



Marlborough Primary Academy School – Science Long Term Planning

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.

Essential Knowledge highlighted red is the minimum key learning for every child within each unit of work.

Communication and Language

- Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions
- Make comments about what they have heard and ask questions to clarify their understanding
- Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.
- Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary
- Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate
- Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher.

Numeracy

- Verbally count beyond 20, recognising the pattern of the counting system
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity

Understanding the World

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

PSED

- Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions
- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge
- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
- Work and play cooperatively and take turns with others

Literacy

- Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role-play
- Read aloud simple sentences and books that are consistent with their phonic knowledge, including some common exception words
- Write simple phrases and sentences that can be read by others.

| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills/Processes | Essential Knowledge | Vocabulary |
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| MAPLE CLASS | | | | | |
| <u>Maple Class (Y1/Y2)</u> <u>Autumn 1</u> <u>Growth and Survival</u> | <p>Children learn to identify and name a variety of common animals. They learn to identify and name carnivores, herbivores and omnivores and to describe and compare the structure of a variety of animals. In addition, pupils are taught to identify, name, draw and label the basic parts of the human body and say which part is associated with each sense.</p> | <p>Animals, including humans (Y1)</p> <ul style="list-style-type: none"> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores <p>Animals, including humans (Y2)</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | <p>Working Scientifically Key Stage 1:</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking Identifying, classifying and grouping Comparative and fair testing <p>Researching using secondary sources</p> | <ul style="list-style-type: none"> To find out about the offspring of a variety of different animals. To find out about the different ways in which animals reproduce. To explore how humans grow as they get older To find out what animals, including humans, need to survive. To explore the environment as a factor of survival for animals, including humans. To find out how to eat a healthy, balanced diet To find out why exercise is important to keep our bodies healthy. | <p>animals, babies, young, adults, species, extinct, survive, eggs, live young, mammals, pregnant, older, teenager, toddler, food, vitamins, minerals, carnivores, herbivores, omnivores, water, air, oxygen, breathe,</p> |
| <u>Maple Class (Y1/Y2)</u> <u>Spring 1</u> <u>Super Scientists</u> | <p>This unit has been selected in order for children to understand why science is important and what it means to be a scientist. They will be encouraged to be curious and to ask questions learning that this is a key skill for a scientist.</p> | <ul style="list-style-type: none"> | <p>Working scientifically</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. | <ul style="list-style-type: none"> To investigate the effect gravity has on everyday objects. (Isaac Newton) To investigate what happens to light when it passes through different transparent objects. To investigate the wind (Maggie Aderin-Pocock) To investigate whether sound can pass through materials. (Alexander Graham Bell) To investigate our senses and reflexes. To investigate how germs are transferred by touching things. (Florence Nightingale, Alexander Flemming, Louis Pasteur) To investigate electrical circuits to make a light bulb light up. (Thomas Edison) Gravity is the force that makes things fall to the ground. | <p>discover, scientist, gravity, pulling it, working scientifically, rainbows, prism, experiment, colours, lens, white light, telescope, space, observatory, wind vane, anemometer, questions, observations, acoustics, control, predict, fungus, germs, disease, spread, sterile, circuit, wire, bulb,</p> |
| <u>Maple Class (Y1/Y2)</u> <u>Spring 2</u> <u>Living in Habitats</u> | <p>Pupils are taught the difference between things that are living, dead and things that have never been alive. They are also taught that most organisms</p> | <p>Living Things and Their Habitats (Y2)</p> <ul style="list-style-type: none"> explore and compare the differences between things that are living, dead, and things that have never been alive identify that most living things live in habitats to which they are suited and | <p>Working Scientifically</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment | <ul style="list-style-type: none"> To be able to identify things that are living, things that are dead and things that have never been alive. To understand that living things need to live in suitable habitats. | <p>alive, energy, move, grow, respond, respire, reproduce, waste, die, sunlight, food, living, non-living, habitat, woodland, pond, ocean,</p> |

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| | live within habitats, that the organisms within an environment are suited to life there and that they depend on each other. Pupils are then able construct simple food chains in addition to identifying and classifying organisms within habitats. | describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other <ul style="list-style-type: none"> • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. | <ul style="list-style-type: none"> • performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources | <ul style="list-style-type: none"> • To explore the plants and animals that live in seaside habitats • To be able to explore plants and animals in an unfamiliar habitat. • To be able to explore and describe a micro-habitat. • To explore food chains in a habitat. | mountain, seaside, coast, rainforest, desert, artic, micro-habitats, invertebrates, mini-beasts, decomposers, insects, arachnids, food chains, herbivores, carnivores, omnivores, |
| <u>Maple Class (Y1 / Y2)</u> <u>Summer 1</u> <u>Everyday Materials</u> | Pupils are provided with an opportunity to explore everyday materials. They learn to distinguish between an object and the material from which it is made and learn to identify and name a variety of everyday materials. In addition, pupils learn to describe the simple physical properties of a variety of everyday materials and to compare and group together a variety of everyday materials based on simple physical properties of the materials. | <u>Everyday Materials (Y1)</u> <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. | <u>Working Scientifically</u> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources • | <ul style="list-style-type: none"> • To be able to identify a variety of common materials • To be able to distinguish between an object and the material from which it is made • To be able to describe materials according to their properties. • To be able to describe why some materials suit certain objects better than others. • To carry out an experiment to find out which materials are waterproof. • To recap what we have learnt about everyday materials. | material, different, types, wood, plastic, metal, glass, stone, fabric, properties, absorbent, bad idea, bendy, compare, dry, dull, fabric, good idea, group, hard, investigate, material, metal, not absorbent, not bendy, not waterproof, opaque, paper, rock, rough, shiny, smooth, soft, sort, stiff, stretchy, transparent, umbrella Venn diagram, water, water object, waterproof, wet |
| <u>Maple Class (Y1/Y2)</u> <u>Summer 2</u> <u>Growing Plants</u> | Pupils are taught to observe and describe how seeds and bulbs mature into plants. Pupils also find out and describe how plants need water, light and a suitable temperature to stay healthy. | <u>Plants (Y2)</u> <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. | <u>Working Scientifically</u> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. | <ul style="list-style-type: none"> • To understand that different seeds grow into different plants and to describe them. • To understand that plants can be grown from bulbs. • To be able to explain why and how seeds are dispersed • To plan, carry out and evaluate an investigation into the conditions that affect germination • To observe and describe how a plant changes as it matures. | anchor, baby plant (embryo), bean seed, bulb, conditions, dispersal, dissect, dormant, expedition, germinate, germination, grow, growth, instructions, leaves, life cycle, packet, prediction, reproduction, root, roots, seed, seed coat, seed leaves, seedling, shoot, sprout, stem, |

| | | | Working Scientifically' is embedded into each unit. Children will have opportunities to take part in: <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources • | | sunflower, survive, variables |
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| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills and Processes | Essential Knowledge (small steps of learning) | Vocabulary |
| Sycamore Class (Y3/Y4) | | | | | |
| <u>Sycamore Class (Y3/Y4)</u> <u>Autumn 1</u> <u>Eating and Digestion</u> | Pupils will be taught to describe the simple functions of the basic parts of the digestive system in humans and to identify the different types of teeth in humans and their simple functions. | <u>Animals, including Humans (Y4)</u> <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. | Working Scientifically Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills: <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. | <ul style="list-style-type: none"> • To be able to identify and classify carnivores, herbivores and omnivores. • To be able to construct and interpret a variety of food chains. • To identify the different types of teeth in humans and identify their functions. • To explore different ways of keeping teeth healthy. • To investigate how the digestive system works. • To be able to describe the functions of the basic parts of the digestive system • | acid, adult teeth, canines, carnivore, crown, damage, decay, dentine, digestive system, enamel, gall bladder, herbivore, incisors, intestine, liver, milk teeth, molars, oesophagus, omnivore, pancreas, plaque, premolars, pulp, rectum, root, stomach, sugar, teeth, tooth, wisdom |

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| | | | <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources | | |
| <p><u>Sycamore Class (Y3/Y4)</u></p> <p><u>Spring 1</u></p> <p><u>Rocks and Fossils</u></p> | <p>Pupils are taught to compare, and group together different kinds of rocks based on their appearance and simple physical properties. Pupils also learn to describe how fossils form and that soils are made from rocks and organic matter.</p> | <p><u>Rocks (Y3)</u></p> <ul style="list-style-type: none"> • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter. | <p><u>Working Scientifically</u> Lower Key Stage 2:</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking | <ul style="list-style-type: none"> • To be able to identify naturally occurring rocks and explore their uses. • To be able to group rocks according to their characteristics. • To be able to plan, carry out and evaluate experiments to compare rocks. • To identify rocks that are used for particular purposes. • To explore soil and how it is formed. • To explore what fossils are and how they are formed • To be able to identify fossilised remains. • • | <p>absorption, anthropic, bone fossil, building, burns, carve, crystals, decay, decompose, dissolve, durable, earth, erosion, extinct, fossil, fossilisation, friction, grains, igneous, impermeable, metamorphic, minerals, mold fossil, molten, natural, organism, origin, palaeontologist, paleontology, permeable, polished, porous, properties, remains, resin fossil, rock segments, rocks, sculpture, sediment, sedimentary, soil, submerge, tourists, trac, fossil, uses</p> |

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| | | | <ul style="list-style-type: none"> Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | | |
| <p>Sycamore Class (Y3/4)</p> <p>Spring 2</p> <p>States of Matter</p> | <p>Pupils should be taught to compare and group materials together, according to whether they are solids, liquids or gases. Pupils should also 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. In addition to this, pupils should identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> | <p>States of Matter (Y4)</p> <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>Working Scientifically Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. <p>'Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | <ul style="list-style-type: none"> To compare and group materials together according to whether they are solids or liquids. To identify and explore the properties of gases. To observe that materials change state when they are heated or cooled. To research the temperature in degrees Celsius (°C) at which materials change state To understand the process of evaporation To understand the process of condensation. To identify the part played by evaporation and condensation in the water cycle. | <p>Celsius, change of state, condensation, condenses, convert, cycle, degree Celsius, evaporation, freeze, gas, liquid, material, melting, pace, precipitation, rate, solid, states of matter, temperature, viscosity, water vapour</p> |

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| <p>Sycamore Class (Y3/Y4)</p> <p>Summer 1</p> <p>Forces and Magnets</p> | <p>Pupils should be taught to compare how things move on different surfaces and notice that some forces need contact between two objects whilst magnetic forces can act at a distance. Pupils also need to observe how magnets attract or repel each other and attract some materials but not others, and describe magnets as having two poles predicting whether two magnets will attract or repel each other depending on which way the poles are facing. In addition, pupils should be taught to compare and group together a variety of everyday materials based on whether they are attracted to a magnet and to identify some magnetic materials.</p> | <p>Forces and Magnets (Y3)</p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two 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 whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing | <ul style="list-style-type: none"> • Working Scientifically Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills: <ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | <ul style="list-style-type: none"> • To explore what forces are and notice that some forces need contact between two objects. • To compare how things move on different surfaces. • To explore how magnetic forces work • To be able to identify magnetic materials. • To investigate uses for magnets. • | <p>alloy, Antarctica, Arctic, attract, bar magnet, button magnet, compass, cylindrical magnet direction, distance, Earth, field, force, friction, fridge, gravity, horseshoe magnet, investigate, iron, like, magnet, magnetic, magnetised, man-made, material, movement, natural, non-magnetic, north, object, opposite, pointer, pole, pull, push, real-life, record, repel, ring magnet, shape, south, speed, start, steel, stop, strength, surfaces, travel</p> |
| <p>Sycamore Class (Y3/Y4)</p> | <p>Pupils should be taught to identify how sounds are made, associating some of</p> | <p>Sound (Y4)</p> | <p>Working Scientifically Lower Key Stage 2:</p> | <ul style="list-style-type: none"> • To find out that sounds are made when objects and materials vibrate. | <p>absorb, amplitude, anvil, auditory nerve, closer, cochlea,</p> |

| <p>Summer 2</p> <p>Changing Sound</p> | <p>them with something vibrating and to recognise that vibrations from sounds travel through a medium to the ear. Pupils should also be taught to find patterns between the pitch of a sound and features of the object that made it in addition to finding patterns between the volume of a sound and the strength of the vibrations that produced it. Pupils should also be taught to recognise that sounds get fainter as the distance from the sound source increases.</p> | <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 • 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>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources | <ul style="list-style-type: none"> • To investigate whether sounds can travel through different materials. • To explore the relationship between distance and volume. • To find out that some materials are effective in preventing vibrations from sound sources reaching the ear. • To investigate how sounds can be different pitches and volumes. • To find out how the length, thickness and tightness of a string affects its pitch. • To find out how sounds can be made by air vibrating and how to change the pitch of notes produced by vibrating air. • | <p>decreasing, distance, ear canal, ear drum, energy, fainter, faster, flautist, flute, force, frequency, further, gas, guitar, guitarist, hammer, high, increasing, larger, length, liquid, loud, low, musical instruments, particles, pinna, pitch, protect, quiet, slower, smaller, solid, sound, source, speed, stirrup, strength, strings, travel, tuning fork, vibrate, vibration, violin, violinist, vocal cords, volume, wave</p> |
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| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills and Processes | Essential Knowledge (small steps of learning) | Vocabulary |
| Beech Class (Y5/Y6) | | | | | |
| <p>Beech Class (Y5/Y6)</p> <p>Autumn 1</p> | <p>Pupils should be taught to associate the brightness of a lamp or the volume of a</p> | <p>Electricity (Y6))</p> | <p>Working Scientifically Upper Key Stage 2:</p> | <ul style="list-style-type: none"> • To recap what electricity is and investigate static electricity | <p>battery, branches, bulb, buzzer, complete circuit, component,</p> |

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| <p><u>Changing Circuits</u></p> | <p>buzzer with the number and voltage of cells used in the circuit. They should also be taught to 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 change. In addition, pupils should be taught to use recognised symbols when representing a simple circuit in a diagram.</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>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 • identifying scientific evidence that has been used to support or refute ideas or arguments. | <ul style="list-style-type: none"> • To recap our knowledge and understanding of circuits. • To be able to recognise and use conventional symbols for circuits. • To investigate ways in which the brightness of a bulb or speed of a motor is changed. • To be able to plan, carry out and evaluate an experiment to see how changing the wire in a circuit affects the brightness of a bulb. • To create a simple device using a circuit. | <p>conductor, electric current, electric shock, electrical current, electricity, electrons, generator, high voltage, insulator, motor, parallel circuit, power, power source, proton, series circuit, simple circuit, switch, symbol, voltage, voltmeter, volts</p> |
| <p><u>Beech Class (Y5/Y6)</u> <u>Autumn 2</u> <u>Evolution and Inheritance</u></p> | <p>Pupils should be taught to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. They should also be taught to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. In addition, pupils should be taught to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> | <p><u>Evolution and Inheritance (Y6)</u></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><u>Working Scientifically</u> Upper Key Stage 2: During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | <ul style="list-style-type: none"> • To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • To identify how animals and plants are adapted to suit their environment in different ways. • To understand that adaptation of plants and animals to suit their environment may lead to evolution. • To find out about how the work of scientists has helped develop our understanding of the process of evolution. • To recognise that living things have changed over time and that a number of factors can affect a species' evolution. • To understand how humans have evolved over time, and how human behaviour can affect change in species over time. | <p>adapt, adaptation, artificial selection, cell, characteristics, chromosome, climate change, DNA, dominant, dominant and recessive, environment, evolution, extinct, extinction, fossil, gene, hereditary, ichthyosaur, inheritance, invasive species, living things, natural selection, palaeontologist, plesiosaur, predator, recessive, reproduce, species, survive, survival of the fittest, threat, trait/characteristic, traits, variation</p> |

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| | | | <ul style="list-style-type: none"> • using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 <ul style="list-style-type: none"> • identifying scientific evidence that has been used to support or refute ideas or arguments. | | |
| <p><u>Beech Class (Y5/Y6)</u></p> <p><u>Spring 1</u></p> <p><u>Life Cycles</u></p> | <p>Pupils should be taught to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. They should also be taught to describe the life process of reproduction in some plants and animals.</p> | <p><u>Living Things and their Habitats</u></p> <ul style="list-style-type: none"> • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. | <p><u>Working Scientifically</u> Upper Key Stage 2:</p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 • identifying scientific evidence that has been used to support or refute ideas or arguments. • . | <ul style="list-style-type: none"> • To describe the process of sexual reproduction in flowering plants • To describe the process of asexual reproduction in plants • To describe the process of sexual reproduction in animals • To observe and compare the life cycles of animals in our local environment with other animals around the world. • To compare how different animals reproduce and grow. • To find out about the work of naturalists. • | <p>accomplishments, altricial, amphibian, anther, arthropod, asexual, bird, budding, bulbs, carpel, class, discoveries, echinoderm, embryo, exoskeleton, fetus (foetus), filament, fish, gestation, grafting, internal organs, invertebrate, life cycle, mammal, molluscs, naturalist, offspring, ovary, ovule, parent plant, precocial, propagating, reproduction, reptile, runners, sexual, significant, species, sponges, spores, stamen, stigma, style, tubers, vertebrate, viviparous, worm, zoologist</p> |
| <p><u>Beech Class (Y5/Y6)</u></p> <p><u>Spring 2</u></p> <p><u>Earth and Space</u></p> | <p>Pupils should be taught to describe the movement of the Earth and other planets relative to the sun in the solar system. They should</p> | <p><u>Earth and Space (Y5)</u></p> <ul style="list-style-type: none"> • describe the movement of the Earth, and other planets, relative to the Sun in the solar system | <p><u>Working Scientifically</u> Upper Key Stage 2:</p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> | <ul style="list-style-type: none"> • To describe the movements of the Sun, Earth and Moon • To explore how the rotation of Earth creates day and night. | <p>(names of planets), asteroid belt, atmosphere, axis, climate conditions, crater, crescent,</p> |

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| | <p>also be taught to describe the movement of the moon relative to the Earth and describe the sun, Earth and moon as approximately spherical bodies. In addition, they should be taught to use the idea of the Earth's rotation to explain why we experience day and night and why the sun appears to move across the sky during the day.</p> | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. <ul style="list-style-type: none"> | <ul style="list-style-type: none"> To learn about how Earth's tilt creates seasons To learn about the phases of the Moon To discover how theories about our solar system have changed. To investigate the planets in the solar system | <p>daylight, daylight hours, daytime, earth, equator, flat earth , full moon, galaxy, gas planets, geocentric, gibbous, heliocentric, inner planets, lunar eclipse , lunar month, milky way, moon, mythology, new moon, night-time, northern hemisphere, orbit, outer planets, phases of the moon, planets, prime meridian, rocky planets, rotate, solar system, southern hemisphere , spherical body, spherical earth, star, sun, theory, tilt, time zone, universe, volcano, waning, waxing</p> |
| <p>Beech Class (Y5/Y6) Summer 2 Seeing Light</p> | <p>Pupils should be taught to recognise that light appears to travel in straight lines and to use this idea to explain that objects are seen because they give out or reflect light into the eye. They should also be taught to 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 and to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> | <p>Light (Y6)</p> <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 use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. | <p>Working Scientifically Upper Key Stage 2: During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests | <ul style="list-style-type: none"> To recall facts about how shadows are formed. To investigate how we can change shadows To understand how our eyes allow us to see To understand how we see objects. To investigate reflection To learn about refraction To investigate the colours in white light | <p>absorbed, angle, angle of incidence, angle of reflection, angle of refraction, bend, cornea, ecosystems, electromagnetic, radiation, glare, illusion , incident ray, iris, lens, light pollution, light trespass , light waves, opaque, optic nerve, perpendicular joint, prism, pupil, reflected, reflected ray, refraction, retina, rods and cones, shadow, shielding, skyglow, the visible spectrum, translucent, transmitted, transparent, wave frequency, wavelength, white light</p> |

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| | | | <ul style="list-style-type: none"> reporting and presenting 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 presentation identifying scientific evidence that has been used to support or refute ideas or arguments. | |
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YEAR B (2024-2025)

| Subject - SCIENCE LEARNING SEQUENCE | | | | |
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| <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Long term memory development strategies to be used in every lesson through assessing prior knowledge at beginning of the unit and in the lesson. <p style="text-align: center;">Essential Knowledge highlighted red is the minimum key learning for every child within each unit of work</p> | | | | |
| <p><u>Communication and Language</u></p> <ul style="list-style-type: none"> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions Make comments about what they have heard and ask questions to clarify their understanding Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes | <p>Numeracy</p> <ul style="list-style-type: none"> Verbally count beyond 20, recognising the pattern of the counting system Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity | <p>Understanding the World</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | <p><u>PSED</u></p> <ul style="list-style-type: none"> Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions Be confident to try new activities and show independence, resilience and perseverance in the face of challenge Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Work and play cooperatively and take turns with others | <p>Literacy</p> <ul style="list-style-type: none"> Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role-play Read aloud simple sentences and books that are consistent with their phonic knowledge, including some common exception words Write simple phrases and sentences that can be read by others. |

| <p>and poems when appropriate</p> <ul style="list-style-type: none"> Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher. | | | | | |
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| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills/Processes | Essential Knowledge | Vocabulary |
| MAPLE CLASS | | | • | • | |
| <u>Maple Class (Y1/Y2)</u> <u>Autumn 1</u> <u>My Body</u> | <p>Pupils will learn about how their body works especially the five senses.</p> | <p>Animals, including humans (Y1)</p> <ul style="list-style-type: none"> 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>Working Scientifically</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions | <ul style="list-style-type: none"> To be able to identify, name and label body parts To explore what parts of our bodies we use for different activities. To find out about the five senses, in particular the sense of sight. To explore the sense of touch. To explore the sense of smell. To explore the sense of taste. To explore the sense of sound. | <p>head, neck, leg, arm, elbow, finger, mouth, ears, toes, feet, hands, stomach, wrist, eyes, ears, nose, senses, taste, sound, touch, sight, smell, feel, tongue</p> |
| <u>Maple Class (Y1/Y2)</u> <u>Spring 1</u> <u>Exploring Everyday Materials</u> | <p>Pupils identify and compare the suitability of a variety of everyday materials. They also find out how the shapes of solid objects, made from some materials, can be changed.</p> | <p>Uses of Everyday Materials (Y2)</p> <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>Working Scientifically</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking | <ul style="list-style-type: none"> To be able to identify a variety of materials and sort them according to a variety of criteria. To be able to identify natural and man-made materials. To identify that some materials can change shape by squashing, bending, stretching and twisting, and others can't. To identify the suitability of metal and plastic for a variety of purposes To identify different products that can be made from wood and their features and purposes. To identify different materials that are used for the same product. To identify material inventions and discoveries | <p>absorbent, bend, biodegradable, bulletproof, crops, discover, fabric, flexible, glass, invention, inventor, Kevlar, litter, materials, metal, objects, opaque, packaging, paper, plastic, pledge, pollution, properties, recycle, rigid, rock, rubber, scientist, shape, silicon chip, single-use, squash, stretch, suitability, suitable, symbols, transparent, twist, unsuitable, water, waterproof, wood</p> |

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| | | | <ul style="list-style-type: none"> Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | | |
| <p>Maple Class (Y1/Y2)</p> <p>Spring 1</p> <p>Identifying Plants</p> | <p>Pupils identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They also identify and describe the basic structure of a variety of common flowering plants, including trees.</p> | <p>Plants (Y1)</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>Working Scientifically Key Stage 1:</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | <ul style="list-style-type: none"> To find out what a plant is. To identify and describe garden plants. To identify and describe wild plants. To identify and describe a range of trees. To identify the different parts of a plant To make observations of growing plants | <p>air, bark, blossom, brambles, bulbs, buttercup, clothing, clover, cotton, daisy, dandelion, deciduous, evergreen, farmer, fern, flower, food, fruit, garden plant, grass, grow, honeysuckle, hydrangea, insects, ivy, lavender, leaves, living thing, magnolia tree, marigold, medicine, moss, nettle, petals, plant, pod, poppies, primula, raw, roots, rose, seeds, shrub, soil, stem, sunflower, sweet pea, thistle, tree, trunk, weed, wild plant</p> |
| <p>Maple Class (Y1 / Y2)</p> <p>Summer 1</p> <p>Seasonal Changes</p> | <p>Pupils observe changes across the four seasons. They observe and describe weather associated with the seasons and how the length of a day varies.</p> | <p>Seasonal Changes (Y1)</p> <ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. | <p>Working Scientifically Key Stage 1:</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children</p> | <ul style="list-style-type: none"> To find out about different seasons and how to describe them. To find out about the seasons and how they are different To find out about how animals are affected by the seasons. To find out about how humans are affected by the seasons. To find out how day length is affected by the seasons. To investigate the weather during the seasons. | <p>active, adapt, animals, autumn, colder, daylight, fall, forecasts, fruit, fungi, hibernate, leaves, longer, migration, month, nuts, season, shorter, sleet, snow, spring, summer, temperature, warmer, weather, winter, year</p> |

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| | | | <p>will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources | | |
| <p>Maple Class (Y1/Y2)</p> <p>Summer 2</p> <p>Identifying Animals</p> | <p>Pupils learn to identify and name a variety of common animals. They learn to identify and name carnivores, herbivores and omnivores and to describe and compare the structure of a variety of animals. In addition, pupils are taught to identify, name, draw and label the basic parts of the human body and say which part is associated with each sense.</p> | <p>Animals, including Humans (Y1)</p> <ul style="list-style-type: none"> • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) | <p>Working Scientifically Key Stage 1:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources | <ul style="list-style-type: none"> • To be able to identify and name a variety of common animals. • To be able to identify and name a variety of common UK mammals. • To be able to identify and compare a variety of common UK birds and reptiles. • To be able to identify and compare a variety of common UK fish and amphibians. • To be able to identify and sort carnivores, herbivores and omnivores • To be able to take care of animals. • To collect data about animals and answer questions. | <p>amphibian, animals, backbone, beak, birds, carnivore, characteristics, claws, cold blooded, describe, diet, differences, ears, exercise, eyes, feathers, fins, fish, freshwater, gills, hearing, herbivore, lungs, mammal, medicine, mouth, nose, omnivore, pet, reproduce, reptile, saltwater, scales, shelter, sight, similarities, skeleton, skin, skull, smell, taste, touch, vertebrate, warm blooded, wild animal, wings</p> |
| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills / Processes | Essential Knowledge (small steps of learning) | Vocabulary |
| Sycamore Class (Y3/Y4) | | | | | |
| <p>Sycamore Class (Y3/Y4)</p> <p>Autumn Term 1</p> <p>Health and Movement</p> | <p>Pupils are taught to identify that animals, including humans, need the right types and amounts of nutrition and that they cannot make their own food. Pupils are also taught to identify that humans and some animals have skeletons and</p> | <p>Animals, including Humans (Y3)</p> <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>Working Scientifically Lower Key Stage 2:</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them | <ul style="list-style-type: none"> • To identify that a balanced diet is needed in order to stay healthy. • To investigate which foods different animals eat. • To carry out an investigation to find out what pets eat. • To explore human and animal skeletons • To find out about how the skeleton supports and protects the body and | <p>(common bone names), (scientific bone names), balanced, ball and socket joint, bone, carbohydrates, cardiac, carnivore, cartilage, diet, endoskeleton, exoskeleton, fibre, food chain, herbivore, hinge joint, human,</p> |

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| | <p>muscles for support, protection and movement.</p> | | <ul style="list-style-type: none"> • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources • | <p>to investigate how invertebrates are supported.</p> <ul style="list-style-type: none"> • To find out what muscles are and how skeletal muscles help us to move. | <p>invertebrate, involuntary, ligament, muscle, nutrition, omnivore, organs, photosynthesis, pivot joint, protection, proteins, skeletal muscle, skeleton, smooth muscle, support, tendon, vertebrate, vitamins, voluntary</p> |
| <p>Sycamore Class (Y3/Y4) Spring 1</p> | <p>Pupils should be taught to recognise that living things can be grouped in a variety of ways and to explore and</p> | <p>Living Things and their Environments (Y4)</p> <ul style="list-style-type: none"> • recognise that living things can be grouped in a variety of ways | <p>Working Scientifically Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the</p> | <ul style="list-style-type: none"> • To be able to identify a variety of habitats and explore why organisms live in different habitats. | <p>amphibian, annelid, arachnid, bird, botany, carnivore, characteristics, class,</p> |

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| <p><u>Living in Environments</u></p> | <p>use classification keys to help group, identify and name a variety of living things within their local and wider environment. Pupils should also be taught to recognise that environments can change and that this can sometimes pose dangers to living things. Within this unit, a statement from the Year 4 'animals, including humans' thread is taught alongside the classification of animals within habitats. Pupils are also taught to construct and interpret a variety of food chains, identifying producers, predators and prey.</p> | <ul style="list-style-type: none"> • 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>following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing | <ul style="list-style-type: none"> • To be able to group organisms according to their characteristics. • To be able to classify animals into specific groups according to their characteristics. • To be able to use a classification key to identify animals. • To be able to identify and classify a variety of British plants. • To explore the human impact on habitats and environments. • | <p>classification, classification key, conifers, consumer, crustacean, deforestation, depend, echinoderm, ecosystem, environment, ferns, fish, flowering, food chain, food web, grasses, habitat, herbivore, identify, impact, insects, invertebrate, local, mammal, microhabitat, mollusc, mosses, natural/human, nature reserve, negative, non-flowering, omnivore, organism, pollution, positive, positive/negative, predator, prey, producer, protect, protozoa, reptile, species, urbanisation, vertebrate, zoology</p> |
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| | | | <ul style="list-style-type: none"> Researching using secondary sources | | |
| <p><u>Sycamore Class (Y3/4)</u></p> <p><u>Spring 2</u></p> <p><u>How Plants Grow</u></p> | <p>Pupils should be taught to identify and describe the functions of the different parts of flowering plants and that pupils should be taught to explore the requirements of plants for life and growth and investigate the way in which water is transported in plants. The National Curriculum also states that pupils should explore the part that flowers play in the life cycle of flowering plants.</p> | <p><u>Plants (Y3)</u></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 how they vary from plant to plant 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><u>Working Scientifically</u> Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children</p> | <ul style="list-style-type: none"> To identify and describe the functions of the roots of flowering plants To investigate the way in which water is transported within plants To identify and describe the functions of leaves in flowering plants. To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal To explore some of the ways in which flowering plants disperse their seeds. To understand the structure of seeds and their importance as a food source. | <p>absorb, adapt, anchor, anther, bean, carpel, distributed, environment, fertilisation, fertilizer, flowering, food, germination, life cycle, light, nutrients, ovary, photosynthesis, pollination, roots, seed dispersal, seed formation, sepal, stamen, stem, support, survival, water, transportation</p> |

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| | | | <p>will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing <ul style="list-style-type: none"> • Researching using secondary sources • • | | |
| <p><u>Sycamore Class (Y3/Y4)</u></p> <p><u>Summer 1</u></p> <p><u>Light and Shadow</u></p> | <p>Pupils are taught to recognise that they need light to see things and that dark is the absence of light. They are also taught to notice that light is reflected from surfaces, to recognise that light from the sun can be dangerous and that there are ways we can protect our eyes from the sun. In addition, pupils are taught to recognise that shadows are formed when the light from a light source is blocked by an opaque object and to find patterns in the way that shadows change.</p> | <p><u>Light (Y3)</u></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><u>Working Scientifically</u> Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes | <ul style="list-style-type: none"> • To recognise that we need light in order to see. • To explore the Sun as a light source and identify the difference between night and day. • To investigate what shadows are and why they are formed. • To investigate how shadows behave. • To investigate how the size of shadows change throughout the day. • To explore how light is reflected from surfaces. | <p>angle, brighter, closer, concave mirror, convex mirror, direct line of sight, faint, famous, formed, inventor, lightbulb , man-made, mirrors, opaque, periscope, phonograph , plane mirror, reflection, shadow, source of light, sundial, translucent, transparent</p> |

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| | | | <ul style="list-style-type: none"> • using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> • Observations over time • Pattern seeking • Identifying, classifying and grouping • Comparative and fair testing • Researching using secondary sources • | |
| <p><u>Sycamore Class (Y3/Y4)</u></p> <p><u>Summer 2</u></p> <p><u>Circuits</u></p> | <p>Pupils should be taught to identify common appliances that run on electricity. It states that they should also be taught to construct a simple series electrical circuit, identifying, and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Pupils should also be able to 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, and to recognise that a switch opens and closes a circuit whilst associating this with whether or not a lamp lights in a simple series circuit. In addition, pupils should be taught to recognise some common conductors and insulators and to associate metals with being good conductors.</p> | <p><u>Electricity (Y4)</u></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><u>Working Scientifically</u> Lower Key Stage 2: During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions | <ul style="list-style-type: none"> • To identify common appliances that run on electricity • To understand how to keep safe around electrical appliances. • To construct simple circuits • To recognise common conductors and insulators. • To make a simple device which includes a circuit <p>appliance, battery, battery powered, break, brighter, buzzer, circuit, complete, component, conductor, conducts, dimmer, electrical, electricity, energy, incomplete, insulates, insulator, light, light bulb, mains powered, material, motor, pass through, power, power source, switch, wire</p> |

| | | | <p>for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. <p>Working Scientifically' is embedded into each unit. Children will have opportunities to take part in:</p> <ul style="list-style-type: none"> Observations over time Pattern seeking Identifying, classifying and grouping Comparative and fair testing Researching using secondary sources | | |
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| Year Group | Rationale for Unit of Learning | Key Content from National Curriculum | Skills / Processes | Essential Knowledge (small steps of learning) | Vocabulary |
| Beech Class (Y5/Y6) | | | | | |
| <u>Beech Class (Y5/Y6)</u> Autumn 1 <u>Properties and changes of materials</u> | <p>Pupils should be taught to compare and group together everyday materials on the basis of their properties. They should also know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from that solution. Pupils should use knowledge of solids, liquids and gases to decide how mixtures might be separated and should be taught to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials. In addition, pupils should demonstrate that dissolving, mixing and changes of state are reversible changes, explain that some changes</p> | <p><u>Properties and Changes of Materials (Y5)</u></p> <ul style="list-style-type: none"> 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 know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes 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. | <p><u>Working Scientifically</u> Upper Key Stage 2: During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests | <ul style="list-style-type: none"> To know that some materials will dissolve in liquid to form a solution To use knowledge of solids, liquids and gases to decide how mixtures and solutions might be separated Explain that some changes form new materials, and that these changes are not usually reversible To identify when a change caused by heating or cooling is reversible or irreversible. To investigate the materials needed for something to burn and the new materials formed by burning To compare and group together everyday materials on the basis of their properties To give reasons for the particular uses of everyday materials in relation to their properties | <p>acid, alkali, attract, base, chemical reaction, classify, combustion, compass, concentrated, condensation, conductivity, conductor, corrosion, create, diluted, dissolve, electrical, evaporation, filtrate, filtration, freeze, hardness, improve, indicator, insoluble, insulator, iron, irreversible, magnetic field, magnetism, man-made, material, materials science, melt, metal, mixture, molecules, natural, neutralisation, particles, property, repel, resistance, reversible, saturated, semiconductor, separation, soluble,</p> |

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| | result in the formation of new materials, and that this kind of change is usually irreversible. Within this, pupils should understand the changes associated with burning and the action of acid on bicarbonate of soda. | | <ul style="list-style-type: none"> reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. | | solute, solution, solvent, steel, synthetic, thermal, transparency |
| <u>Beech Class (Y5/Y6)</u> <u>Autumn 2</u> <u>Forces in Action</u> | Pupils should be taught to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. They should also be taught to identify the effects of air resistance, water resistance and friction, that act between moving surfaces and recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. | <u>Forces (Y5)</u> <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. | <u>Working Scientifically</u> Upper Key Stage 2: During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills: <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. . . | <ul style="list-style-type: none"> To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of friction acting between moving surfaces To identify and explain the effects of air resistance. To identify and explain the effects of water resistance To recognise that levers and pulleys allow a smaller force to have a greater effect To recognise that gears allow a smaller force to have a greater effect. . | air resistance, anti-clockwise, balanced, buoyancy, clockwise, contact force, density, direction, drag, effort, force, friction, fulcrum, gear, gradient, gravitational force, gravity, heat, kilograms/grams, lever, load, machine, magnetism, mass, matter, newton meter, newtons, non-contact force, pull, pulley, push, pushing force, streamlined, surface, surface area, unbalanced, upthrust, vacuum, water resistance, weight |
| <u>Beech Class (Y5/Y6)</u> | Pupils should be taught to describe the differences in | <u>Living things and their habitats (Y5)</u> | <u>Working Scientifically</u> Upper Key Stage 2: | <ul style="list-style-type: none"> To recognise the stages of growth and development in humans | accomplishments, altricial, amphibian, |

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| <p>Spring 1</p> <p><u>Changes and Reproduction</u></p> | <p>the life cycles of a mammal, an amphibian, an insect and a bird. They should also be taught to describe the life process of reproduction in some plants and animals.</p> | <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals | <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. | <ul style="list-style-type: none"> To know the stages in the gestation period of humans and compare them to other animals To recognise the stages of development during childhood and understand the needs of children at those stages. To understand the initial changes inside and outside of the body during puberty. To know the changes that occur during puberty and how they differ for boys and girls To understand how the body changes during adulthood and old age | <p>anther, arthropod, asexual, bird, budding, bulbs, carpel, class, cnidarians, discoveries, echinoderm, embryo, exoskeleton, fetus (foetus), filament, fish, gestation, grafting, internal organs, invertebrate, life cycle, mammal, molluscs, naturalist, offspring, ovary, ovoviviparous, ovule, parent plant, precocial, propagating, reproduction, reptile, runners, sexual, significant, species, sponges, spores, stamen, stigma, style, Tanzania, tubers, vertebrate, viviparous, worm, zoologist, zygote</p> |
| <p>Beech Class (Y5/Y6)</p> <p>Spring 2</p> <p><u>Classifying Organisms</u></p> | <p>Pupils should be taught to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences. It states that this classification should include microorganisms, plants and animals and that pupils should give reasons for classifying plants and animals based on specific characteristics.</p> | <p><u>Living Things and their Habitats (Y6)</u></p> <ul style="list-style-type: none"> 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 | <p><u>Working Scientifically</u> Upper Key Stage 2: During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | <ul style="list-style-type: none"> To recap ways of grouping organisms according to their characteristics. To explore ways of distinguishing between organisms that have similar characteristics. To be able to classify plants according to their characteristics. To find out about Carl Linnaeus and his classification system. To explore what micro-organisms are and how they can be grouped. To be able to identify and classify organisms in the local area. | <p>algae, angiosperms, bacteria, biodiversity, botany, bryophytes, characteristics, class, classification, conservation, dichotomous key, evolution, exoskeleton, extinction family, family, fungi, genus, gymnosperms, habitat, hierarchy, invertebrate, microorganism, non-vascular plants, order, phylum, Plantae Kingdom, protozoa, species, taxonomist,</p> |

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| | | | <ul style="list-style-type: none"> recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. <ul style="list-style-type: none"> | | taxonomy, The Linnaean System, vascular plants, vertebrate, viruses |
| <p><u>Beech Class (Y5/Y6)</u></p> <p><u>Summer 2</u></p> <p><u>Healthy Bodies</u></p> | <p>Pupils are taught to identify and name the main parts of the human circulatory system, and to describe the functions of the heart, blood vessels and blood. They are also taught to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function and to describe the ways in which nutrients and water are transported within animals, including humans.</p> | <p><u>Animals, including Humans (Y6)</u></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>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 | <ul style="list-style-type: none"> To find out how scientific ideas about food and diet were tested in the past and how this has contributed to our knowledge of a balanced diet <ul style="list-style-type: none"> To investigate some different food groups and find out why a variety of foods is important for a healthy diet To find out how nutrients and water are transported in the human body To investigate what happens to the heart when we exercise and why. To investigate how muscles move the skeleton and how muscle activity requires increased blood flow. To investigate the effects of tobacco, alcohol and other drugs. To evaluate what we can do to keep our bodies healthy. | <p>addiction, amino acids, analgesics, arteries, artery, atrium, biconcave, blood vessel, capillaries, carbohydrates, cardiovascular system, circulatory system, cytoplasm, deoxygenated blood, depressant, diastole, diffusion, drug, fatty acids, glucose, haemoglobin, hallucinogens, immunity, lactate, lactic acid, lungs, membrane, minerals, nutrient, oxygenated blood, plasma, platelets, protein, pulmonary circuit, red blood cell, resting heartrate, stimulant, systemic system, systole, target heartrate, vein, ventricle, vitamins, white blood cell</p> |

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| | | | <ul style="list-style-type: none">identifying scientific evidence that has been used to support or refute ideas or arguments. | | |
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