Maple Class Year A	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
Autumn 1 Autumn 2 Year 1 season topic: Autumn	Everyday materials Year 1 and year 2 unit 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. SC1 included here: How much water do we need to add to sand to make the best sandcastle? How can we dry teddy the quickest?	wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff, brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce	Performing simple tests to explore questions, for example: 'What is the best material for an umbrella? for lining a dog basket? for curtains? for a bookshelf? for a gymnast's leotard?' Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Identifying and classifying Gathering and recording data to help in answering questions
	3. How many marbles will the boat hold?			
Spring 1 Spring 2 Year 1 season topic: winter	 4. Can we taste when we can't smell? Animals inc humans Year 1 and 2 Use different animals: 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. 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) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. 	amphibians, fish, reptiles, mammals, birds, herbivore, omnivore, carnivore, head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing, food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet	Using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying
Summer 1 Year 1 season topic: spring	Plants Yr 1 • 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.	leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem	Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying Observe closely using simple equipment with help, observe changes over time
Summer 2 Year 1 season topic: summer	Plants year 2 – what plants need to grow how seeds grow into plants 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.	deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb, seed, roots, stem, trunk, branches, growth, germinate, light, temperature reproduce, lifecycle	Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.	Observing closely, using simple equipment Identifying and classifying Gathering and recording data to help in answering questions

Maple Class Year B	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
Autumn 1 and 2 Year 1 season topic: winter	Animals inc humans Year 1 and 2 Use different animals • 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. • 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) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	amphibians, fish, reptiles, mammals, birds, herbivore, omnivore, carnivore, head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing, food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet	Using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying
Spring 1 and 2 Year 1 season topic: Autumn	 Everyday materials Year 1 and year 2 unit 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. SC1 included here: What can we mend the hole in the boat with? Do bigger bubbles fall quicker than smaller bubbles? Red cars roll faster than any other colour car? Test the best way to free the frozen toys from an ice block. 	wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff, brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce	Performing simple tests to explore questions, for example: 'What is the best material for an umbrella? for lining a dog basket? for curtains? for a bookshelf? for a gymnast's leotard?' Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Identifying and classifying Gathering and recording data to help in answering questions
Summer 1 Year 1 season topic: spring	Plants yr 1 – extend range of known plants compare and contrast plants focusing on structure of plants. • 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.	deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb, seed, roots, stem, trunk, branches, growth, germinate, light, temperature reproduce, lifecycle	Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying Observe closely using simple equipment with help, observe changes over time
Summer 2 Year 1 season topic: summer	Living things and their habitats year 2 • 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 describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including micro-habitats • 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.	living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond	Sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions like: 'is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions.	Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying Ask people questions and use simple secondary sources to find answers

Willow Class year A	Knowledge	Vocabulary	Working scientifically suggestions from NC	
Autumn 1	Light year 3 inc seasonal change in day length 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 a solid object Find patterns in the way that the size of shadows changes.		Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Autumn 2	Everyday materials year 2 Year 3's from woodpeckers to inc magnetic materials and magnets • 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.	wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff, brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce	Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	 Asking simple questions and recognising that they can be answered in different ways Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
Spring 1	Animals inc humans (how animals grow, staying healthy) (year 2) • 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.		Observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.	 Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
Spring 2	Rocks and soils EXT enquiry questions (year 3) • 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.	soils, organic matter, fossil, crystals, sandstone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure	Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed	Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Summer 1	 Sc1: Which bag is the strongest? How can I make my boat move quickest across the water tray? Do woodlice prefer the light or the dark? Which paper towel is best for mopping up? How to make raisins dance – experiment with different clear fizzy drinks. 	oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources,, construct, i – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, bar charts, tables		Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Summer 2	Plants year 3 – review year 1 and 2 learning. How water is transported, seeds. 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.	air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination environment,	Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them

Willow Class year B	Knowledge	Vocabulary	Working scientifically suggestions from NC	
Autumn 1	Animals inc humans year 3 Food nutrition, use of muscles, bones. • 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.	skeleton, skull, bones, muscles, movement, support, protection, nutrients, absorb	Identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy, and design meals based on what they find out.	 Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
Autumn 2	Rocks and soils- EXT enquiry questions (see NC) year 3 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.	soils, organic matter, fossil, crystals, sandstone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure	Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed	 Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Spring 1 and 2	Forces and magnets year 3 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.	force, contact, surface, magnetic, attract, repel, poles	Comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces, and gathering and recording data to find answers to their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.	Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Summer 1	Light in sc1 • Find patterns in the way that the size of shadows changes. 1. Which magnet is the strongest? 2. How to make a ramp to make the toy roll fastest? Slowest? Change direction? 3. People with longer legs can jump further? 4. How do sugary drinks affect teeth? (Use egg shells in different drinks) 5. How to stop an apple from turning brown (test with different liquids)	oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources,, construct, i – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, bar charts, tables		Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Summer 2	Living things and their habitats year 2 – use diff animals and micro habitats to woodpeckers. • 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 describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including micro-habitats • 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.	living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond	Sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions like: 'is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions.	 Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Identifying and classifying Ask people questions and use simple secondary sources to find answers Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations

Sycamore Class year A	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
Autumn 1	Living things and their habitats Year 4 Classify animals- Effects of nature reserves and population + development • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things.	vertebrates, invertebrates, environment, habitat, classification key	Using and making simple guides or keys to explore and identify local animals; making a guide to local living things; raising and answering questions based on their observations	 Asking relevant questions and using different types of scientific enquiries to answer them 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings
Autumn 2 Would be good to link this with the music curriculum	Digestive system (Year 4) Describe the simple functions of the basic parts of the digestive system in humans Sound wind instruments (Year 4) 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	vibration, wave, volume, pitch, tone, insulation oseophagus, stomach, small intestine, large intestine, nutrients, absorb Describe the simple functions of the basic parts of the digestive system in humans	They might draw and discuss their ideas about the digestive system and compare them with models or images. finding patterns in the sounds that are made by different objects such as saucepan lids. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
Spring 1	Electricity buzzers (Year 4) • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, switches and buzzers • Identify whether or not a buzzer will buzz in a simple series circuit, based on whether or not the buzzer 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 buzzer buzzes in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors.	appliance, battery power, main power, circuit, series, cell, battery, wire, buzzer, switch, break in circuit conductor, insulator	Observing patterns, for example, that buzzers get louder if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Spring 2 Water cycle in English Use book Witty water drop	States of matter (Year 4) Properties of materials (Year 5) Melting sieving Dissolving Rusting Compare and gp materials Ruth Benerito • 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.	Solid, liquid, gas, evaporation, condensation, particle, temperature, dissolve rust reversible irreversible	Grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. Carrying out tests to answer questions, for example, 'which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting,'. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
Summer 1	Review year 3 plants • How water is transported, seeds. • 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.	air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination environment,	Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
Summer 2	Earth and space (Year 5) Day and night Ext make shadow clocks / sundial Ext moons on other planets Ext research Ptolemy • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation	Comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.	Identifying scientific evidence that has been used to support or refute ideas or arguments

Sycamore Class year B	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
Autumn 1 and into Autumn 2	Animals inc humans teeth (Year 4) Identify the different types of teeth in humans and their simple functions Sound stringed instruments (year 4) 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	Canine, incisor, molar vibration, wave, volume, pitch, tone, insulation	Comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. Finding patterns in the sounds that are made by different objects such as elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
Autumn 2 continued	Living things and their habitats, classify plant Effects of ecology parks and deforestation Year 4 • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things.	Environment, habitat, classification key kingdom domain species	Using and making simple guides or keys to explore and identify local animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	 Asking relevant questions and using different types of scientific enquiries to answer them 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings
Spring 1	States of matter (year 4) Properties of materials (year 5) Evaporating filtering Burining Compare and gp materials Spencer Silver, • 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.	Solid, liquid, gas, evaporation, condensation, particle, temperature, dissolve rust reversible irreversible	Grouping and classifying a variety of different materials; They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting. Carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, , or for making blackout curtains?'. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	 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 Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Spring 2	Electricity light bulbs	Appliance, battery power, main power, circuit, series,	Observing patterns, for example, that bulbs get brighter if more	Asking relevant questions and using different
Spring 2	 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. 	cell, battery, wire, bulb, switch, break in circuit conductor, insulator	cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit. They might compare materials in order to make a switch in a circuit	types of scientific enquiries to answer them
Summer 1	Earth and space (Year 5) Day and night Ext make shadow clocks / sundial Ext moons on other planets Ext research Ptolemy • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation	Comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.	Identifying scientific evidence that has been used to support or refute ideas or arguments
Summer 2	Habitats (year 5) • 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.	life process, reproduction, offspring, characteristic, classification, organism, micro-organism	Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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

Oak Class	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
year A		•		
Autumn 1	Evolution (Year 6) Artic fox - Darwin and Wallace Different breeds of ? • 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.	Adaptation, evolution, characteristic, reproduction, genetics, survival	Observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses. They might analyse the advantages and disadvantages of specific adaptations, tendrils on climbing plants, brightly coloured and scented flowers.	 Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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
Autumn 2	Light (Year 6) Learning to lead to making a periscope 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.	Refraction, reflection, spectrum, rainbow	Deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They could extend their experience of light by looking a range of phenomena including rainbows, , objects looking bent in water, and coloured filters (they do not need to explain why these phenomena occur).	 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 where appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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. Using test results to make predictions to set up further comparative and fair tests. Identifying scientific evidence that has been used to support or refute ideas or arguments
Spring 1 Spring 2	SC1 focused on electricity using light bulbs (Year 6) Make traffic lights • Associate the brightness of a lamp 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, and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram.	Circuit, series, parallel voltage, volts, amps	Systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights,	 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 where appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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. Using test results to make predictions to set up further comparative and fair tests. Identifying scientific evidence that has been used to support or refute ideas or arguments
Summer 1	Animals inc humans circulatory system ext exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. (Year 6) •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	Circulatory system, heart, valve, blood vessel, vein, artery transport, oxygenated, deoxygenated lifestyle, drug	Exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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.

	Describe the ways in which nutrients and water are transported within animals, including humans.			Identifying scientific evidence that has been used to support or refute ideas or arguments
Summer 2	Living things and their habitats Plants (Year 6) • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics	Life process, reproduction, offspring, characteristic, classification, organism, micro-organism	Using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	 Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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

Oak Class	Knowledge	Vocabulary	Working scientifically suggestions from NC	Skills
year B				
Autumn 1	Light Learning leading to making a devise to see around corners (Year 6) • 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.	Refraction, reflection, spectrum, rainbow	Deciding where to place rear-view mirrors on cars; and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including, colours on soap bubbles, and coloured filters (they do not need to explain why these phenomena occur).	 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 where appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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. Using test results to make predictions to set up further comparative and fair tests. Identifying scientific evidence that has been used to support or refute ideas or arguments
Autumn 2	Evolution - How giraffes got longer necks (year 6) Mary Anning- Different breeds of dog • 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.	Adaptation, evolution, characteristic, reproduction, genetics, survival	Observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having a long or a short beak, having gills or lungs.	 Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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
Spring 1	Sc1 focused on electricity using buzzers (year 6) Make a burglar alarm • Associate 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, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram.	Circuit, series, parallel voltage, volts, amps	Systematically identifying the effect of changing one component at a time in a circuit; designing and making, a burglar alarm or some other useful circuit.	 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 where appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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. Using test results to make predictions to set up further comparative and fair tests.

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				Identifying scientific evidence that has been
				used to support or refute ideas or arguments
Spring 2	Brief review of digestive system	Oseophagus, stomach, small intestine, large	They might draw and discuss their ideas about the digestive	Recording data and results of increasing
	Describe the simple functions of the basic parts of the	intestine, nutrients, absorb	system and compare them with models or images.	complexity using scientific diagrams and labels,
	digestive system in humans			classification keys, tables, scatter graphs, bar
				and line graphs
				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
Summer 1	Animals inc humans circulatory system ext exploring the	Circulatory system, heart, valve, blood vessel, vein,	Exploring the work of scientists and scientific research about	Recording data and results of increasing
	work of scientists and scientific research about the	artery transport, oxygenated, deoxygenated lifestyle,	the relationship between diet, exercise, drugs, lifestyle and	complexity using scientific diagrams and labels,
	relationship between diet, exercise, drugs, lifestyle and	drug	health.	classification keys, tables, scatter graphs, bar
	health. (Year 6)			and line graphs
	Identify and name the main parts of the human			Reporting and presenting findings from
	circulatory system, and describe the functions of the			enquiries, including conclusions, causal
	heart, blood vessels and blood			relationships and explanations of and degree of
	• Recognise the impact of diet, exercise, drugs and			trust in results, in oral and written forms such as
	lifestyle on the way their bodies function			displays and other presentations.
	Describe the ways in which nutrients and water are			Identifying scientific evidence that has been are referred to a ref
0	transported within animals, including humans.	Life was a second with a effection of a second winting	Heiner elegation and an and here to identify a supercontract	used to support or refute ideas or arguments
Summer 2	Living things and their habitats – animals (year 6)	Life process, reproduction, offspring, characteristic,	Using classification systems and keys to identify some animals	Recording data and results of increasing
	Describe how living things are classified into broad	classification, organism, micro-organism	and plants in the immediate environment. They could research	complexity using scientific diagrams and labels,
	groups according to common observable characteristics		unfamiliar animals and plants from a broad range of other	classification keys, tables, scatter graphs, bar
	and based on similarities and differences, including		habitats and decide where they belong in the classification	and line graphs
	micro-organisms, plants and animals		system.	Reporting and presenting findings from
	Give reasons for classifying plants and animals based on specific characteristics			enquiries, including conclusions, causal relationships and explanations of and degree of
	on specific characteristics			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.
				used to support or refute ideas or arguments