



Marlborough Primary Academy Science Long Term Planning 2021 - 2022

Subject - Science LEARNING SEQUENCE

- EHCP & SEND Support refer to IEPs for the individual children.
- Minimum assessment for learning strategies to be used during every lesson: target questioning, peer talk, modelling, mini-plenaries, self-assessment, referral to success criteria.
- Long term memory development strategies to be used in every lesson through assessing prior knowledge at beginning of the unit and in the lesson.

| YEAR R/Y1 | Rationale | Key content from NC | Skills/Processes | Essential Knowledge | Vocabulary |
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| Autumn 1 – What can our hands do? | Children use their hands to do a series of activities that help them discover what they can do with their sense of touch. | EYFS – Understanding the World Science – Animals Including Humans | Children work in small groups and carousel around a series of short activities that test their sense of touch. Activities include stacking rings according to size, completing simple jigsaws, putting sandpaper in order from roughest to smoothest, and noticing different weights and temperatures. The children will need to do the activities wearing a blindfold, including a test to see if they can identify colours with their hands. <ul style="list-style-type: none"> • Perform simple tests. • Gather and record data to help in answering questions. • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | Our sense of touch allows us to work out the size, temperature, texture, weight and number of objects. We cannot identify colours with our hands. | <ul style="list-style-type: none"> • sense • skin • temperature • texture • touch • weight |
| Autumn 1 & 2 – Exploring Autumn | This project teaches children about the natural changes that happen during the season of autumn, including how the | EYFS – The World KS1 – Seasonal Changes | Explore the natural world around them, making observations and drawing pictures of animals and plants. | Living things can change over time. This includes growth and decay. | <ul style="list-style-type: none"> • Autumn • Season • change • Leaves |

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| | weather changes, why trees lose their leaves and how wild animals prepare for winter. | | Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Describe, following observation, how plants and animals change over time. Name and describe basic features of plants and trees. Identify common features for different groups of animals, including wild and domestic animals. | Some plants and trees change with the seasons. For example, new green leaves grow in the spring and some leaves change colour in autumn and fall from the trees. Parts of plants and trees include trunk, branch, twig, roots, stem, flowers and leaves. Wild animals make their own homes including dens and burrows. They also have to hunt or gather their food. All animals have special features or ways of behaving that help them to survive. Some animals hibernate during the winter. Hibernation is a long period of sleep. Different animal groups have some common body parts, such as eyes and a mouth, and some different body parts, such as fins or wings. | <ul style="list-style-type: none"> • Leaf • Tree • Trunk • Branches • Colour • Woodland • Animals • Hibernate • Eyes • Mouth • Nose • Beak • Wings |
| Autumn 2 – Sparkle & Shine | This project teaches children about the celebrations that take place during the autumn and winter seasons, and focus on the significance and symbolism of light at this time of year. | EYFS – The World | <ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Sort and group materials and resources and talk about how they are similar or different. | Objects are made from different materials. Everyday materials include, wood, plastic, glass, fabric, metal and stone. Materials have different properties. | <ul style="list-style-type: none"> • materials • wood • plastic • glass • fabric • metal • stone |
| Autumn 2 – Winter Wonderland | This project links with previous season learning ‘Exploring Autumn’ and is linked to the main topic for this term ‘Starry Night’. It teaches children about the observable changes that happen during winter, including the types of weather associated with winter. It also explores places that have snow all year round and the types of animals that live there. | EYFS – The World KS1 – Seasonal Changes | Explore the natural world around them, making observations and drawing pictures of animals and plants. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter – explore ice and how it feels and changes. | Weather changes - What clothes were we wearing in September compared to now. What is the weather like? The days (daylight hours) are shorter in the winter. Explore ice and what it feels like – can we stop it feeling so cold? <ul style="list-style-type: none"> • Ice is the solid form of water. | <ul style="list-style-type: none"> • Winter • Season • Weather • Changes • Frosty • Cold • Rainy • Snow • Ice • water |

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| | | | <p>Describe, following observation, how plants and animals change over time.</p> <p>Name and describe basic features of plants and trees.</p> <p>Identify common features for different groups of animals, including wild and domestic animals.</p> <p>Explore other places where it is always cold – secondary sources.</p> | <ul style="list-style-type: none"> Water turns to ice when the temperature is very cold (below freezing). When ice melts, it becomes liquid water again. Heat causes ice to melt. <p>Know that some places are snowy and cold all the time.</p> | |
| <p>Spring 1 – Shadows and Reflections</p> | <p>This project teaches children about natural phenomena that they will already have experience of in everyday life, including shadows, reflections and echoes. They explore how shadows are formed and how they can change.</p> | <p>EYFS – The World</p> | <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants – reflections on different surfaces/shadows. Develop scientific knowledge through play activities, sharing stories and non-fiction books and discussion. Develop scientific knowledge through play activities, sharing stories and non-fiction books and discussion. Say how materials are the same or different. | <p>Mirrors reflect. We can see our reflection in a mirror.</p> <p>Know what happens to a reflection as you move closer/further away.</p> <p>Reflections can be seen on shiny surfaces – e.g. window, puddle.</p> <p>A reflection can look different on different surfaces.</p> <p>Know what a shadow is and how we can see shadows on sunny days.</p> | <ul style="list-style-type: none"> Shadows Reflections Light Dark Day Night Surface |
| <p>Spring 2 - Sunshine and Sunflowers -Puddles and rainbows</p> | <p>This unit links with previous Autumn and Winter project continuing with them exploring/observing the local environment. This seasonal project provides opportunities for outdoor learning and teaches children how to care for the plants and animals in their local environment and how to stay safe in the sun.</p> | <p>EYFS – The World</p> | <ul style="list-style-type: none"> Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. Explore the natural world around them, making observations and drawing pictures of animals and plants. Understand some important processes and | <p>A habitat is a place where living things live. Local habitats include woodlands, gardens and ponds. Other habitats include hot places, such as deserts, and cold places, such as the Arctic.</p> <p>The weather can change throughout the day, week and month. The weather is different at different times in the year.</p> <p>Ways to describe daily weather include sunny, rainy, windy, cloudy, warm or cold. Weather</p> | <ul style="list-style-type: none"> habitat weather sunny windy rainy cloudy warm cold hot places cold places season autumn winter |

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| | <p>This mini project teaches children about the weather that happens during spring and allows them to explore natural phenomena, including rainbows. It supports them to explore colour in the natural world.</p> | | <p>changes in the natural world around them, including the seasons and changing states of matter.</p> <ul style="list-style-type: none"> • Develop scientific knowledge through play activities, sharing stories and non-fiction books and discussion. • Know ways to care for their local environment. • Notice and begin to describe patterns of weather in summer and winter. • Describe simply how weather changes as the seasons change. • Name and describe natural phenomena, such as the size of shadows, the colours of a rainbow, the speed of clouds moving across the sky and the strength of a wave. • With support, observe, record and talk about materials and living things. | <p>is warmer in the summer with more sunshine and colder in the winter with more snow, hail and rain.</p> <p>Parts of a plant include the roots, stem, leaves, flowers and petals.</p> <p>Flowers are brightly coloured to attract insects</p> <p>Spring is one of the four seasons. You can get all types of weather in the spring. Different types of springtime weather include rain, sun, wind, hail, sleet and snow.</p> <p>Rain clouds are large collections of tiny water droplets. When the water droplets get too heavy, they fall to the earth as rain.</p> | <ul style="list-style-type: none"> • spring • summer • rainbow • waterproof |
| <p>Summer 1 - Where do snails live?</p> | <p>These projects are linked to the main topic for the Summer 1 term – ‘Why do ladybirds have spots?’ In these companion projects the children explore questions about mini beasts in the local environment, similarities and differences; growth and change, patterns and colour and flowers and plants.</p> | <p>EYFS – The World KS1 – Animals including Humans KS1 - Plants</p> | <p>Explore the world around them, leading them to ask some simple scientific questions about how and why things happen; Observe the natural and humanly constructed world around them; Use simple features to compare objects, materials and living things; a notice links between cause and effect with support; Observe changes over time – Butterfly kit observations during</p> | <p>Say how living things are the same but different.</p> <p>Know the names of different mini beast and their features.</p> <p>Recall the stages in the life cycle of a butterfly.</p> | <p>Mini beasts Beetle Ladybird Ant Spider Slug Snail Bee Woodlouse Worm Caterpillar Cocoon Crawl Fly Wriggle Leaf</p> |
| <p>Summer 1 - Life cycle of a butterfly</p> | | | | | |

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| | | | the life cycle from caterpillar to butterfly; | | Tree Flower Plant |
| Summer 2 – Everyday Materials | This project links with prior exploration of materials in EYFS learning/provision. It teaches children that objects are made from materials. They identify a range of everyday materials and their sources. Children investigate the properties of materials and begin to recognise that a material's properties defines its use. | KS1 – Everyday Materials | Ask questions and know some can be answered using scientific enquiry. Observe/Measure: Talk about similarities and differences. Classify: Talk & sort - Use simple scientific criteria. Explore objects/ materials/ living things/ resources designed to model scientific processes. Concrete context. Create drawings and models of their environment Conclusions/Explain: in simple terms. | <ul style="list-style-type: none"> • distinguish between an object and the material from which it is made; • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock; • describe the simple physical properties of a variety of everyday materials; • compare and group together a variety of everyday materials on the basis of their simple physical properties. | Wood Metal Plastic Glass Water Rock |
| YEAR 1/2 | Rationale | Key content from NC | Skills/Processes | Essential Knowledge | Vocabulary |
| Autumn 1 - How is mud made? | This unit is a companion project which goes alongside the main topic of Mud, Mess and Mixtures for this term. Children make muddy mixtures and investigate their properties. Children start by adding an equal amount of soil to individual bowls. They practise their measuring skills by adding different volumes of water to each bowl then mixing well. The children use their hands to explore the mixtures. They answer questions about the mud's properties and record their observations. After leaving their muddy mixtures overnight, the children examine them again the following day and look for changes. | Working Scientifically/Everyday Materials | Ask questions and know some can be answered using scientific enquiry. Observe/Measure: Observe change over time. Use Senses/ equipment. Identify & Classify: Compare similarities and differences. Testing: Use simple comparative tests. Conclusions: Describe what has happened or been observed. Explain observations. | Mud is a mixture of soil and water and we use it for many things, including construction. The amount of water added to soil changes the properties of the mud. The more water added to the mixture the runnier it gets. | <ul style="list-style-type: none"> • millilitre • mixture • mud • soil • volume • water • thick • runny |

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| Autumn 2 – Seasonal Changes – Autumn Winter(2) | This unit links with the children prior learning in EYFS, and to their own experiences and understanding of the 4 seasons. They discuss the differences observed in all seasons and the impact this has on their lives e.g. different clothes/ playing outside in lighter evenings etc. Children in Year 2 will have missed some of the content in EYFS relating to seasons at relevant times throughout the year, due to lockdown when they were in EYFS and Year 1. | <ul style="list-style-type: none"> • observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies. | <p>Ask questions and know some can be answered using scientific enquiry. Observe: Observe change over time. Use Senses/ equipment. Classify and find patterns: Compare and contrast Find information using given sources. e.g. <i>animals</i>. Describe what has happened or been observed.</p> | <p>Know the names of the 4 seasons. Know which months are in which season. Know that daylight hours are shortest in the Winter and longest in the summer.</p> | <p>seasons autumn winter weather daylight</p> |
| Spring 1 – Everyday Materials (2) | This project teaches children that objects are made from materials. They identify a range of everyday materials and their sources. Children investigate the properties of materials and begin to recognise that a material's properties defines its use. This project links with prior exploration of materials in EYFS learning/provision, however due to lockdown for the Year 2s, when they were in EYFS and Year 1, this unit will consolidate for some and support new learning for others in the cohort. | <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses; • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | <p>Ask questions and know some can be answered using scientific enquiry. Observe: Measure change over time e.g. plant growth. Select equipment Classify: materials. Compare Differences. Explore and create drawings and physical models. Explain why a simple observation occurred. Evaluate the effectiveness of observations.</p> | <p>The properties of everyday materials and their uses: Wood, glass, metal, plastic, paper, cardboard, fabric, rubber.</p> | <p>materials suitability properties use squash bend twist stretch similar different</p> |
| Spring 2 – Can seeds grow anywhere? (2) – Plants (Y1 & 2) | This unit links to prior learning in EYFS (UW) - 'The Natural World'; 'Seasonal Changes' and 'Animals including humans'. The children have learnt about seasons and how this affects living things including plants. They are now ready to explore the conditions required in order for plants to grow. | <p>Year 1</p> <ul style="list-style-type: none"> • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees; • identify and describe the basic structure of a variety of common flowering plants, including trees. <p>Year 2</p> | <p>Ask questions and know some can be answered using scientific enquiry. Observe: Measure change over time e.g. plant growth. Select equipment Classify: materials. Compare Differences. Explore and create drawings and physical models. Explain why a simple observation occurred.</p> | <p>The Life Cycle of a Plant: seed, germination, roots and shoots growing, leaves growing, flowers/fruit to seed dispersal.</p> | <p>Plants Seeds Germination Water Sun light sprout Shoot Roots Leaves Flowers dies Seed dispersal Water</p> |

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| | | <ul style="list-style-type: none"> • observe and describe how seeds and bulbs grow into mature plants; • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy and describe the impact of changing these. | Evaluate the effectiveness of observations. | | Temperature Nutrition |
| Summer 1 – Why do Humans have 2 eyes? Animals including Humans | This companion project supports children’s growing knowledge of human senses. Children complete two tests with one eye closed and then both eyes open to understand why humans and other animals have two eyes. This links to prior learning classifying animals and the use of their senses. | Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense | <p>Testing: Perform simple tests and comparative fair tests.</p> <p>Asking questions: Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum</p> <p>Measure/Observe: Use simple equipment.</p> <p>Gathering & Recording: Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables.</p> <p>Communicating their Findings: Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. simple written reports or write ups.</p> <p>Classifying: Identify, group and classify according to a given criteria</p> <p>Concluding and questioning: Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns</p> | What features animals and humans have in common. Animals including humans have two eyes to help them see accurately and judge the position of objects. | <ul style="list-style-type: none"> • eyes • observe • see • sense |
| Summer 2 – How do boats float? | This project links to the termly Topic ‘Land Ahoy’. It lets the children explore how clay in/on | <ul style="list-style-type: none"> • Ask simple questions and recognise that they can be | Children think scientifically and discuss the question: ‘How do boats float?’ They write down | A boat’s shape, size and materials all affect whether it will float or sink. | <ul style="list-style-type: none"> • boat • float • hollow |

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| | water and why it will either float or sink dependent on the shape/size it is moulded into. It not only supports their understanding that some materials can be shaped, but it is more exploration of forces, started in EYFS which they will explore in more detail later on in the school. | <p>answered in different ways.</p> <ul style="list-style-type: none"> • Use their observations and ideas to suggest answers to questions. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | their thoughts and record questions that come up in their discussions. Children then place a ball of modelling clay into a bowl of water and watch to see if it floats or sinks. They remove and dry the clay, then squash, twist and bend it into a new shape. Children place their clay back in the water and observe again to see if it floats or sinks. They reshape and test the clay a number of times, always drawing or writing a description of their shape. Children take photos of their clay shape every time they test. | The results are information that has been found out from an investigation and can be used to answer a question. Questions can help us find out about the world. | <ul style="list-style-type: none"> • material • shape • sink |
| YEAR 3 | Rationale | Key content from NC | Skills/Processes | Essential Knowledge | Vocabulary |
| Autumn 1 – What are catapults for? | Linked to the topic Raiders and Traders – Anglo Saxon and Viking Invasion, where the Year 3s were exploring weapons used. It shows them the development of weapons over time after this time going into the Middle Ages.. Children learn about catapults by making one out of lolly sticks and using it to launch sweets of different weights, shapes and sizes. It develops further their understanding of a fair test. | <p>SC1</p> <ul style="list-style-type: none"> • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Use straightforward scientific evidence to answer questions or to support their findings. | <p>Testing - Set up simple practical enquiries, comparative and fair tests</p> <p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Measure/Observe Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.</p> <p>Gather & Record: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables.</p> <p>Communicate Findings: Report on findings from enquiries, including oral</p> | Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. | <ul style="list-style-type: none"> • castle • catapult • missile • trebuchet • weapon • fair test • observation • measure • record • observe • conclusion |

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| | | | and written explanations, displays or presentations of results and conclusions Classifying: Group information according to common factors Conclusions: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions | | |
| Autumn 2 – Animals including Humans (3) | This unit links to the topic unit for the term, 'Predators'. The children find out about different types of skeleton in different species of animals including humans. They develop their skills to classify species. | <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat; identify that humans and some other animals have skeletons and muscles for support, protection and movement. | <p>Observe: <i>Systematic/ careful observations. Use bar charts, pictograms, tables.</i></p> <p>Classify: <i>Classify animals</i></p> <p>Research: using given sources. e.g. <i>research different food groups and how they keep us healthy</i></p> | <ul style="list-style-type: none"> Living things need food to grow and to be strong and healthy. Plants can make their own food, but animals cannot. To stay healthy, humans need to exercise, eat a healthy diet and be hygienic. Animals, including humans, need food, water and air to stay alive. <p>Skeletons do three important jobs:</p> <ul style="list-style-type: none"> protect organs inside the body; allow movement; support the body and stop it from falling on the floor. | <p>nutrition</p> <p>healthy</p> <p>energy</p> <p>fibre</p> <p>vitamins</p> <p>water</p> <p>minerals</p> <p>carbohydrates</p> <p>fat</p> <p>muscles</p> <p>tendons</p> <p>joints</p> <p>skeletons</p> <p>vertebrates</p> <p>invertebrates</p> |
| Spring 1 – Forces & Magnets (3) | The children will be able to make links with their own experiences of friction in their everyday lives. This unit will enable them to develop the correct scientific vocabulary to support their growing knowledge and understanding of forces. The knowledge and understanding of magnets may be new to some children. They will be supported to begin to understand how magnets work. | <ul style="list-style-type: none"> compare how things move on different surfaces; notice that some forces need contact between 2 objects, but magnetic forces can act at a distance; observe how magnets attract or repel each other and attract some materials and not others; compare and group together a variety of everyday materials on the basis of | <p>Observe: Systematic/ careful observations. Use bar charts, pictograms, tables.</p> <p>Classify: Classify materials</p> <p>Research: using given sources.</p> <p>Comparative & Fair Tests:</p> <p>Predict. Fair tests e.g. How does distance affect magnet strength?</p> | <p>Different surfaces create different amounts of friction. The amount of friction created by an object moving over a surface depends on the roughness of the surface and the object and the force between them.</p> <p>Magnets have 2 poles. Not all metals are magnetic</p> | <p>forces</p> <p>friction</p> <p>surface</p> <p>push</p> <p>pull</p> <p>magnet</p> <p>magnetic</p> <p>magnetic field</p> <p>pole</p> <p>attract</p> <p>repel</p> |

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| | | <p>whether they are attracted to a magnet, and identify some magnetic materials;</p> <ul style="list-style-type: none"> • describe magnets as having 2 poles; • predict whether 2 magnets will attract or repel each other, depending on which poles are facing. | | | |
| Spring 2 – Light (3) | <p>This unit links to the children own experiences of light and shadows which they would have explored in EYFS and KS1 looking at Seasons exploring the natural local environment. (including Sun Safety and the wearing on sunglasses to protect their eye).</p> | <ul style="list-style-type: none"> • recognise that they need light in order to see things and that dark is the absence of light; • notice that light is reflected from surfaces; • recognise that light from the sun can be dangerous and that there are ways to protect their eyes; • recognise that shadows are formed when the light from a light source is blocked by an opaque object; • find patterns in the way that the size of shadows change. | <p>Identify scientific questions. ie can be investigated through scientific enquiry. Observe: Systematic/ careful observations. Use bar charts, pictograms, tables. Classify: Classify materials Research: using given sources. Comparative & Fair Tests: Predict. Fair tests Model Abstract contexts e.g. processes and phenomena such as forces/ light. Use labelled diagrams and drawings and physical models. Conclusions: Explain an observation or an event in scientific terms. Distinguish between what has been observed and why it happened. Begin to link evidence from secondary sources as well as primary. Suggest improvements.</p> | <p>We need light to be able to see things. Light travels in straight lines. When light hits an object it is reflected. If the reflected light hits our eyes we can see the object. Some surfaces are made of materials that reflect light well. Other surfaces do not reflect light well. The pupils control the amount of light going into the eye. If too much light enters the eye it will damage the retina. A shadow is caused when light is blocked by an opaque object. A shadow is larger when the object is closer to the light source. When a light source is directly above an object the shadow will be directly under.</p> | <p>light light sources dark reflection reflect reflective ray pupil retina shadow opaque translucent transparent midday sunset sunrise</p> |
| Summer 1 – Plants (3) | <p>This units follows on from prior learning on Plants in KS1. The children make links with what they already know and develop the knowledge and understanding of the different scientific processes in the life cycle of a plant.</p> | <ul style="list-style-type: none"> • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers; • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and | <p>Identify scientific questions. ie can be investigated through scientific enquiry. Observe: Systematic/ careful observations. Use bar charts, pictograms, tables. Research: using given sources. Comparative & Fair Tests: Predict. Fair tests Conclusions:</p> | <p>Name the different parts of a flower. How water moves through a plant. The root absorbs the water from the soil. The stem transports water to the leaves. Water evaporates from the leaves. This evaporation causes more water to be sucked up by the stem.</p> | <p>roots stem leaves flowers nutrients evaporation fertilization petal stamen carpel sepal</p> |

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| | | <p>how they vary from plant to plant;</p> <ul style="list-style-type: none"> 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. | <p>Explain an observation or an event in scientific terms. Distinguish between what has been observed and why it happened. Begin to link evidence from secondary sources as well as primary. Suggest improvements.</p> | <p>Know what a plant needs in order to grow: water, light, nutrients, air and room to grow. This will vary dependent on species of plant. The flowers job is to create seeds so new plants can grow. Life Cycle of a Flowering Plant: Germination, growing, pollination, fertilization, seed dispersal. Seeds can be dispersed in a variety of ways: water, shaking, dropping, carrying, eating, bursting.</p> | <p>pollination pollinator germination seed dispersal</p> |
| Summer 2 – SC1 STEM Project TBC | | | | | |
| YEAR 4/5 | Rationale | Key content from NC | Skills/Processes | Essential Knowledge | Vocabulary |
| Autumn 1 – Earth & Space (5) | <p>In this unit, the learning is linked this to the children’s own experiences of day/night; Seasons across the course of a Year and the shortening/lengthening of day light hours; of the Moon and its changing appearance in the sky across over time; the Sun and its appearance of movement across the sky during the course of a day; other planets and stars visible from Earth.</p> | <ul style="list-style-type: none"> describe the movement of the Earth and other planets relative to the sun in the solar system; describe the movement of the moon relative to the Earth; describe the sun, Earth and moon as approximately spherical bodies; use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. | <p>Identify scientific questions. ie can be investigated through scientific enquiry. Research using given sources. & Select information to support findings. Abstract contexts e.g. processes and phenomena such as sound/ electricity. Create labelled diagrams and drawings and physical models. Explain an observation or an event in scientific terms. Distinguish between what has been observed and why it happened. Begin to link evidence from secondary sources as well as primary.</p> | <p>Names of the 8 planets in the solar system and their order of distance from the sun. Mercury, Venus, Earth and Mars are rocky planets made of metal and rock. The other 4 planets are mostly made of gas. Pluto is no longer classified as a planet. It appears that the sun is moving across the sky during the course of a day but it does not. It seems to us that the sun moves but it is the movement of the Earth that makes us think this. The Earth rotates on its axis once every 24 hours. The Earth orbits the sun, which takes 365 days (one year) Daytime occurs when the part of the Earth is facing the sun. It is night time when the part of the Earth is not facing the Sun. The Moon orbits the Earth in 28 days. It appears different in the</p> | <p>Sun Star Moon Planet Sphere Satellite Orbit Rotate Axis Astronomer</p> |

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| | | | | sky at different times of the month. | |
| Autumn 2 – Living Things and Their Habitats (4) | This unit is linked to this term's topic theme of 'Predators'. The children develop further their understanding of Food Webs/ Food Chains and how nutrition is passed from one species of plant or animal to another. | <ul style="list-style-type: none"> recognise that living things can be grouped in a variety of ways; explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment; recognise that environments can change and that this can sometimes pose dangers to living things. | <p>Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams and keys</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & Questions: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | <p>Life Processes</p> <p>Carnivorous plants</p> <p>Parasitic Plants</p> <p>Classification – Living Things</p> <p>Food Chains & Food Webs</p> <p>Flying Predators</p> <p>Frog Food Chain</p> | <p>Organism</p> <p>Life processes</p> <p>Respiration</p> <p>Sensitivity</p> <p>Reproduction</p> <p>Excretion</p> <p>Nutrition</p> <p>Habitat</p> <p>Environment</p> <p>Endangered species</p> <p>Extinct</p> <p>Classification</p> <p>Vertebrate</p> <p>Invertebrate</p> <p>Specimen</p> <p>Characteristics</p> |
| Spring 1 – Sound (4) | In this unit the children will discover the science behind 'How Sound is made'. They will draw on their own experiences and prior knowledge and understanding e.g. the vibrations they can feel in their own voice box. The vibration of a music speaker. The further away you are from a sound the quieter it is etc. This unit will | <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating; recognise that vibrations from sounds travel through a medium to the ear; find patterns between the pitch of a sound and features of the object that produced it; | <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take</p> | <p>Sound is a type of energy. Sounds are created by vibrations. Sound travels in waves through particles of whatever medium they are travelling through. Pitch is a measure of how high or low a sound is. The size of the vibration is called amplitude. Louder sounds have larger amplitude. Quieter sounds have smaller amplitude.</p> | <p>Sound</p> <p>Vibration</p> <p>Sound wave</p> <p>volume</p> <p>amplitude</p> <p>pitch</p> <p>ear</p> <p>particles</p> <p>distance</p> <p>sound proof</p> <p>absorb sound</p> <p>vacuum</p> |

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| | give the children the scientific knowledge and understanding. | <ul style="list-style-type: none"> • find patterns between the volume of a sound and the strength of the vibrations that produced it; • recognise that sounds get fainter as the distance from the sound source increases. | <p>accurate measurements using standard units, using a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | <p>You can change the pitch of a sound. Sound vibrations can travel though solid, liquids and gases. Sound cannot travel through a vacuum.</p> <p>Sound vibrations travel to the ear and make the eardrum vibrate. The amplitude of the vibrations decrease the further the distance travelled.</p> <p>Therefore the sound becomes quieter.</p> | eardrum |
| Spring 2 –Living Things and Their Habitats (as part of the topic) | This is part of the topic planning for the Spring terms ‘The Blue Abyss’, which has a Science and Geography theme. This unit links well with a STEAM project all the children in the class took part in during Summer 2021, looking a plastic pollution in the seas and the impact it has. It also links well and builds on from the Autumn term’s topic ‘Predator’. | <ul style="list-style-type: none"> • describe the simple functions of the basic parts of the digestive system in humans; • identify the different types of teeth in humans and their simple functions; • construct and interpret a variety of food chains, identifying producers, predators and prey. | <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific</p> | <p>Living things and their habitats</p> <p>Working scientifically</p> <p>Under the Sea – sorting and grouping</p> <p>Classification – keys/creatures</p> <p>Investigating Brine Shrimp</p> <p>Ocean Food Chains</p> <p>Deep Sea Adaptations</p> <p>Sea level zones</p> | <p>Adapt</p> <p>Camouflage</p> <p>Climate</p> <p>Conservation</p> <p>Coral</p> <p>Free diving</p> <p>Habitat</p> <p>Oceanography</p> <p>Organism</p> <p>Pressure</p> <p>Species</p> <p>Submarine</p> <p>Ocean layers</p> <p>Food Chains</p> <p>Bioluminescence</p> <p>Sunlight zone</p> |

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| | | | evidence to answer questions or to support his/her findings | | Twilight zone Midnight zone Abyss trenches |
| Spring 2 - Animals including Humans (4) | This unit is linked to previous learning about the human body regarding healthy eating – RSHE & Science. | <ul style="list-style-type: none"> describe the simple functions of the basic parts of the digestive system in humans; identify the different types of teeth in humans and their simple functions; | <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | <p>Animals including Humans</p> <p>Describe the basic functions of the human digestive system.</p> <p>Identify the different types of teeth in humans and their simple functions.</p> | <p>Digest</p> <p>Oesophagus</p> <p>Stomach</p> <p>Small intestine</p> <p>Large intestine</p> <p>Rectum</p> <p>Canine</p> <p>Incisor</p> <p>Premolar</p> <p>Molar</p> <p>Wisdom</p> |
| Summer 1 – States of Matter (4) | Link to previous unit last year studied by all Year 3 and Year 4 ‘Misty Mountain Winding River’ – link to Water Cycle. Children develop a deeper understanding of changing states. | <ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases; observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C); identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> | <p>Particles in a solid cannot move and can only vibrate.</p> <p>Particles in a liquid are close together but can move around each other easily.</p> <p>Particles in a gas are spread out and can move around very quickly in all directions.</p> <p>When water and other liquids reach a certain temperature they change state into a solid or gas. The temperature that these changes happen are called boiling, melting or freezing points. If a solid is heating to its melting point it becomes a liquid. The particles are no longer fixed and can move over each other. When freezing occurs the particles become slower and fixed into a solid.</p> <p>Evaporation is when water turns into a gas – water vapour.</p> <p>Condensation is when water vapour cools down. Recall previous learning on the Water Cycle.</p> | <p>States of matter</p> <p>Solids</p> <p>Liquids</p> <p>Gases</p> <p>Water vapour</p> <p>Melt</p> <p>Freeze</p> <p>Evaporate</p> <p>Condense</p> <p>Precipitation</p> |

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| | | | <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | | |
| Summer 2 – Electricity (4) | <p>The prior unit on Electricity was missed for this cohort due to previous lockdowns. This is their first introduction to electricity. We will start the unit linking to the children’s prior knowledge of electricity and electrical items they have experience of.</p> | <ul style="list-style-type: none"> • identify common appliances that run on electricity; • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers; • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery; • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit; • recognise some common conductors and insulators, and associate metals with being good conductors. | <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> | <p>Coal and natural gases are fossil fuels which can be burnt to produce electricity.</p> <p>Electricity can be generated by wind, solar and wave power.</p> <p>Geothermal energy comes from the Earth and can be used to generate electricity.</p> <p>Nuclear power can generate electricity by splitting atoms.</p> <p>Many appliances rely on electricity by being plugged in. Some appliances are battery powered.</p> <p>Electricity can only flow around a complete circuit.</p> <p>A battery has a positive and negative.</p> <p>Switches can be used to open and close a circuit.</p> <p>A conductor of electricity allows electricity to flow through it. Materials that are insulators do not let electricity pass through them.</p> | <p>Electricity</p> <p>Generate</p> <p>Appliances</p> <p>Renewable</p> <p>Non-renewable</p> <p>Battery</p> <p>Circuit</p> <p>Fossil fuels</p> <p>Switch</p> <p>Conductor</p> <p>Insulator</p> |

| YEAR 5 /6 | Rationale | Key content from NC | Skills/Processes | Essential Knowledge | Vocabulary |
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| Autumn 1 – Forces (6) | This unit is linked to prior learning on forces in lower key stage 2. The unit will start by linking it to the children’s prior knowledge as a baseline. | <ul style="list-style-type: none"> • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object; • identify the effects of air resistance, water resistance and friction, that act between moving surfaces; • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. | <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple</p> | <p>Forces can make an object: move, stop moving, change direction, move faster, move slower, change shape.</p> <p>Isaac Newton developed the theory of gravity.</p> <p>Gravitational pull of an object depends on its mass e.g. moon is smaller than the Earth so gravitational pull is less.</p> <p>Water resistance and air resistance are forms of friction.</p> <p>Natural and an made objects can be streamlined to lessen resistance.</p> <p>Pulleys, gears and levers can be used in mechanisms to create forces.</p> | <p>Forces</p> <p>Gravity</p> <p>Gravitational pull</p> <p>Weight</p> <p>Mass</p> <p>Friction</p> <p>Air resistance</p> <p>Water resistance</p> <p>Buoyancy</p> <p>Streamlines</p> <p>Mechanism</p> <p>Upthrust</p> <p>Isaac Newton</p> |

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| | | | <p>conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | | |
| Autumn 2 – Electricity (6) | <p>This unit follows an electricity unit the children would have learned about in lower key stage 2. The unit will start with links made to prior learning, knowledge and understanding and then build on this, developing the children’s understanding of circuits in more detail, using increased scientific specific vocabulary.</p> | <ul style="list-style-type: none"> • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit; • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches; • use recognised symbols when representing a simple circuit in a diagram. | <p>Testing: Know which type of investigation is needed to suit a particular scientific enquiry</p> <p>Scientific Questioning: Plan different types of scientific enquiries to answer their own or others' questions.</p> <p>Measuring/Observing: Take measurements, using a range of Scientific equipment, with Increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Gathering & Recording: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Communicating Findings: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Classifying: Group according to properties.</p> <p>Concluding & Questions: Use results to draw conclusions. Is evaluative when explaining findings from scientific enquiries and is clear about what has</p> | <p>Components of an electrical circuit and their symbols: Lamp/bulb/indicator; Wire; motor; buzzer, switch; cell/battery; switch open; switch closed.</p> <p>What will make a bulb brighter – more batteries/higher voltage/shortening the wires. If more components are added to a circuit the less power it will contain e.g. more buzzers and bulbs added the sound will be quieter/the bulb will be dimmer. Lengthening the wires means the electrons have more resistance to travel through. If the circuit is broken e.g. the switch is open – the electricity will not flow.</p> | <p>Circuit Symbol Cell/battery Current Amps Voltage Resistance Electrons</p> |

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| | | | <p>happened in recent enquiries and can relate this to other enquiries where appropriate</p> <p>Use Scientific Evidence: Identify scientific evidence that has been used to support or refute ideas or arguments</p> | | |
| Spring 1 – Animals Including Humans (6) | <p>This unit links to previous learning in RSHE in Autumn 1 & 2 2021, 'How we can keep healthy as we grow' and also RSHE Summer term, 'What will change as we grow?'. It also links to previous Science learning about humans, the human body and staying healthy.</p> | <ul style="list-style-type: none"> • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood; • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function; • describe the ways in which nutrients and water are transported within animals, including humans. | <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> | <p>Mammals including humans have a heart with 4 chambers.</p> <p>The heart pumps blood to the lungs to get oxygen. The oxygenated blood then is pumped round the body.</p> <p>Arteries carry oxygenated blood around the body.</p> <p>Veins carry deoxygenated blood back towards the heart.</p> <p>Oxygenated blood comes through blood vessels from the lungs.</p> <p>De-oxygenated blood comes through blood vessels from the body.</p> <p>A drug is a natural or manmade substance that affects the body when it enters your system.</p> <p>Exercise strengthens muscles, including the heart; helps with your circulation; increases oxygen levels; releases chemicals which are calming in your brain.</p> | <p>Circulatory system</p> <p>Heart</p> <p>Blood vessels</p> <p>Oxygen</p> <p>Carbon dioxide</p> <p>Oxygenated blood</p> <p>De-oxygenated blood</p> <p>Veins</p> <p>Arteries</p> <p>Capillaries</p> <p>Drugs</p> <p>Alcohol</p> <p>Nutrients</p> <p>Plasma</p> <p>Platelets</p> <p>Red blood cells</p> <p>White blood cells</p> <p>Waste products</p> |

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| | | | <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | | |
| <p>Spring 2 – Evolution & Inheritance (6)</p> | <p>This is a new unit with areas not previously covered, although it does link well to prior learning on Animals including Humans and Living things and their habitats. When the children are looking at climate affecting adaptive traits they can link new learning with learning in the Spring Term topic 2022 ‘Frozen Kingdoms’.</p> | <ul style="list-style-type: none"> • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago; • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents; • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things – secondary sources</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | <p>Animals and plants produce offspring that are similar but not identical to them. Offspring quite often look like their parents because features are passed on. You can see variation between offspring and parents and this is the same with plants and animals. Adaptive traits are characteristics influenced by the environment – climate and food.</p> <p>Inherited traits include eye colour, hair colour and shape of ears.</p> <p>A good habitat should provide; shelter, water and food.</p> <p>There are a range of different environments around the world (link to Frozen Kingdoms – Spring 2022 topic)</p> <p>Fossils are preserved remains of animals and plants that used to live millions of years ago. They are proof of evolution. Evolution is a gradual process by which living things change.</p> <p>Name some animals and their adaptive traits which means they survive in their environment.</p> | <p>Offspring Inheritance Variation Characteristics Adaption Habitat Environment Evolution Natural selection Fossil Adaptive traits Inherited traits</p> |

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| | | | | Giraffes have evolved to have longer necks so they can reach food on taller trees. | |
| Summer 1 – Earth & Space (5) | In this unit, the learning is linked this to the children’s own experiences of day/night; Seasons across the course of a Year and the shortening/lengthening of day light hours; of the Moon and its changing appearance in the sky across over time; the Sun and its appearance of movement across the sky during the course of a day; other planets and stars visible from Earth. | <ul style="list-style-type: none"> • describe the movement of the Earth and other planets relative to the sun in the solar system; • describe the movement of the moon relative to the Earth; • describe the sun, Earth and moon as approximately spherical bodies; • use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. | <p>Raise scientific questions and hypothesise</p> <p>Research: Explore relevant information by using a wide range of secondary sources.</p> <p>Abstract contexts.</p> <p>Evaluate diagrams/ models e.g. solar system. Create labelled diagrams and drawings and physical models.</p> <p>Evaluate original hypothesis against observed evidence and reach appropriate conclusions. Identify causal relationships. Begin to identify how reliable the data is.</p> | <p>Names of the 8 planets in the solar system and their order of distance from the sun. Mercury, Venus, Earth and Mars are rocky planets made of metal and rock.</p> <p>The other 4 planets are mostly made of gas.</p> <p>Pluto is no longer classified as a planet.</p> <p>It appears that the sun is moving across the sky during the course of a day but it does not. It seems to us that the sun moves but it is the movement of the Earth that makes us think this.</p> <p>The Earth rotates on its axis once every 24 hours.</p> <p>The Earth orbits the sun, which takes 365 days (one year)</p> <p>Daytime occurs when the part of the Earth is facing the sun. It is night time when the part of the Earth is not facing the Sun.</p> <p>The Moon orbits the Earth in 28 days. It appears different in the sky at different times of the month.</p> | <p>Sun</p> <p>Star</p> <p>Moon</p> <p>Planet</p> <p>Sphere</p> <p>Satellite</p> <p>Orbit</p> <p>Rotate</p> <p>Axis</p> <p>Astronomer</p> |
| Summer 2 – Light (6) | This unit follows a previous unit on light the children would have learned about in lower key stage 2. The unit will start with links made to prior learning, knowledge and understanding and then build on this, developing the children’s understanding of light in more detail, using increased scientific specific vocabulary. | <ul style="list-style-type: none"> • recognise that light appears to travel in straight lines; • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes; | <p>Testing: Set up simple practical enquiries, comparative and fair tests</p> <p>Asking Scientific Questions: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Measuring/Observing: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using</p> | <p>We need light to see things.</p> <p>Light travels in straight lines.</p> <p>Rays are beams of light.</p> <p>Light hits objects in a straight line and then the light is reflected and travels in a straight line to the eye.</p> <p>The law of reflection states that the angle of reflection is the angle between the normal line and the reflected light ray. The angle of incidence is the angle</p> | <p>Light</p> <p>Light source</p> <p>Reflection</p> <p>Incident ray</p> <p>Reflected ray</p> <p>The law of reflection</p> <p>Refraction</p> <p>Visible spectrum</p> <p>Prism</p> <p>Shadow</p> <p>Transparent</p> <p>Translucent</p> <p>Opaque</p> |

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| | | <ul style="list-style-type: none"> • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. | <p>a range of equipment</p> <p>Gathering & Recording: Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables</p> <p>Communicating Findings: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Classifying: Group information according to common factors</p> <p>Research: Use research to find out a range of things</p> <p>Concluding & questioning: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using Scientific Evidence: Use straight forward scientific evidence to answer questions or to support his/her findings</p> | <p>between the normal line and the incident of the light ray.</p> <p>Light travels as a wave but unlike sound and it can travel through a vacuum.</p> <p>When light enters water it bends. This is called refraction – e.g. spoon I water.</p> <p>Shadows are formed by an object blocking light rays.</p> <p>Isaac Newton shone light through a transparent prism – this separates the light into colours of the rainbow (spectrum). All the colours combine to make visible light.</p> | |
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