Science skills progression document

EYFS scientific skills	Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
An EYFS scientist needs to understand: ● ELG: The Natural World Children at the expected level of development will: ● 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.	The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' skills must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. 'Working scientifically' skills must always be taught through and clearly related to substantive science content in the programme of study. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Year	**Unit title and skills**	**Objectives / knowledge**	**Questions that children will answer**	**Vocabulary -** Use scientific language in their work, including....	
				Previous:	**New:**
N and R: EYFS Framework and Development Matters					
ELG: **Communication and language-** **Listening, Attention and Understanding.** **Personal, Social and Emotional Development-** **Managing Self** **Understanding The World- The Natural World**			Make comments about what they have heard and ask questions to clarify their understanding. Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. 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.		
N	**Communication and language**	● Seasonal changes ● Minibeast	● Can you describe the weather?		

			• Can you name some minibeasts? • What do they look like? • What is their habitat?		
	Physical Development	• Make healthy choices about food, drink, activity and toothbrushing.	• What does healthy eating mean? • Can you name some healthy foods? • Why do we need to drink water? • How can we keep our teeth and bodies healthy?		
	Understanding The World	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.	• What natural materials can you see? • What does a plant need to grow? • How can we look after our natural world? • What are the differences in materials? • What can you make using these materials? • What are the different forces that you can feel?		
R	**Communication and language**	• Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Use talk to work out problems and organise thinking and activities. • Explain how things work and why they might happen. • Use new vocabulary in different contexts.	Asks who, what, when and why questions. I wonder… I predict… I think…		
	Physical Development	• Know and talk about the different factors that support their overall health and wellbeing: -regular physical activity -healthy eating - toothbrushing -sensible amounts of 'screen time' -having a good sleep routine -being a safe pedestrian	What is exercise? Why do we need to exercise? What happens when we do? How can we keep our bodies healthy? What food helps us to grow? How many times a day should you brush your teeth and why? How much screen time should you be having each day? Why is sleep important? How can we safely cross the road?	healthy body teeth cross road lights traffic red green amber	**exercise** **grow** **heart** **pumping** **blood** **fluoride** **enamel** **bones** **vitamins** **minerals** **repair** **pedestrian** **crossing** **island**
	Understanding The World	• Explore the natural world around them.	Can you describe the natural world around you?	seasons autumn winter	seasons autumn winter

		• Describe what they see, hear and feel while they are outside.
		• Recognise some environments that are different to the one in which they live.
		• Understand the effect of changing seasons on the natural world around them.
		  • Understand the key features of the life cycle of a plant and an animal.
		  • Talk about the differences between materials and changes they notice.
		  • Floating and sinking
			Can you describe the similarities and differences between our country and another?
			
			Can you name the seasons?
			
			Can you describe how you know what season it is? What happens?
			
			Can you describe the life cycle of a plant?
			
			Can you describe the life cycle of a duck/caterpillar?
			
			Can you describe the difference between materials and how it changes?
			
			What is floating and sinking?
				spring
				summer
				weather
				rain
				cloudy
				cold
				sunny
				leaves
				sun
				water
				grow
				cold
				materials
				mix
				roll
					spring
					summer
					weather
					rain
					cloudy
					cold
					sunny
					colours
					leaves
					light
					shade
					sun
					warm
					cool
					water
					space
					grow
					shoot
					root
					stem
					float
					sink
					materials
					mix
					batter
					roll

Years 1-6: National Curriculum supplemented by CUSP

Year	Unit title and skills	Objectives / knowledge	Questions that children will answer	Vocabulary - Use scientific language in their work, including....	
				Previous:	**New:**
1	**Autumn term 1: Seasonal changes and daily weather** **This term, the children should be able to…** • Ask simple questions and recognise that they can be answered in different ways • Use practical science to raise questions about: how seasons are similar and different. How seasons change our surroundings. • Observe changes across the four seasons. • • Strong Start: Observing closely, using simple equipment - https://www.unity-curriculum.co.uk/wp-content/uploads/2023/07/Strong-Start-Science-Observation-KS1-Autumn-Cycle-1-1-1.pdf	**This term, the children should learn to…** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• What are the four seasons? • What's the weather like in Autumn, Winter, Spring and Summer? • Why does day become night?	sun rain snow cloud day night	month season spring summer autumn winter dawn dusk mild rotate soaked weather
	Autumn term 2: Introduce Plants – (trees) **This term, the children should be able to…** • Observe plants closely using simple equipment. • Make comparisons between different plants and begin to sort them. • Carry out simple tests –using comparative fair testing. • Begin to make predictions. • Use simple measurements and equipment to gather data. • Record simple data (bar charts, pictograms, tall charts etc.) • Observe changes over different periods of time and talk about what has happened. • Notice patterns and relationships (with help). • Record and communicate findings from relevant enquiries (including research) in a range of ways • begin to use simple scientific language (with help).	**This term, the children should learn to…** • 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.	• What are the parts of a plant? • What are wild plants and where do you find them? • What are garden plants and where do you find them? • What makes a tree? • What types of trees are there? (Trees that live around my school) • What's the difference between trees?	plant tree fruit flower roots leaf garden living grow	light shade Sun warm cool water space grow healthy bulb germinate shoot seedling

	Spring term 1: Animals, including humans **This term, the children should be able to…** ● Use science experiences to explore the world around them. ● Make comparisons between different living things and begin to sort them. ● Record and communicate findings from relevant enquiries (including research) in a range of ways and begin to use simple scientific language (with help).	**This term, the children should learn to…** ● 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.	● What are the features of an animal? ● What features do mammals have? ● What features do birds/ amphibians/ reptiles/ fish have? ● Can you give examples of birds/ amphibians/ reptiles/ fish? ● Which food is eaten by a herbivore/ carnivore/ omnivore? ● Are humans animals/ mammals? ● What are the 5 senses that humans have?	animal human living plant	blood senses young feathers fur scales mammal amphibian reptiles herbivore carnivore omnivore
	Spring term 2: Everyday materials **This term, the children should be able to…** ● Gather simple secondary sources (e.g. internet, books, visitors) to find answers. ● Identify and classify materials ● Notice patterns and relationships between different materials.(with help) ● Make comparisons between ● different objects and materials and begin to sort them. ● Carry out simple tests.	**This term, the children should learn to…** ● 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.	● Can you name some materials? ● What material are some everyday items made of? ● Describe how plastic/ wood/ fabric feels. ● What does waterproof mean? ● What do the words opaque/ transparent/ translucent mean? ● Can you give examples of materials which are opaque/ transparent/ translucent? ● Why is fabric suitable to make towels with?	hard soft stretch bend	absorb rough smooth waterproof metal plastic materials properties flexible transparent opaque physical
	Summer term 1: Revisit Animals Including Humans See above	See above	See above	See above	See above
	Summer term 2: Revisit plants See above	See above	See above	See above	See above
2	**Autumn term 1- Living things and their habitats** **This term, the children should be able to…** ● Begin to make predictions. ● Use their observations and ideas to suggest answers to questions. ● Gather and record data to help in answering questions. ● Identify and classify living things according to their habitats. ● Make comparisons between different objects, materials and living things and begin to sort them. Ask questions and use simple	**This term, the children should learn to…** ● explore and compare the differences between things that are living, dead, and things that have never been alive. ● identify that most living	● What are the features common to all living things? ● What does respiration mean? ● What factors do plants need to survive? ● What is a habitat/ microhabitat? ● Can you give examples of habitats? ● What does a food chain show? ● Can you give an example of a simple food chain? ● What is a producer/ consumer/ prey/ predator?	habitat animal plant living	thrive depend producer consume prey predator oxygen nutrition respiration sensitivity reproduce excretion

	secondary sources (e.g. internet, CD-ROMS, books, visitors) to find answers. Strong start - Asking simple questions and recognising tha they can be answered in different ways - https://www.unity-curriculum.co.uk/wp-content/uploads/2024/05/Strong-Start-Science-Asking-simple-questions-and-recognising-that-the-can-be-answered-in-different-ways-KS1-Spring-Cycle-2.pdf	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 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.			
	Autumn term 2- Animals including humans **This term, the children should be able to…** ● Ask simple questions and recognise that they can be answered in different ways. ● Ask questions and use simple secondary sources (e.g. internet, CD-ROMS, books, visitors) to find answers. ● Use practical science to raise questions about: how animals are similar and different / How they change and how they survive. ● Make comparisons between different living things and begin to sort them.	**This term, the children should learn to…** ● 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.	● What are vertebrates/ invertebrates? ● What characteristics do humans have? ● What does metamorphosis mean? ● Can you describe the lifecycle of a chicken? ● Can you describe the lifecycle of humans? ● What do animals need to survive? ● Can animals make their own food? ● Why do we exercise our bodies?	mammal amphibian reptile carnivore herbivore omnivore	healthy survive exercise heart lungs muscles hygiene larva pupa vertebrates invertebrates metamorphosis
	Spring term 1- Uses of everyday materials **This term, the children should be able to…** ● Make comparisons between different objects, materials and begin to sort them. ● Use practical science to begin to work with different scientific enquiries - comparative (fair) testing, pattern seeking. ● Begin to make predictions. ● Use their observations and ideas to suggest answers to questions. ● Gather and record data to help in answering questions.	**This term, the children should learn to…** ● 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	● What are the features of wood/ glass/ metal/ plastics/ ceramics/ fabrics? ● Which material can be squashed/ twisted/ stretched? ● What are the uses of each material? ● What does repel/ absorbent/ waterproof mean? ● What is the difference between natural and artificial material? ● Describe the features of rocks.	materials physical properties flexible transparent waterproof opaque absorb	artificial brittle extracted fabric manufactured natural ceramic durable inflexible reflective rigid translucent

		stretching.			
	Spring term 2- Plants **This term, the children should be able to…** ● Ask simple questions and recognise that they can be answered in different ways. ● Use practical science to raise questions about: how plants are similar and different / How plants grow best and how their lifecycle. ● Use practical science to begin to work with different scientific enquiries – observation over time.	**This term, the children should learn to…** ● 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.	● What is a seed? ● What does germination mean? ● What conditions do seeds need to germinate? ● What is the name of a young plant? ● What is the difference between a seed and a bulb? ● What does a plant need to be healthy? ● How do you know if a plant is unhealthy? ● Do plants move?	bud trunk stem branch bark seed nutrients respiration reproduction excretion deciduous evergreen	wither dormant mature bulb anchor sustain germination perennial carbondioxide glucose clone
	Summer term 1- Revisit living things and their habitats + everyday materials See above	See above	See above	See above	See above
	Summer term 2- Revisit plants and animals, including humans See above	See above	See above	See above	See above
3	**Autumn term 1- Rocks** **This term, the children should be able to…** ● Ask relevant questions and use different types of scientific enquiry to answer them. ● Suggest criteria for grouping, sorting ● and classifying information. ● Gather, record, classify and present data in a variety of ways to help answer questions. ● Set up simple practical enquiries- ● observation over time ● Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Strong start - What is a comparative test? What are variables? - https://www.unity-curriculum.co.uk/wp-content/uploads/2023/09/Strong-Start-Science-Comparative-tests-LKS2-Autumn-Cycle-1-.pdf	**This term, the children should learn to…** ● 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.	● Can you name each part of a volcano? ● How are sedimentary/ metamorphic/ igneous rocks formed? ● Can you name 2 types of metamorphic, sedimentary/ igneous rocks? ● What happens when an acid (vinegar) is dropped onto limestone or chalk rock? ● Can you name each layer of soil? ● Which rocks could you find fossils in? ● What are fossils?	materials properties physical	cemented compacted decay prehistoric soil transform fossil igneous magma metamorphic minerals sedimentary
	Autumn term 2- Animals including humans **This term, the children should be able to…** ● Ask relevant questions. ● Decide which type of enquiry to use to answer the questions they come up with. ● Suggest criteria for grouping, sorting and classifying information. ● Identify differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. ● Use scientific language to discuss ideas and communicate findings.	**This term, the children should learn to…** ● 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	● Why do humans need water? ● Use the food pyramid to explain how much of each food type we should be consuming. ● How do carbohydrates/ proteins/ fats/ vitamins help us? ● What is the purpose of the human skeleton? ● Can you name some bones in our body? ● What are the functions of bones? ● What are the 3 main types of muscles in our body? ● What happens to our biceps and triceps for it to allow our arms to move?	vertebrate invertebrate flexible muscles heart absorb	mineral skeleton skull voluntary involuntary nerves biceps triceps vertebrae vitamins proteins carbohydrates

		movement.			
	Spring term 1- Forces and magnets **This term, the children should be able to…** ● Ask relevant questions. ● Make predictions ● Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. ● Suggest criteria for grouping, sorting and classifying information. ● Draw simple conclusions from data or relevant enquiries (including research) to answer questions (with help).	**This term, the children should learn to…** ● Compare how things move on different surfaces. ● Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. ● Observe how magnets attract or repel each other and attract some materials and not others. ● Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. ● Describe magnets as having 2 poles. ● Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	● Give examples of non-contact forces. ● What is friction / resistance? ● How do rough/smooth surfaces affect friction/resistance? ● What happens when two magnets with north poles/south poles face each other? ● What happens when the north pole and south pole face each other? ● Explain how a magnetic field is formed. ● Which materials are magnetic /non-magnetic?	materials properties physical metal	consequence contact force attract north south magnet resistance friction repel pole magnetic field
	Spring term 2- Plants **This term, the children should be able to…** ● Ask relevant questions. ● Decide which type of enquiry to use to answer the questions they come up with. ● Make predictions. ● Set up simple practical enquiries. ● Suggest how to plan a fair test. ● Make decisions about observations - what to make, how long to make them for and what equipment to use (with help). ● Collect data from observations and measurements by using notes, tables and standard units. ● Report on findings from enquiries, including oral and written explanations, displays or presentations of results.	**This term, the children should learn to…** ● 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.	● What are the 4 major parts of a plant? ● What do plants need to survive? ● How do plants get their food? ● What do plants need to make their food? ● What do plants excrete? ● How does water travel through a plant? ● What is the role of flowers? ● What are the male/ female parts of a flower? ● What is pollination? ● Which factors help with pollination? ● What are the common types of pollination?	thrive absorb stem nutrients perennial germination	adapt essential glucose transport variety vital transpiration pollination stoma stamen pistil photosynthesis
	Summer term 1- Light	**This term, the children should learn to…**	● Can you give examples of light sources?	light materials	absence cast shadow

	This term, the children should be able to… ● Ask relevant questions. ● Set up simple practical enquiries, comparative and fair tests. ● Make predictions ● Make systematic and careful observations and, where appropriate, take accurate measurements using standard units. ● Identify simple changes, patterns, similarities and differences in data (with help). ● Gather, record, classify and present data in a variety of ways to help answer questions. ● Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. ● Use results to draw simple conclusions.	● 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.	● Using a diagram, explain how light helps to see an object. ● Are shiny objects light sources? ● Define what darkness is. ● describe whether transparent/ translucent /opaque objects allow light through. ● How are shadows formed? ● What happens to the shape of a shadow as you move the light source closer/further away from the object?	opaque shiny	impenetrabl e reflect shadow source light constant dependent independent illuminate translucent variable
	Summer term 2- Revisit Rocks See above	**This term, the children should learn to…** ● 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.	See above	See above	See above
4	**Autumn term 1- Living things and their habitats** **This term, the children should be able to…** ● Decide which type of enquiry to use to answer the questions they come up with. ● Suggest criteria for grouping, sorting and classifying information. ● Sort information into criteria that they have decided. ● Recognise when secondary sources of information should be used when their questions cannot be answered practically. ● Collect data from observations and measurements by using notes, tables and standard units. Strong start: How do scientists record their knowledge and understanding? - https://www.unity-curriculum.co.uk/wp-content/uploads/2023/12/Strong-Start-Science-Recording-findings-LKS2-Spring-Cycle-1.pdf	**This term, the children should learn to…** ● 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.	● What characteristics do living things have in common? ● What is an organism? ● What are vertebrates? ● Can you name the 5 animal groups that are vertebrates? ● Which vertebrates are warm/cold blooded? ● What are invertebrates? ● Can you name the four groups of invertebrates? ● Name the two groups that plants are classified in. ● Can you give examples of flowering/non flowering plants? ● How do scientists explain and sort animals and plants? ● What is a habitat?	habitat micro-habit at depend organism reproductio n	classification interdepend ence environment interact beneficial hierarchy vertebrate invertebrate biotic ecosystem species niche

	Autumn term 2- States of Matter **This term, the children should be able to…** ● Ask questions. ● Suggest criteria for grouping, sorting and classifying information. ● Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. ● Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. ● Draw simple conclusions from data or relevant enquiries (including research) to answer questions (with help). ● Recognise when secondary sources of information should be used when their questions cannot be answered practically.	**This term, the children should learn to…** ● 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.	● What are the 3 states of matter? ● What are the features of solid/ liquid/ gas? ● Describe how the particles are arranged for each state of matter. ● What happens to the particles when we melt liquid? ● What is evaporation/ condensation? ● How can we speed up evaporation? ● How are these concepts applied in the water cycle?	heat cool temperature change freeze compare materials properties	permanent particle solid liquid gas vapour evaporate condense melt matter state volume
	Spring term 1- Animals, including humans **This term, the children should be able to…** ● Ask relevant questions. ● Decide which type of enquiry to use to answer the questions they come up with. ● Set up simple practical enquiries, comparative and fair tests. ● Make predictions. ● Collect data from observations and measurements by using notes, tables and standard units. ● Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. ● Suggest criteria for grouping, sorting and classifying information.	**This term, the children should learn to…** ● 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.	● What are the four main types of teeth humans have? ● describe the shape and function of incisors, canines, premolars and molars? ● What does saliva contain? How does it help digestion? ● Why do carnivores/ herbivores have different teeth structures? ● Which organs are part of the digestive system? ● What happens at each stage of digestion? ● Can you describe a food chain? What do the arrows represent? Which way do the arrows go? ● What is a producer/ prey/predator?	skull skeleton carbohydrates vitamins proteins absorb	expel compact digestion acid stomach intestines incisor canine molar enzyme saliva peristalsis
	Spring term 2- Electricity **This term, the children should be able to…** ● Suggest criteria for grouping, sorting and classifying information. ● Use practical science to ask questions about the world around them. ● Make predictions. ● Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. ● Collect data from observations and measurements by using notes, tables and standard units. ● Help make decisions on how to record and analyse the data. ● Draw simple conclusions from data or relevant enquiries (including research) to answer questions (with help). ● Find ways of making improvements.	**This term, the children should learn to…** ● 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	● Which appliances are mains/battery powered? ● What does current mean? ● What are each end of a battery called? ● What are components? Give examples. ● What components does a simple circuit contain? ● What is an insulator/conductor? ● What is the role of wires in a circuit? ● Which materials are good conductors/insulators? ● What could affect the brightness of a bulb?	perimeter complete completion recharge	associate identify portable effect appliance series component electrical conductor electrical insulator circuit hypothesis variable

		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.			
	Summer term 1- Sound **This term, the children should be able to…** ● Ask relevant questions. ● Decide which type of enquiry to use to answer the questions they come up with – pattern seeking. ● Make predictions. ● Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. ● Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. ● Find ways of making improvements. ● Use scientific language to discuss ideas and communicate findings.	**This term, the children should learn to…** ● 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.	● How does sound travel? ● What can sound travel through? ● How fast does sound travel in air? ● Why does sound get fainter as it travels further away from the source? ● What does pitch mean? ● Can you change the pitch or loudness of a sound? ● What do high and low pitch sound waves look like in a diagram?	particle matter solid liquid gas energy	produce property source frequent regular affect vibrate pitch volume medium vacuum sound wave
	Summer term 2- Revisit Living things and their habitats See above	**This term, the children should learn to…** ● 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.	See above	See above	See above
5	**Autumn term 1- properties and changes of materials** **This term, the children should be able to…** ● Use their scientific experiences to select	**This term, the children should learn to…** ● Compare and group	● What is a conductor? ● What is an insulator? ● Describe what hardness/solubility means? ● Which materials are good	transparent transparency translucent thermal magnetism	property particle separate combine recover

	and plan the most appropriate line of enquiry to answer scientific questions. ● Plan including recognising and controlling variables where necessary. ● Make predictions and hypotheses. ● Identify when further comparative tests and observations might be needed. ● Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. ● Report and present findings from enquiries, including conclusions, causal relationships and explanations of, and degrees of trust in results, in oral and written forms such as displays and other presentations. ● Use test results to make predictions to set up further comparative and fair tests. ● Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ● Make decisions about what observations to make. ● Make decisions about what measurements to make and how long to make them for and whether to repeat them. Strong Start: Recognising and controlling variables in a fair test - https://www.unity-curriculum.co.uk/wp-content/uploads/2023/09/Strong-Start-Science-Recognising-and-controlling-variables-UKS2-Autumn-Cycle-1-.pdf	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.	conductors/insulators? ● Which materials are transparent/ opaque /translucent? ● What is a solution/mixture? ● What does dissolve mean? ● How do you separate salt from water in a mixture? ● How do you separate water from soil in a mixture? ● Give examples of reversible and irreversible changes? ● Is a chemical change reversible/irreversible?		comparative atom molecule chemical physical reversible reaction
	Autumn term 2- Animals including humans. **This term, the children should be able to…** ● Ask meaningful science questions. ● Research ● Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. ● Report and present findings from enquiries, including conclusions, causal relationships and explanations of, and degrees of trusts in results, in oral and written forms.	**This term, the children should learn to…** ● Describe the changes as humans develop to old age.	● Which type of mammals are humans? ● Explain the stages in human life cycle ● What does adolescence / gestation mean? ● What terms are used to describe an unborn baby? ● Which female organ are babies born in? ● How long is the average human gestation period? ● What does puberty mean? ● Which animal has the longest gestation period? ● What does life expectancy mean?	chronology multiply	development diverse unique generation mature equipped adolescence gestation puberty embryo fetus womb
	Spring term 1- Forces **This term, the children should be able to…** ● Ask meaningful questions. ● Plan different types of scientific enquiries to answer questions, including recognising and controlling	**This term, the children should learn to…** ● Explain that unsupported objects fall towards the	● What is friction? ● What is air resistance? ● What are the factors that affect air resistance? ● What happens if you increase the surface area of an object falling through the air?	force magnetism attract repel friction resistance	opposite reaction advantage displace weight mass pulley

	variables where necessary. ● Talk about how scientific ideas have developed over time. ● Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ● Report and present findings from enquiries, including conclusions, causal relationships and explanations of, and degrees of trust in results, in oral and written forms such as displays and other presentations. ● Use test results to make predictions to set up further comparative and fair tests.	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.	● What is water resistance? ● What is upthrust? ● What did Galilei discover? ● What are levers? Can you give examples? ● What are pulleys? ● Can you name the two types of gears? ● What are gears useful for? ● What laws of physics did Isaac Newton discover?		gear pivot fulcrum lever upthrust
	Spring term 2- Earth and space **This term, the children should be able to…** ● Ask meaningful scientific questions. ● Talk about how scientific ideas have developed over time. ● Recognise which secondary sources will be most useful to research ideas and begin to separate opinion from fact. ● Report and present findings from enquiries, including conclusions, causal relationships and explanations of, and degrees of trust in results, in oral and written forms such as displays and other presentations. ● Identify scientific evidence that has been used to support or refute ideas or arguments. ● Talk about how scientific ideas have developed over time.	**This term, the children should learn to…** ● 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.	● Which planets are considered rocky/ gas giants? ● What does orbit mean? ● How long does the earth take to orbit the sun? ● What is the dwarf planet called? ● What are the different phases of the moon? ● How long does the earth take to spin on its own axis? ● Describe how day and night happens. ● Explain why the sun appears at different positions across the sky, during the day. ● Why do we have different seasons?	anticlockwise hemisphere equinox	luminous phenomenon attraction approximately apparent relative orbit axis crescent gravitational waxing waning
	Summer term 1- Living things and their habitats **This term, the children should be able to…** ● Ask meaningful scientific questions. ● Use and then develop scientific keys and information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment . ● Recognise which secondary sources will be most useful to research ideas and begin to separate opinion from fact. ● Use their scientific experiences to select and plan the most appropriate line of enquiry to answer scientific questions. ● Use results from relevant enquiries (including research) to write conclusions and explanations.	**This term, the children should learn to…** ● 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.	● What are the characteristics common to most mammals/ amphibians/ insects/ birds? ● How do insects transform from larva to adults? ● How do most mammals reproduce? ● What was Maria Merion interested in studying/ observing? ● What does entomology mean? ● What is the difference between sexual and asexual reproduction? ● Do birds give birth to live young? ● What are the advantages of sexual/ asexual reproduction? ● Which animals can reproduce asexually? ● How do plants reproduce? ● What part of the plant directly helps with sexual reproduction? ● How do plants reproduce asexually?	pupa larva reproduction pollinate pollination	deduce process re-form transform adolescence contrast embryo sexual metamorphosis incubate biochemical fertilisation
	Summer 2- Revisit living things and their habitats **This term, the children should be able to…**	**This term, the children should learn to…** ● Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	● Refer to questions above	refer to vocabs above	refer to vocabs above

		• Describe the life process of reproduction in some plants and animals.			
6	**Autumn term 1- Electricity** **This term, the children should be able to…** • Use their scientific experiences to select and plan the most appropriate line of enquiry to answer scientific questions. • Recognise when and how to set up fair tests and explain which variables need to be controlled and why. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • • Strong Start: Recording data and results using bar graphs, line graphs and scatter graphs - https://www.unity-curriculum.co.uk/wp-content/uploads/2024/05/Strong-Start-Science-Recording-data-and-results-using-different-graphs-UKS2-Summer-Cycle-2.pdf	**This term, the children should learn to…** • 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.	• What is an atom? • What does an atom contain? • What would you find in the nucleus of an atom? • Are protons/electrons positively or negatively charged? • Which terminal of a cell/battery does electricity come out from? • What are the scientific symbols for each component? • What would happen if you add/remove a cell from the circuit? • What would happen if you add/remove a component e.g. bulb from a circuit? • How could opening/closing a switch impact a circuit? • Is there sufficient voltage in a cell for the component to work?	circuit current conductor insulator	component consequence systematic represent source generate proton neutron electron terminal series voltage
	Autumn term 2- Animals including humans- Circulatory system **This term, the children should be able to…** • Ask meaningful questions • Identify scientific evidence that has been used to support or refute ideas or arguments. • Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.	**This term, the children should learn to…** • 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.	• What are the main components of blood? • What are the functions of each component? • What is the composition of each component? • What do red blood cells carry? • What do cells need to survive? • What are the main parts of our circulatory system? • In which order does our circulatory system transport blood? • Can you explain what is happening in a diagram of the circulatory system? • explain what oxygenated blood and deoxygenated blood means? • What is each chamber of the heart called? • What are the functions of arteries and veins? • Who were the first scientists to discover the circulatory system? • Why do we need to eat a healthy diet? • Why are proteins important in our diet? • What lifestyle choices can we adopt to live a healthier life?	skeleton, muscles digestion nutrition oxygen	cell chamber system circulation vessel clot plasma platelet artery capillary vein ventricle

	Spring term 1- Animals including humans - Water transportation **This term, the children should be able to…** ● Ask meaningful questions ● Identify scientific evidence that has been used to support or refute ideas or arguments. ● Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.	**This term, the children should learn to…** ● describe the ways in which nutrients and water are transported within animals, including humans.	● Which organs play a key role in the digestive system? ● Which organs play a key role in the circulatory system? ● Which organs play a key role in the urinary system? ● What is the role of the kidneys? ● What are toxins transformed into by the kidneys? ● What are the signs of dehydration? ● What does dark-coloured urine signify? ● How many litres of blood do the kidneys clean daily?	system digestion circulation muscle	filter expel substance function regulate transform kidney bladder urine excretion toxin nutrient
	Spring term 2- Light **This term, the children should be able to…** ● Make predictions and hypotheses. ● Make decisions about what observations to make. ● Make decisions about what measurements to make and how long to make them for and whether to repeat them. ● Make decisions about how to record data and information. ● Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeated readings where appropriate. ● Use results from relevant enquiries (including research) to write conclusions and explanations. ● Recognise which secondary sources will be most useful to research ideas and begin to separate opinion from fact.	**This term, the children should learn to…** ● 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.	● Describe how light travels ● Can you draw a diagram to explain how we see light? ● How fast does light travel? ● What happens when light hits a mirror? or a shiny surface? ● How is a shadow formed? ● What happens to the size of the shadow as you move the light source closer/further away from the object? ● Explain what happens when light hits a prism? ● What colours are in the visible spectrum of white light? ● Which scientist invented the colour wheel? What does it demonstrate? ● What is the angle of incidence? ● What happens when light beams reflect off rough surfaces? ● What is a pigment? ● Using a diagram, explain the process of refraction.	reflect absence presence transparent translucent opaque visible	impurity emit absorb constituent filter artificial refraction incidence spectrum prism lux pigment

	Summer term 1- Living things and their habitats **This term, the children should be able to…** ● Use their scientific experiences to select and plan the most appropriate line of enquiry to answer scientific questions. ● Use and then develop scientific keys and information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. ● Research ● Make decisions about how to record data and information. ● Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	**This term, the children should learn to…** ● 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. ● Includes weekly wander and monthly meander templates for enhanced provision.	● What is the meaning of taxonomy? ● Which scientist came up with the taxonomy system? ● What does the taxonomy system classify? ● What subheadings does the taxonomy system consist of? ● What type of animal/species do kingdom/phylum/class identify? ● What is the difference between vertebrates and invertebrates? ● Can you name animals that are vertebrates/ invertebrates? ● What is a microorganism? ● What kingdoms contain microorganisms? ● What are the advantages/ disadvantages of bacteria? ● Can you explain what a virus is? ● How do we classify plants? ● What are the characteristics of flowering/ non-flowering plants? ● Can you name 3 flowering/ non-flowering plants? ● Can you identify the animal phylum from the flowchart/diagram?	environment vertebrate invertebrate interdependence ecosystem	characteristic interdependence specific categorise primitive hierarchy fungus arthropod taxonomy kingdom phylum genus
	Summer 2-Evolution and inheritance **This term, the children should be able to…** ● Use their scientific experiences to raise different kinds of questions. ● Report and present findings from enquiries, including conclusions, causal relationships and explanations of, and degrees of trust in results, in oral and written forms such as displays and other presentations. ● Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. ● Talk about how scientific ideas have developed over time.	**This term, the children should learn 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. ● 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.	● What clues/evidence do we refer to when studying living things that lived millions of years ago? ● Where did the first living things live? ● Can you identify the four different types of fossil? ● What is the difference between each type of fossil? ● Why is it hard for humans to explain early life in oceans? ● Can you explain the order in which the animal kingdom evolved? ● How long ago did dinosaurs live on earth? ● What is DNA? ● What information does DNA carry? ● Is DNA inherited or acquired? ● What is the difference between acquired and inherited characteristics? ● What is the difference between sexual and asexual reproduction? ● What is the difference between variation and diversity? ● Which scientist wrote a book on evolution?	variation reproduce descendant diversity	characteristic adaptation acquire theory modify generation evolve survival species clone inherit fossil asexual