everyday materials<br>• compare and group together a variety of everyday materials on the basis of their simple physical properties<br><br>What are materials?<br>What are things made of in school?<br>How can I describe materials?<br>Which materials are waterproof and which are not?<br>What's the best material for the job and why? | Absorb<br>Rough<br>Smooth<br>Waterproof<br>Metal<br>plastic | Materials<br>Property<br>Flexible<br>Transparent<br>Opaque<br>physical |
| Y1<br>Animal including humans | Biology | EYFS –- The Natural World<br>They talk about the features of their own immediate environment and how environments might vary from one another<br><br>similarities and differences in relation to places, objects, materials and living things<br><br>They make observations of animals and plants and explain why some things occur and talk about changes. | Pupils should be taught to:<br>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals<br>• identify and name a variety of common animals that are carnivores, herbivores and omnivores<br><br>What is an animal?<br>What types of animals are there?<br>What is similar and what is different?<br>What does food tell us about an animal? | Blood<br>Senses<br>Young<br>Feather<br>Fur<br>scales | Mammal<br>Amphibian<br>Reptile<br>Herbivore<br>Carnivore<br>omnivore |
| Y1<br><br>Plants including trees | Biology | EYFS: The Natural World<br><br>Explore the natural world around them, making observations and drawing pictures of animals and plants.<br><br>Know some similarities and differences between the natural world around them and | Pupils should be taught to:<br>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees<br>• identify and describe the basic structure of a variety of common flowering plants, including trees<br><br>What are the parts of a plant?<br>What are wild plants and where do you find them? | Bud<br>Trunk<br>Branch<br>Bark<br>Seed<br>wild | Nutrients<br>Stem<br>Deciduous<br>evergreen |

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| | | contrasting environments, drawing on their experiences and what has been read in class<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | What are garden plants and where do you find them?<br>What makes a tree?<br>What types of trees are there? (around my school)<br>What's the difference between trees? | | |
| Y1<br>Changes<br><br>Introduce seasons and weather<br>Day and night | Physics | EYFS - The Natural World<br>Explore the natural world around them, making observations and drawing pictures of animals and plants.<br><br>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.<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | Pupils should be taught to:<br>• observe changes across the 4 seasons<br>• observe and describe weather associated with the seasons and how day length varies<br><br>What are the four seasons?<br>What's the weather like in Autumn, Spring and Summer?<br>Why does day become night? | Dawn<br>Dusk<br>Mild<br>Rotate<br>Soaked<br>weather | Month<br>Season<br>Spring<br>Summer<br>Autumn<br>Winter |
| Y1<br>Revisit<br>Plants, including trees | Biology | EYFS: The Natural World<br>Explore the natural world around them, making observations and drawing pictures of animals and plants.<br><br>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<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | Pupils should be taught to:<br>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees<br>• identify and describe the basic structure of a variety of common flowering plants, including trees<br><br>What do I remember about plants?<br>Remember: What are the parts of a plant?<br>Remember: What are deciduous and evergreen trees? | Bud<br>Trunk<br>Branch<br>Bark<br>Seed<br>wild | Nutrients<br>Stem<br>Deciduous<br>evergreen |

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
|---|---|---|---|---|---|
| Y2<br><br>Introduce | | EYFS -The Natural World | Pupils should be taught to: | artificial<br>inflexible<br>manufactured | Ceramic<br>Durable<br>Inflexible |

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| Use of Everyday materials | | Explore the natural world around them, making observations and drawing pictures of animals and plants<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter<br><br>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<br><br>Y1 – Everyday materials | • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses<br>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching<br><br>What are materials used for? Categorise and compare wood, metal, plastic and glass.<br>What are materials used for? Categorise and compare ceramics, rock, paper and card, and fabric.<br>What happens when we squash, bend, twist or stretch a material?<br>What's the right material for the job?<br>What's the most absorbent material?<br>Who invented waterproofing?<br>Learn about Charles Mackintosh | natural<br>brittle<br>extracted<br>fabric | Reflective<br>Rigid<br>translucent |
| Y2<br>Introduce<br>Living things and their habitats | Biology | EYFS: The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants.<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter<br><br>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.<br><br>Year 1<br>Plants<br>Everyday materials<br>Animals, including humans | Pupils should be taught to:<br>• explore and compare the differences between things that are living, dead, and things that have never been alive<br>• 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<br>• identify and name a variety of plants and animals in their habitats, including microhabitats<br>• 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<br><br>What is alive and what is not?<br>What do all living things have in common?<br>Where do plants and animals live?<br>What plants and animals live in our local environment?<br>What are food chains?<br>How are they connected?<br>Why do plants and animals need each other? | Thrive<br>Depend<br>Producer<br>Consume<br>Prey<br>predator | Oxygen<br>Nutrient<br>Respiration<br>Sensitivity<br>Reproduction<br>excretion |
| Y2<br><br>Introduce<br><br>Animals, including humans | Biology | Y1 - Animals including humans Introduction and revisit.<br><br>Y2 - Living things and their habitats.<br><br>Y1 – Plants | Pupils should be taught to:<br>• notice that animals, including humans, have offspring which grow into adults<br>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)<br>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene | Healthy<br>Survive<br>Exercise<br>Heart<br>Lungs<br>muscles | Hygiene<br>Lava<br>Pupa<br>Vertebrates<br>Invertebrates<br>metamorphosis |

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| | | Y2 – Plants and bulbs | REMEMBER: what is an animal?<br>How do animals change as they mature?<br>How do we change as we mature?<br>What do all animals have to do to stay alive?<br>Keeping healthy – why do we exercise?<br>Keeping healthy – why do we eat different types of food? | | |
| Y2<br>Introduce<br>Plants | Biology | Y1 Science Animals and living things<br>Y1 Science Plants<br><br>Y2 Science Living things and habitats | Pupils should be taught to:<br>• observe and describe how seeds and bulbs grow into mature plants<br>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy<br><br>How do seeds germinate and what happens?<br>What happens when bulbs sprout?<br>What do plants need to thrive and be healthy? What can happen if plants don't get the things they need?<br>What do I notice about plants around the school? How are they healthy? How are they unhealthy?<br>Show what you know How do seeds and bulbs grow? What do plants need to be healthy? | Wither<br>Dormant<br>Mature<br>Bulb<br>Anchor<br>sustain | Germination<br>Perennial<br>Carbon dioxide<br>Glucose<br>clone |
| Y2<br>Revisit<br><br>Everyday materials<br><br>(Y2 retrieval unit) | Chemistry | EYFS -The World Children know about similarities and differences in relation to places, objects, materials and living things<br><br>Y1 Science Properties of materials | Pupils should be taught to:<br>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses<br>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching<br><br>REMEMBER IT – what are everyday materials and how are they used?<br>APPLY IT – why do you think materials should and should not be used for certain jobs?<br>PROVE IT – what is the hardest and softest material? P199 Essential Primary Science | Extracted<br>inflexible<br>Brittle<br>Polished<br>Durable<br>artificial | Sturdy<br>Tough<br>Flexible<br>Fragile<br>versatile |
| Y2<br>Revisit<br><br>Living things and their habitats | Biology | Y1 Science Animals and living things Revisited Summer<br><br>Y1 Science Plants Revisited Summer<br><br>Y2 Science Living things and their habitats | Pupils should be taught to:<br>Living things and their habitats<br>• explore and compare the differences between things that are living, dead, and things that have never been alive<br>• 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<br>• identify and name a variety of plants and animals in their habitats, including microhabitats | Stalk<br>Thrive<br>Consume<br><br>Require<br>Identify<br>approach | |

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| | | | • 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<br><br>Remember - what is alive and what is not?<br>What do all living things have in common? Remember - where do plants and animals live?<br>Remember - what are food chains? | | |
| Y2<br><br>Revisit<br><br>Plants and Animals including humans | Biology | Y2 Science Living things and habitats<br><br>Y2 Science Plants<br><br>Year 2 Science Animals, including humans | Pupils should be taught about plants:<br>• observe and describe how seeds and bulbs grow into mature plants<br>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy<br><br>Pupils should be taught about animals, including humans:<br>• notice that animals, including humans, have offspring which grow into adults<br>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)<br>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene<br><br>PLANTS<br>EXPLAIN-IT • How do seeds and bulbs grow?<br>• Complete knowledge organiser on P27 and flick back to check.<br>Use knowledge note 1 to support explanations through organisational or explanative drawings. Try using sentence stems, such as I know…<br>Download and select questions from the Socrative Quiz to test pupil retention.<br><br>2. ANIMALS (Page 29 and 30)<br>SUMMARISE-IT • What do I know about animals, including humans?<br>• Complete knowledge organiser and use knowledge notes to elaborate.<br>Use knowledge note 2 to engage pupils in retrieval practice – model going back to prior learning and using what you know. You could ask pupils to verbally explain characteristics of animals or explain through a diagram using drawings and annotations as cues. You could provide diagrams of life cycles that are completed and ask pupils to explain similarities and differences between how animals change as they grow older or link to life cycles. Download and select questions from the Socrative Quiz to test pupil retention.<br><br>3. PLANTS and ANIMALS (Page 31) | | |

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| | | | INTERLEAVING EXPLAIN-IT • What do plants need to thrive and be healthy? This could be a guided or independent activity to draw on prior learning and explain in their own way.<br>ELABORATE-IT • What do I know about animals, including humans?<br>Download and select questions from the Socrative Quiz to test pupil retention. | | |

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
|---|---|---|---|---|---|
| Y3<br><br>Introduce<br><br>Animals including humans | Biology | Year 1 Animals including humans Introduction<br><br>Year 2 Animals including humans Introduction<br><br>Year 1 Animals including humans revisit | Pupils should be taught to:<br>• 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<br>• identify that humans and some other animals have skeletons and muscles for support, protection and movement<br><br>What effect does the food we eat have?<br>Where is my skeleton and what does it do?<br>Where are my muscles and what do they do? | Minerals<br>Skelton<br>Skull<br>Voluntary<br>Involuntary<br>nerves | Biceps<br>Triceps<br>Vertebra<br>vitamins<br>proteins<br>carbohydrates |
| Y3<br><br>Introduce<br><br>Forces and Magnets | Physics | Year 1 Everyday materials<br><br>Year 2 Uses of everyday materials | Forces and magnets<br>• compare how things move on different surfaces<br>• notice that some forces need contact between 2 objects, but magnetic forces can act at a distance<br>• observe how magnets attract or repel each other and attract some materials and not others<br>• 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<br>• describe magnets as having 2 poles<br>• predict whether 2 magnets will attract or repel each other, depending on which poles are facing<br><br>What are contact forces?<br>How do surfaces affect the motion of an object?<br>How does friction affect moving objects?<br>What is a non-contact force?<br>How is this different to a contact force?<br>How do magnets attract and repel?<br>Which materials are magnetic?<br>Forces and magnetism summary | Consequences<br>Contact<br>Force<br>Attract<br>North<br>south | Magnet<br>Resistance<br>Friction<br>Repel<br>Pole<br>Magnetic field |

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| Y3<br><br>Introduce<br><br>Plants | Biology | Year 2 Plants and bulbs<br><br>Year 3 Animals, including humans | Pupils should be taught to:<br>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers<br>• 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<br>• investigate the way in which water is transported within plants<br>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal<br><br>What are the parts of a flowering plant?<br>What do they do?<br>Do all plants need the same things to thrive and grow?<br>How do leaves make food for the plant?<br>How does water move through a plant?<br>What do flowers do?<br>What is pollination? | Adapt<br>Essential<br>Glucose<br>Transport<br>Variety<br>vital | Transpiration<br>Stoma<br>Pollination<br>Stamen<br>Pistil<br>Photosynthesis |
| Y3<br><br>Introduce<br><br>Rocks | Chemistry | Year 1 Everyday materials<br><br>Year 2 Uses of everyday materials | Rocks Pupils should be taught to:<br>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties<br>• describe in simple terms how fossils are formed when things that have lived are trapped within rock<br>• recognise that soils are made from rocks and organic matter<br><br>How are rocks formed?<br>What types of rocks are there?<br>Can rocks change?<br>How can we test a rock to see if it is limestone or chalk?<br>Is soil just dirt? What makes soil?<br>How are fossils formed?<br>Optional Elaborate and remember rocks, soils and fossils | cemented<br>compacted<br>inorganic matter<br>transform | metamorphic<br>sedimentary<br>igneous<br>fossil<br>magma<br>minerals |
| Y3<br><br>Introduce<br><br>Light | Physics | Year 3<br>Animals, including humans<br>Forces and magnets<br><br>Y3 Plants | Pupils should be taught to:<br>• recognise that they need light in order to see things and that dark is the absence of light<br>• notice that light is reflected from surfaces<br>• recognise that light from the sun can be dangerous and that there are ways to protect their eyes<br>• recognise that shadows are formed when the light from a light source is blocked by an opaque object<br>• find patterns in the way that the size of shadows change<br><br>Do we need light to see things?<br>Remember: what are light sources and what are not light sources?<br>How are shadows formed? | Absence<br>Cast (shadow)<br>Impenetrable<br>Reflect<br>Shadow<br>Source (light) | Constant<br>dependent<br>Independent<br>Illuminate<br>Translucent<br>Variable |

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| | | | What happens to the size of a shadow when the object moves closer to, or away from, the light source? | | |
| Y3<br><br>Revisit and Retrieve<br><br>Rocks | Chemistry | Year 1 Everyday materials<br><br>Year 2 Uses of everyday materials | Rocks Pupils should be taught to:<br>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties<br>• describe in simple terms how fossils are formed when things that have lived are trapped within rock<br>• recognise that soils are made from rocks and organic matter<br><br>How are rocks formed and what types are there?<br>Remember: how can rocks change?<br>Remember: how are fossils formed and how do we know? | cemented<br>compacted<br>inorganic matter<br>transform | metamorphic<br>sedimentary<br>igneous<br>fossil<br>magma<br>minerals |

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
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| Y4<br><br>Introduce<br><br>Animals, including humans (Teeth, digestion and food chains | biology | Year 1 Animals, including humans animals, senses, body parts<br><br>Year 2 Animals, including humans offspring, basic needs, exercise<br><br>Year 3 Animals, including humans nutrition, skeleton | Animals, including humans<br>• identify the different types of teeth in humans and their simple functions<br>• describe the simple functions of the basic parts of the digestive system in humans<br>• construct and interpret a variety of food chains, identifying producers, predators and prey<br><br>What teeth do humans have?<br>What do they do?<br>How does our mouth and teeth help digestion? What's the process?<br>Can teeth tell us what animals eat? | Expel<br>Compact<br>Digestion<br>Acid<br>Stomach<br>intestines | Incisor<br>Canine<br>Molar<br>Enzyme<br>Saliva<br>Peristalsis |
| Y4<br><br>Introduce<br><br>Sound | Physics | Year 3 Light | Pupils should be taught to:<br>• identify how sounds are made, associating some of them with something vibrating<br>• recognise that vibrations from sounds travel through a medium to the ear<br>• find patterns between the pitch of a sound and features of the object that produced it<br>• find patterns between the volume of a sound and the strength of the vibrations that produced it<br>• recognise that sounds get fainter as the distance from the sound source increases<br><br>What is sound? Remember particles from states of matter<br>How does sound travel? | Produce<br>Property<br>Source<br>Frequent<br>Regular<br>affect | Vibrate<br>Pitch<br>Volume<br>Medium<br>Vacuum<br>Sound wave |

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| | | | What is the pitch and loudness of sound? | | |
| Y4<br><br>Introduce<br><br>Electricity | Physics | Year 3 Light reflection, sources and shadows<br><br>Year 3 Forces and magnets forces attract and repel | Pupils should be taught to:<br>• identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers<br>• 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<br>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit<br>• recognise some common conductors and insulators, and associate metals with being good conductors<br><br>What appliances use electricity? What sort of power makes them work?<br>Notice it – what are the everyday appliances that run on electricity - battery or mains?<br>Name it - what are the components in a simple series circuit?<br>Test it – what happens when a circuit is open or closed? (High volume practice using similar question types)<br>Diagnose it – what are the effects of changing circuit components and batteries? | Associate<br>Identify<br>Portable<br>Effect<br>series | component<br>electrical<br>insulator<br><br>electrical<br>conductor<br><br>hypothesis<br>variable |
| Y4<br><br>Introduce<br>States of<br>Matter | Chemistry | Year 3 Light Forces and magnets<br><br>Year 4 Geography Water Cycle<br><br>Year 4 - Electricity | Pupils should be taught to:<br>• compare and group materials together, according to whether they are solids, liquids or gases<br>• 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)<br>• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature<br><br>What is matter? What does 'state' mean?<br>What are solids, liquids and gases?<br>Melting: how do materials change state? Evaporating: how do materials change state? Condensing: how do materials change state? Summary: how do materials change? | Permanent<br>Particle<br>Solid<br>Liquid<br>Gas<br>vapour | Evaporate<br>Condense<br>Melt<br>Matter<br>State<br>volume |
| Y4<br><br>Introduce<br><br>Living things and their habitats | | Year 3 Rocks<br><br>Year 3 Animals, including humans<br><br>Year 3 Plants | Pupils should be taught to:<br>• recognise that living things can be grouped in a variety of ways<br>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment<br>• recognise that environments can change and that this can sometimes pose dangers to living things | Classification<br>Environment<br>Interdependence<br>Interact<br>Beneficial<br>Hierarchy | Vertebrate<br>Invertebrate<br>Biotic<br>Ecosystem<br>Species<br>niche |

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| | | | What are the characteristics of living things What animals are vertebrates?<br>What animals are invertebrates?<br>What groups are plants classified in?<br>What is classification?<br>How do I use a key?<br>What happens if the environment in a habitat changes? | | |
| Y4<br><br>Revisit<br><br>Living things and their habitats | Biology | Year 3 Rocks<br><br>Year 3 Animals, including humans<br><br>Year 3 Plants | Pupils should be taught to:<br>• recognise that living things can be grouped in a variety of ways<br>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment<br>• recognise that environments can change and that this can sometimes pose dangers to living things<br><br>What animals are vertebrates and invertebrates?<br>What groups are plants classified in?<br>Explain it: what's a classification key and how do you use it? | Classification<br>Environment<br>Interdependence<br>Interact<br>Beneficial<br>Hierarchy | Vertebrate<br>Invertebrate<br>Biotic<br>Ecosystem<br>Species<br>niche |

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
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| Y5<br><br>Introduce<br><br>Living things and their habitats | Biology | Year 4 Living things and their habitats<br><br>Year 4 Animals, including humans<br><br>Year 4 Plants | Pupils should be taught to:<br>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>• describe the life process of reproduction in some plants and animals<br><br>Life cycle differences – what's the difference between a mammal and an amphibian?<br>Life cycle differences – what's the difference between an insect and a bird?<br>What is similar and what is different between the life cycles of a mammal, an insect, an amphibian and a bird?<br>Summer birds – who was Maria Merion and what did she do?<br>The science of life - how do living things reproduce?<br>Plants and animals: what's the life process of reproduction? | Deduce<br>Process<br>Re-form<br>Adolescence<br>Transform<br>Contrast | Embryo<br>Sexual<br>Metamorphosis<br>biochemical<br>Incubate<br>Fertilisation |
| Y5<br><br>Introduce<br><br>Earth and Space | Physics | Year 4 Light | Earth and Space<br>• describe the movement of the Earth and other planets relative to the Sun in the solar system<br>• describe the movement of the moon relative to the Earth | Luminous<br>Phenomena<br>Attraction<br>Approximately<br>Relative | Orbit<br>Axis<br>Crescent<br>Gravitational<br>Waning |

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| | | | • describe the Sun, the Earth and the Moon as approximately spherical bodies<br>• use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky<br><br>What are the planets in our solar system?<br>How does our view of the Moon change in a lunar month?<br>Why does the rotation of Earth result in night and day?<br>Why is the Earth's tilt (axis) responsible for the seasons?<br>Review and summarise - present what you know about Earth and Space | apparent | Waxing |
| Y5<br><br>Introduce<br><br>Properties and changes of materials | Chemistry | Science / Geography Y4 Water cycle<br><br>Science Y4 Electricity<br>Science Y4 States of matter<br><br>Science Y5 Earth and space | Pupils should be taught to:<br>• 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<br>• know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution<br>• use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating<br>• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic<br>• demonstrate that dissolving, mixing and changes of state are reversible changes<br>• 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<br><br>What properties do materials have? How do we use them?<br>What is a solution and what is a mixture?<br>How can we separate materials from a mixture?<br>How can we separate materials from a solution?<br>What changes are reversible? What changes are irreversible? | Property<br>Particle<br>Separate<br>Combine<br>Recover<br>comparative | Atom<br>Molecules<br>Chemical (changes)<br>Physical (changes)<br>Reversible reaction |
| Y5<br><br>Introduce<br><br>Forces | Physics | Science Y3 Forces<br><br>Science Y4 Electricity States of matter<br>Sound Science<br><br>Y5 Earth and space<br>Y5 Properties and changes of materials | Pupils should be taught to:<br>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object<br>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces<br>• recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect<br><br>Remember gravity<br>When is friction helpful and when is it not? | Opposite<br>Reaction<br>Advantage<br>Displace<br>Weight<br>mass | Pulley<br>Gear<br>Pivot<br>Fulcrum<br>Lever<br>upthrust |

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| | | | What's the effect of air resistance? What's the effect of water resistance?<br>How do levers help us?<br>How do pulleys and gears help us? Who was Galileo Galilei? | | |
| Y5<br><br>Introduce<br><br>Animal, including Humans | Biology | Year 2 Animals, including humans notice that animals, including humans, have offspring which grow into adults<br><br>Year 3 Animals, including humans skeletons for growth and support | Pupils should be taught to<br>describe the changes as humans develop to old age<br>• Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.<br>• Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.<br><br>What is the human timeline?<br>How do we change into adults?<br>How does human and animal lifespan compare? | Development<br>Unique<br>Diverse<br>Generation<br>Mature<br>Equipped | Adolescence<br>Puberty<br>Gestation<br>Embryo<br>Foetus<br>womb |
| Y5<br><br>Revisit<br><br>Living things and their habitats | Biology | Year 4 Living things and their habitats<br><br>Year 4 Animals, including humans<br><br>Year 4 Plants | Pupils should be taught to:<br>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>• describe the life process of reproduction in some plants and animals<br><br>Life cycles: what's the difference between an insect and an amphibian?<br><br>What is similar and what is different between the life cycles of an insect and an amphibian?<br><br>Remember plants: what's the process of reproduction? | Development<br>Unique<br>Diverse<br>Generation<br>Mature<br>Equipped | Adolescence<br>Puberty<br>Gestation<br>Embryo<br>Foetus<br>womb |
| Y5<br><br>2nd Revisit<br><br>Living things and their habitats | Biology | Year 4 Living things and their habitats<br><br>Year 4 Animals, including humans<br><br>Year 4 Plants | Pupils should be taught to:<br>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>• describe the life process of reproduction in some plants and animals<br><br>SELECT and ORGANISE information<br><br>DESIGN and CREATE animal information using explanative response frameworks<br><br>COMPARE differences between animals using organisational (relational) response frameworks | | |

| Yr group, Unit Title | Substantive concept | Previous Learning | National Curriculum – Learning Questions | Tier 2 Vocabulary | Tier 3 Vocabulary |
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| Y6<br><br>Introduce<br><br>Living things and their habitats | Biology | Year 4 Living things and their habitats<br><br>Year 5 Living things and their habitats<br>Year 5 Animals, including humans | Pupils should be taught to:<br>• 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<br>• give reasons for classifying plants and animals based on specific characteristics<br><br>Who was the scientist Carl Linnaeus and what did he do?<br><br>How do we classify vertebrates?<br>How do we classify invertebrates we know?<br>How do we classify invertebrates we don't know? (Sponges, Jellyfish and Flatworms)<br>How do we classify invertebrates we don't know? (Starfish and Sea urchins, Crustacea and Myriapoda)<br><br>Apply it: what animals can I classify? What animals and plants exist in my local environment? | Characteristics<br>Interdependence<br>Specific<br>Categorise<br>Primitive<br>Hierarchy | Fungus<br>Arthropod<br>Taxonomy<br>Kingdom<br>Phylum<br>genus |
| Y6<br><br>Introduce<br><br>Evolution and Inheritance | Biology | Science Y3 Rocks Geography<br><br>Y4 Water cycle Science<br><br>Y5 Life cycles and reproduction Science<br>Y5 Animals, including humans Science<br>Y5 Properties and changes of materials Science<br><br>Y6 Classification | Pupils should be taught to:<br>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago<br>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents<br>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution<br><br>How have living things changed over time? How do we know?<br><br>How has life evolved over time?<br><br>What is DNA and what does it do? Working scientifically Are all offspring identical to their parents?<br><br>Darwin and Wallace – what evidence did they share to argue the case for evolution?<br><br>Survival of the fittest - how have animals adapted and evolved to suit their environment? | Characteristics<br>Adaptation<br>Acquire<br>Theory<br>Modify<br>generation | Evolve<br>Survival<br>Species<br>Clone<br>Inherit<br>fossil |
| Y6 Introduce | Physics | Year 3 Light reflection, sources and shadows | Pupils should be taught to: | Component | Proton |

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| Light | | Year 3 Forces and magnets forces attract and repel<br><br>Year 4 Sound source, vibrations, pitch and volume<br><br>Year 4 Electricity series circuits and elements | • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit<br>• compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram<br><br>What is electricity? How does it work?<br>Do it - How do we build and represent a series circuit?<br><br>What are the components in a series circuit?<br>Test it - How does the number of cells and voltage affect components in a circuit?<br><br>Diagnose it – what are the effects and consequences of changing circuit components and batteries? | Consequence<br>Proton<br>Neutron<br>Systematic<br>Represent<br>Source<br>Generate | Neutron<br>Electron<br>Terminal;<br>Series<br>voltage |
| Y6<br><br>Introduce<br><br>Electricity | Physics | Year 3 Light reflection, **sources and shadows** Year 3 Forces and magnets **forces attract and repel**<br><br>Year 4 Sound source, **vibrations, pitch and volume** Year 4 Electricity series **circuits and elements** | Pupils should be taught to:<br>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit<br>• compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram<br><br>What is electricity? How does it work? Do it - How do we build and represent a series circuit?<br><br>What are the components in a series circuit?<br>Test it - How does the number of cells and voltage affect components in a circuit?<br><br>Diagnose it – what are the effects and consequences of changing circuit components and batteries? | Component<br>Consequence<br>Systematic<br>Represent<br>Source<br>Generate | Proton<br>Neutron<br>electron<br>Terminal<br>Series<br>voltage |
| Y6<br>Introduce<br><br>Animals, including humans (Circulatory System) | Biology | Year 3 Animal, including humans nutrition, skeletons and muscles<br><br>Year 4 Animal, including humans teeth, digestion and food chains<br><br>Year 5 Animal, including humans changes as humans develop to old age | Animals, including humans<br>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood<br>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans | Cell<br>Chamber<br>System<br>Circulation<br>Vessel<br>Clot | Plasma<br>Platelet<br>Artery<br>Capillary<br>Vein<br>ventricle |

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| | | | What is blood made of and why do we need it?<br>Why do our bodies need nutrients and how are they transported?<br>What is our circulatory system? What is our heart like inside? How does it work?<br>Who influenced what we know about our circulatory system?<br>What can we do to keep healthy? Present and explain what we know about the circulatory system, nutrients and keeping healthy | | |
| Y6<br>Introduce<br><br>Animals, including humans: water transportation | Biology | Year 3 Animal, including humans nutrition, skeletons and muscles<br><br>Year 4 Animal, including humans teeth, digestion and food chains<br><br>Year 5 Animal, including humans changes as humans develop to old age<br><br>Year 6 Animal, including humans circularity system | Animals, including humans<br>• describe the ways in which nutrients and water are transported within animals, including humans<br><br>Remember circulation and digestion: how are these two systems connected?<br><br>Where are the kidneys and what do they do?<br><br>How do kidneys keep us healthy? | Filter<br>Expel<br>Substance<br>Function<br>Regulate<br>transform | Kidney<br>Bladder<br>Urine<br>Excretion<br>Toxin<br>Nutrient |

# Science Progression Map – Progress measures for working at the 'Expected' Level

| | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Working Scientifically – Asking Questions | Explore the natural world around them | ask simple questions and recognise that they can be answered in a different way | | ask relevant questions and use different types of scientific enquiries to answer them<br><br>set up simple practical enquiries, comparative and fair tests | | plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | |
| Working Scientifically – Measuring and Recording | | observe closely, using simple equipment<br><br>perform simple tests<br><br>gather and record data to help in answering questions | | make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers<br><br>record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables<br><br>gather, record, classify and present data in a variety of ways to help in answering questions | | take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br><br>record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | |
| Working Scientifically - Concluding | Explore the natural world around them.<br><br>Describe what they see, hear and feel whilst outside. | identify and classify<br>use their observations and ideas to suggest answers to questions | | identify differences, similarities or changes related to simple scientific ideas and processes<br><br>report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions<br><br>use straightforward scientific evidence to answer questions or to support their findings | | identify scientific evidence that has been used to support or refute ideas or arguments<br><br>report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written | |
| Working Scientifically - Evaluating | Explore the natural world around them. | | | use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions | | use test results to make predictions to set up further comparative and fair tests | |

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| | Describe what they see, hear and feel whilst outside. | | | | | | |
| Biology - Plants | Explore the natural world around them.<br><br>Describe what they see, hear and feel whilst outside. (name and describe some plants)<br><br>Explore the natural world around them, making observations and drawing pictures of animals and plants; | Name a variety of common wild and garden plants. (T1)<br><br>Name the petals, stem, leaf and root of a plant. (T3 and 6)<br><br>Name the roots, trunk, branches and leaves of a tree. (T1) | Describe how seeds and bulbs grow into plants. (T6)<br><br>Describe what plants need in order to grow and stay healthy (water, light & suitable temperature). (T6) | Describe what dark is (the absence of light). (T3)<br><br>Explain that light is needed in order to see. (T3)<br><br>Explain that light is reflected from a surface. (T3)<br><br>Explain and demonstrate how a shadow is formed. (T3)<br><br>Explore shadow size and explain. (T3)<br><br>Explain the danger of direct sunlight and describe how to keep protected. (T3) | | | |
| Biology – Animals including humans | Describe what they see, hear and feel whilst outside. (name and describe some animals)<br><br>Explore the natural world around them, making observations and drawing pictures of animals and plants; | Name a variety of animals including fish, amphibians, reptiles birds and mammals. (T4)<br><br>Classify and name animals by what they eat (carnivore, herbivore and omnivore). (T4) | Explain the basic stages in a life cycle for animals, including humans. (T?)<br>Describe what animals and humans need to survive. (T1)<br>Describe why exercise, a balanced diet and good hygiene are | Explain the importance of a nutritious, balanced diet. (T6)<br><br>Explain how nutrients, water and oxygen are transported within animals and humans. (T6) | Identify and name the parts of the human digestive system.<br><br>Describe the functions of the organs in the human digestive system. | Create a timeline to indicate stages of growth in humans. | Identify and name the main parts of the human circulatory system.<br><br>Describe the function of the heart, blood |

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| | | Sort animals into categories (including fish, amphibians, reptiles, birds and mammals). (T4)<br><br>Sort living and non-living things. (?)<br><br>Name the parts of the human body that I can see. (T2)<br><br>Link the correct part of the human body to each sense. (T2) | important for humans. (T1) | Describe and explain the skeletal system of a human. (T6)<br><br>Describe and explain the muscular system of a human. (T6)<br><br>Describe the purpose of the skeleton in humans and animals. (T6) | Identify and describe the different types of teeth in humans.<br><br>Describe the functions of different human teeth.<br><br>Use food chains to identify producers, predators and prey.<br><br>Construct food chains to identify producers, predators and prey. | | vessels and blood.<br><br>Discuss the impact of diet, exercise, drugs and lifestyle on health.<br><br>Describe the ways in which nutrients and water are transported in animals, including humans. |
| Biology – Living things and their habitats | Explore the natural world around them, making observations and drawing pictures of animals and plants; | | Identify things that are living, dead and never lived. (T?)<br><br>Describe how a specific habitat provides for the basic needs of things living there (plants and animals). (T5)<br><br>Identify and name plants and animals in a range of habitats. (T4 and 5)<br><br>Match living things to their habitat. (T4 and 5) | | Group living things in different ways.<br><br>Use classification keys to group, identify and name living things.<br><br>Create classification keys to group, identify and name living things (for others to use).<br><br>Describe how changes to an environment could | Describe the life cycle of different living things, e.g. mammal, amphibian, insect bird.<br><br>Describe the differences between different life cycles.<br><br>Describe the process of reproduction in plants.<br><br>Describe the process of | Classify living things into broad groups according to observable characteristics and based on similarities & differences<br>.<br>Describe how living things have been classified.<br><br>Give reasons for classifying plants and animals in a specific way. |

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| | | | Describe how animals find their food. (T4 and 5)<br><br>Name some different sources of food for animals. (T4 and 5)<br><br>Explain a simple food chain. (T4 and 5) | | endanger living things. | reproduction in animals. | |
| Physics - Light | Explore the natural world around them.<br><br>Observe and interact with natural processes, such as light travelling through transparent material and an object casting a shadow. | | | Describe what dark is (the absence of light). (T3)<br><br>Explain that light is needed in order to see. (T3)<br><br>Explain that light is reflected from a surface. (T3)<br><br>Explain and demonstrate how a shadow is formed. (T3)<br><br>Explore shadow size. (T3)<br><br>Explore the danger of direct sunlight and describe how to keep protected. (T3) | | | Explain how light travels.<br><br>Explain and demonstrate how we see objects.<br><br>Explain why shadows have the same shape as the object that casts them.<br><br>Explain how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. |
| Physics - Sound | Explore the natural world around them. | | | | Describe how sound is made. | | |

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| | Observe and interact with natural processes, a sound causing a vibration. | | | | Explain how sound travels from a source to our ears.<br><br>Explain the place of vibration in hearing.<br><br>Explore the correlation between pitch and the object producing a sound.<br><br>Explore the correlation between the volume of a sound and the strength of the vibrations that produced it.<br><br>Describe what happens to a sound as it travels away from its source. | | |
| Physics – Forces and Magnets | Explore the natural world around them.<br><br>Observe and interact with natural processes, a magnet attracting an object. | | | Explore and describe how objects move on different surfaces. (T2)<br><br>Explain how some forces require contact and some do not, giving examples. (T2)<br><br>Explore and explain how objects attract and repel in relation | | Explain what gravity is and its impact on our lives.<br><br>Identify and explain the effect of air resistance.<br><br>Identify and explain the effect of water resistance. | |

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| | | | | to objects and other magnets. (T2)<br><br>Predict whether objects will be magnetic and carry out an enquiry to test this out. (T2)<br><br>Describe how magnets work. (T2)<br><br>Predict whether magnets will attract or repel and give a reason. (T2) | | Identify and explain the effect of friction.<br><br>Explain how levers, pulleys and gears allow a smaller force to have a greater effect. | |
| Physics – Electricity | | | | | Identify and name appliances that require electricity to function.<br><br>Construct a series circuit.<br><br>Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers).<br><br>Draw a circuit diagram.<br><br>Predict and test whether a lamp will | | Explain how the number & voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.<br><br>Compare and give reasons for why components work and do not work in a circuit.<br><br>Draw circuit diagrams using correct symbols. |

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| | | | | | light within a circuit.<br><br>Describe the function of a switch in a circuit.<br><br>Describe the difference between a conductor and insulators; giving examples of each. | | |
| Physics – Seasonal Change | Explore the natural world around them.<br><br>Understand the effect of changing seasons on the natural world around them.<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br><br>Seasonal changes<br>Observe and comment on changes in the seasons.<br><br>Name the seasons and suggest the type of weather in each season. | | | | | | |

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| Chemistry – Materials | Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function; | Distinguish between an object and the material it is made from. (T5)<br><br>Explain the materials that an object is made from. (T5)<br><br>Name wood, plastic, glass, metal, water and rock. (T5)<br>Describe the properties of everyday materials. (T5)<br><br>Group objects based on the materials they are made from. (T5) | Identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard. (T2)<br><br>Suggest why a material might or might not be used for a specific job. (T2)<br>Explore how shapes can be changed by squashing, bending, twisting and stretching. (T3) | Compare and group rocks based on their appearance and physical properties, giving a reason. (T1)<br><br>Describe how fossils are formed. (T1)<br><br>Describe how soil is made. (T1)<br><br>Describe and explain the difference between sedimentary and igneous rock. (T1) | | Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets).<br>Describe how a material dissolves to form a solution; explaining the process of dissolving.<br><br>Describe and show how to recover a substance from a solution.<br><br>Describe how some materials can be separated.<br><br>Demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating).<br><br>Know and can demonstrate that some changes are reversible and some are not. | |

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| | | | | | | Explain how some changes result in the formation of a new material and that this is usually irreversible.<br><br>Discuss reversible and irreversible changes.<br><br>Give evidenced reasons why materials should be used for specific purposes. | |
| Physics – Earth and Space | | | | | | Describe and explain the movement of the Earth and other planets relative to the Sun.<br><br>Describe and explain the movement of the Moon relative to the Earth.<br><br>Explain and demonstrate how night and day are created.<br><br>Describe the Sun, Earth and Moon (using the term spherical). | |

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| Biology – Evolution and Inheritance | | | | | | | Describe how the earth and living things have changed over time.<br><br>Explain how fossils can be used to find out about the past.<br><br>Explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents).<br><br>Explain how animals and plants are adapted to suit their environment.<br><br>Link adaptation over time to evolution.<br><br>Explain evolution. |
| Chemistry – States of Matter | Explore the natural world around them.<br><br>Observe and interact with natural | | | | Group materials based on their state of matter (solid, liquid, gas). | | |

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| | processes, such as ice melting<br><br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | | | | Describe how some materials can change state.<br><br>Explain how materials change state.<br><br>Measure the temperature at which materials change state.<br><br>Describe the water cycle.<br><br>Explain the part played by evaporation and condensation in the water cycle. | | |