Amotherby Science Knowledge Progression Grid

Core Knowledge Question: How does this Science learning affect us?

EYFS	
EYFS End Points (informed by Early Learning Goals)	**'I can/will…, I/We will…' and 'I know…' Statements**
Personal, Social and Emotional Development **ELG: Speaking** • Offers explanations for why things might happen. **ELG: Managing Self** • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **ELG: People, Culture and Communities** • Describes the immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. **Understanding the World** **ELG: The Natural World** • Explores the natural world around them, making observations and drawing pictures of animals and plants. • Knows some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understands some important processes and changes in the natural world around them, including the seasons and changing states of matter.	**Linking to Y1 Seasonal Change (Part 1) Topic:** • We will talk about the seasons and seasonal changes. • We will observe and describe plant growth and the life cycle of butterflies. **Linking to Y1 Materials Topic:** • I will develop my own ideas and decided which materials to use to express them (when making props for a play). • I will use junk modelling, paint and other materials to make a selection of transport vehicles. • I will develop my small movement (fine motor) skills: threading, pouring, stirring, constructing and using malleable (mouldable) materials. **Linking to Y1 Animals Topic:** • We will learn about different habitats and the animals that live in these habitats, linking our understanding to why different animals are found in different countries. • We will explore the natural world, making observations and drawing pictures of animals and plants having identified the local habitats and contrasting environments. **Linking to Y1 Plants Topic:** • We will create miniature gardens and discuss ways in which we can care for the garden, as well as the environment. • We will learn about the life cycle of a butterfly and created a butterfly garden with flowering plants. **Linking to Seasonal Change (Part 2) Topic:** • I know when each of the four seasons occurs. • I know what the features of autumn are and what happens to trees in this season. • I know that days are longer in summer (sunshine hours) than in winter • I can observe changes across the four seasons.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SU MMER 1	SUMMER 2
EYFS	**Ourselves** **People who help us**	**Celebrations**	**Traditional Tales**	**Chicks** **Local Area** **Arctic** **Jungle**	**Plants and Growing**	**The seaside** **Minibeasts**
	Autumn **-Exploring senses** **-Explore the natural world around them**	**-Freezing/ melting** **-Explore the natural world around them**	**Freezing/ melting** **-Properties of materials** **-Explore the natural world around them**	**Chicks- Hatching Chicks** **– Observing over time** **-Explore the natural world around them**	**What we can do to help the environment** **-Explore the natural world around them**	**Changing seasons** **-Explore the natural world around them**
	Knowledge:	**Knowledge:**	**Knowledge:**	**Knowledge:**	**Knowledge:**	**Knowledge:**
	Talk about members of their immediate family and community. Name and describe people who are familiar to them.	Describe what they see, hear and feel whilst outside Recognise some environments that are different to the one in which they live .	Explore the natural world around them. Describe what they see, hear and feel whilst outside Manipulate Materials to achieve an effect.	Show care and concern for living things Draw information from a simple map. Explore the natural world around them. Recognise some environments that are different to the one in which they live.	Make observations of plants Show care for the world around them Describe what they see, hear and feel whilst outside.	Understand the effect of changing seasons on the natural world around them. Observe changes across the four seasons
Vocabulary	Animals- including humans	Sound States of matter	Materials	Animals Habitats	Plants	Seasonal Changes Habitats
	head eyes nose mouth ears hands fingers feet toes arm leg Senses	Loud Quiet Volume	material metal wood rock plastic hard soft material smooth shiny rough	Animal fish bird human Animal body parts: Legs, tail, face, nose, ears, fur, skin, hair, paw, fin, wing.	tree petals trunk roots leaves flowers seed grow plant	Summer day Spring dark Autumn light Winter night Season Moon Sun Habitats Woodland, Seaside Microhabitats: - Log, stone, tree, dead leaves, soil.

	Smell touch Hear taste see	Sound Freeze Melt Cold Hot Warm Change		Habitats desert, ocean, jungle, Arctic.		

	Autumn 1	**Autumn 2**	**Spring**	**Summer 1**	**Summer 2**

YEAR 1	Topic: Everyday Materials	Seasons (Part 1)	Seasons Animals Including Humans	Topic: Plants	Topic: Seasons (Part 2)
	Knowledge coverage:	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**
	• 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.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• 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.	• 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.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.
	Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**
	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, card/cardboard, hard, soft, stretchy, stiff, bendy, floppy, waterproof, rough, smooth, shiny, dull, see-through, not see-through	Weather sunny, rainy, windy, snowy, cloudy Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves Senses touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area: Oak Holly Willow Birch	Weather sunny, rainy, windy, snowy, cloudy Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length

			Fish, Reptiles, Mammals, Birds, Amphibians Herbivore, Omnivore, Carnivore Name and identify a range of animals in each animal group i.e. Dog - Mammal	Chestnut Names of garden and wild flowering plants in the local area: Daisy Buttercup Rose Daffodil Fruit	
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**
	Know the name of the material an object is made from Know about the properties of everyday materials and use these to describe and compare objects.	Name the 4 Seasons Describe the weather associated with the seasons. Knows when each of the four seasons occurs Knows what the features of autumn are and what happens to trees in this season Knows that days are longer in summer (sunshine hours) than in winter Observe changes across the four seasons	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Know and classify animals based on what they eat (Carnivore, Herbivore, Omnivore) Know the name of the human body parts that can be seen. Know the senses associated with body parts.	Label and name the parts of a tree: trunk, roots, leaves, branches. Label and name the parts of a plant: petals, stem, leaves, root. Know and name a variety of Trees, garden and wild flowering plants in the local area	Knows about and can describe weather in different seasons over a year. Knows and can describe the features of different seasons and how they change through the year.
KS1 Skills End Points (Working scientifically): ● Asks simple questions and recognises that they can be answered in different ways.	● Compare and group together a variety of everyday materials based on their simple physical properties. ● Classify objects made of one material in different ways e.g. a group of objects made of	● Gather and record data about weather conditions in autumn, drawing on observation and using simple equipment (such as a container to measure rainfall)	● Make first hand close observations of animals from each of the groups (Flamingo Land) ● Compare the structure of two animals from the same or different group e.g. wings,	● Can sort and group parts of plants using similarities and differences e.g. the shape of leaves, the colour of the flower/blossom.	Collect information about the weather regularly throughout the year. Present this information in tables and charts to compare the weather across the seasons. ● Collect information,

Observes closely, using simple equipment. ● Performs simple tests. ● Can identify and classify. ● Uses their observations and ideas to suggest answers to questions. ● Gathers and records data to help in answering questions.	metal. ● Classify one type of object made from a range of materials e.g. a collection of spoons made of different materials. ● Chosen an appropriate method for testing an object for a particular property. ● Use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent? ● Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters.	● Use data to create a pictogram and use this to describe changes in day length over the seasons. ● Use their evidence to describe some other features of the weather, surroundings, themselves, animals, and plants found in autumn. ● Demonstrate their knowledge in different ways e.g. creating seasonal artwork, creating a pictogram (and use this to ask and answer related questions).	feathers, vertebrates/ invertebrates. ● Classify animals using a range of features e.g. lay eggs/give birth to live young. herbivore, omnivore (these terms do not have to be explicitly taught). ● Identify animals by matching statements to named images. ● Take measurements of parts of the body and present results in a table to interpret. ● Conduct simple sense experiments. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match?	● Can use simple charts and Venn diagrams etc. to identify and classify plants. ● Use photographs and their own observations to talk about how plants change over time (e.g. seed to sapling to tree) and over the year (deciduous and fruit bearing trees). ● Plant beans and observe how they grow and change by making simple observations. ● Make close observations of plants, including trees - leaves, seeds, flowers etc. ● Point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green, the leaves are different shapes.	regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans. ● Present this information in different ways to compare the seasons. ● Gather data about day length regularly throughout the year and present this to compare the seasons. ● Use gathered evidence to describe the general types of weather and changes in day length over the seasons. ● Use evidence to describe some other features of their surroundings, themselves, animals, plants that change over the seasons. ● Demonstrate knowledge in different ways e.g. creating seasonal artwork.	

From sept 2023	Autumn 1	Autumn 2	Spring 1	Spring 2 and Summer 1	Summer 1 and Summer 2
YEAR 2	**Everyday materials**		**Animals, including humans**	**Living things and their habitats**	**Plants**
	Knowledge coverage:		**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**
	• 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.		• 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.	• 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 ani animals, using the idea of a simple • food chain, and identify and name different sources of food.	• 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.
	Vocabulary:		**Vocabulary:**	**Vocabulary:**	**Vocabulary:**
	Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and reflective, flexible, rigid		Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, calf/cow puppy/dog baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs,	Living, dead, never been alive basic needs, food, food chain, shelter, Predator, Prey Names of local habitats pond, woodland fields	light, shade, sun, warm, cool, water, grow, health, germinate, seeds, bulbs, water, healthy

	Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending	food types (examples – meat, fish, vegetables, bread, rice, pasta)	Names of micro-habitats under logs, in bushes	
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**
	Know that objects are made of one or more materials that are chosen specifically because they have suitable properties for the task Including; wood, metal, plastic, glass, brick, rock and paper Know why a material can be suitable for different purposes and an object can be made of different materials. Explore how objects made of some materials can be changed in shape by bending, stretching, squashing and twisting.	Know that Animals, including humans, have offspring which grow into adults. Know the basic stages of a life cycle for different animals (including humans). Know that in order to survive all animals, including humans, must have the basic needs of feeding (food), drinking(water) and breathing (Air) Know why exercise, a balanced diet and good hygiene is important for humans.	Classify objects as either living, dead or have never been alive. Know that: Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive Name some habitats which animals and plants can live in. Know that a habitat provides the basic needs of the animals and plants – shelter, food and water. Name some micro-habitats e.g. in a woodland – on the bark of trees, on the leaves. Match the animal to its habitat Know about and explain a simple food chain.	Observe and Explain how plants may grow from either seeds or bulbs into mature plants. Compare the similarities and differences between seeds and bulbs. Know that plants need water, light and a suitable temperature to grow and stay healthy

KS1 Skills End Points (Working scientifically): ● Asks simple questions and recognises that they can be answered in different ways. ● Observes closely, using simple equipment. ● Performs simple tests. ● Can identify and classify. ● Uses their observations and ideas to suggest answers to questions. ● Gathers and records data to help in answering questions.	● Classify and sort materials by their properties e.g. manmade, natural ● Investigate and observe what happens to different materials during testing and use this to inform explanation of their properties ● Investigate which materials are fit for a purpose e.g. What is the best material for an umbrella? ● Explain from their observations how materials change when a force is exerted on them by squashing, bending, twisting and stretching. ● Investigate the transparency of objects, recording class data in a table and drawing simple conclusions from the findings. ● Ask and answer questions about everyday materials	● Ask questions and use secondary sources to find out about the life cycles of some animals ● Observe animals growing over a period e.g. chicks, caterpillars, a baby, frogspawn ● Ask questions of a parent about how they look after their baby ● Ask pet owners questions about how they look after their pet ● Investigate the effect of exercise on their bodies ● Classify food in a range of ways ● Investigate washing hands, using glitter gel ● Describe, using diagrams, the life cycle of some animals, including humans, and their growth to adults e.g. by creating a life cycle book for a younger child ● Measure/observe how animals, including humans, grow. ● Collate what they know about looking after a baby/animal by creating a parenting/pet owners' guide ● Explain how development and health might be affected by differing conditions and needs being met/not met	● Explore the outside environment regularly to find objects that are living, dead and have never lived ● Classify objects found in the local environment ● Observe animals and plants carefully, drawing and labelling diagrams ● Create simple food chains for a familiar local habitat from first hand observation and research ● Create simple food chains from information given e.g. in picture books (Gruffalo etc.) ● Can sort into living, dead and never lived ● Can give key features that mean the animal or plant is suited to its micro habitat ● Using a food chain can explain what animals eat ●Can explain in simple terms why an animal or plant is suited to a habitat	● Make close observations of wildflower seeds and bulbs ● Classify seeds and bulbs ● Research and plan when and how to plant a range of seeds and bulbs ● Look after the plants as they grow – weeding, thinning, watering etc. ● Make close observations and measurements of their plants growing from seeds and bulbs ● Make comparisons between plants as they grow ●Can spot similarities and difference between bulbs and seeds

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
YEAR 3	**Topic: Animals Including Humans**		**Topic: Rocks**	**Topic: Plants**	**Topic: Light**	**Topic: Forces and Magnets**

Knowledge coverage:	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**
• identify that animals, including humans, need the right types and amounts 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.	• Compare and group together different kinds of rocks based on 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.	• 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	• 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.	• 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.
Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**
Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones,	Rock, stone, pebble, boulder, grain, crystals,	Photosynthesis, pollen, insect/wind pollination, Transportation seed formation	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface,	Force, push, pull, twist, magnet, strength,

	muscles, joints, support, protect, move, skull, ribs, spine		layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, Durable, permeable, impermeable Sedimentary, metamorphic, ingenious absorbent porous	seed dispersal wind dispersal, animal dispersal, water dispersal Air, Light, Water, Nutrients, Soil	shadow, reflect, reflective mirror, sunlight	bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel poles, north pole, south pole
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**
	Know how nutrients water and oxygen are transported within animals and humans. Know the importance o f a nutritious balanced diet Know that A piece of food will often provide a range of nutrients including carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water – and fibre that are needed by the body to stay healthy. Know that humans, and some other animals, have skeletons and muscles which help them move and provide protection and support.		Compare and group rock based on their appearance and physical properties giving reason for how they have been grouped. Know how soil is made and how fossils are formed. Know about and explain the difference between sedimentary, metamorphic and igneous rock.	Know and describe the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers. Explore the requirements of plants and how they grow using (air, light, water, nutrients from soil, and room to grow) How does this vary from plant to plant? Know the plant life cycle including the importance of flowers.	Know that dark is the absence of light. Know that light is needed in order to see and is reflected from a surface. Demonstrate how a shadow is formed and explain how a shadow changes shape. Explain the dangers of direct sunlight and describe how to keep protected.	Describe how objects move on different surfaces. Know and model how a simple pulley system works and use to lift an object. Know about and explain how magnets attract and repel. Predict whether magnets will attract or repel and give a reason.
Lower KS2 Skills (Working Scientifically) End Points: ● Asks relevant questions and use different types of scientific enquiries to answer them.	● Classify food in a range of ways ● Use food labels to explore the nutritional content of a range of food items ● Use secondary sources to find out the types of food that contain different nutrients		● Can compare and group together different kinds of rocks on the basis of their appearance	● Observe what happens to plants over time when the leaves or roots are removed.	● Observe and identify changes to the size and orientation of shadows, relative to their	● Record and report on findings from investigations, involving how things move on different surfaces

● Sets up simple practical enquiries, comparative and fair tests. ● Makes systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Gathers, records, classifies and presents data in a variety of ways to help in answering questions. ● Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions . ● Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. ● Identifies differences, similarities or changes related to simple scientific ideas and processes. ● Use straightforward scientific evidence to answer questions or to support their findings ● Use secondary sources	● Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks? ● Plan a daily diet contain a good balance of nutrients and record and present findings ● Explore the nutrients contained in fast food ● Use secondary sources to research the parts and functions of the skeleton ● Investigate pattern seeking questions such as ; Can people with longer legs run faster?; Can people with bigger hands catch a ball better? ● Compare, contrast and classify skeletons of different animals	and simple physical properties. ● Can devise tests to explore the properties of rocks and use data to rank the rocks ● Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily. ● Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc. ●Can identify plant/animal matter and rocks in samples of soil. ● Can devise a test to explore the water retention of soils.	● Observe the effect of putting cut white carnations or celery in coloured water. ● Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. ● Spot flowers, seeds, berries and fruits outside throughout the year. ●Observe flowers carefully to identify the pollen ● Observe flowers being visited by pollinators e.g. bees and butterflies in the summer. ● Observe seeds being blown from the trees e.g. sycamore seeds. ● Research different types of seed dispersal. ● Classify seeds in a range of ways including by how they are dispersed. ● Create a new species of flowering plant ● Can explain observations made during investigations. ● Can look at the features of seeds to	proximity to the light source. ● Observe and identify the difference in shadows of opaque, translucent and transparent objects/materials. ● Observe how shadows are formed and affected by different circumstances. ● To notice that light can be reflected off surfaces and Replace with 'investigate the visibility of different materials (eg shiny; foil, mirrors and matt; sugar paper) in a darker environment according to which reflect most light.' ● Investigate the size of shadows according to times of day and year, by tracing shadows outside and comparing differences. ● Classify materials according to opaque, transparent and translucent. ● Use oral and written explanations to report on why shadows are formed and how the length and size of a shadow can be changed. ● Investigates questions related to an object and	● Compare and group materials following magnetic testing, recording findings and use the outcome to answer questions about which materials are magnetic. ● Make and investigate predictions on whether two magnets will attract or repel, depending on which poles are facing.

			decide on their method of dispersal. ● Can draw and label a diagram of their created flowering plant to show its parts, their role and the method of pollination and seed dispersal.	the shadow it will cause.*	

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
YEAR 4	**Topic: Animals Including Humans (Digestion)**	**Topic: Electricity**	**Topic: States of Matter**	**Topic: Sound**	**Topic: Animals Including Humans Food Chains** **Sates of matter: Water Cycle**	**Topic: Living Things and their habitats**
	Knowledge coverage:	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**
	• 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. •	• 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	• 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 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.	• Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	• 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.

		with being good conductors.				
	Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**
	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Cells, Wires, Bulbs, Switches, Buzzers, clip, motor Battery, Positive, Negative Circuit, Series, Conductors, Insulators, brightness Connection	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature,	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, tone	herbivore, carnivore, omnivore, producer, predator, prey, food chain Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature,	Classification, classification keys, environment, habitat, migrate, hibernate
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**
	Identify and name the parts of the human digestive system. Know the functions of the organs in the human digestive system. Identify and know that humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing). Know the functions of human teeth.	Identify and name common appliances that run on electricity. Construct a series circuit Identify and name the components in a series circuit including cells, wires, buzzers, bulbs and switches. Predict and test whether a lamp will light within a circuit Know the difference between a conductor and insulator and give examples of each.	Compare and group materials together, according to their states of matter (whether they are solids, liquids or gases). Know the temperature at which materials change state. Explore how some materials can change state and explain why.	Know how sound is made associating some of them with vibrations. Explore how sound travels from a source to our ears. Know the correlation between pitch and the object producing a sound. Know the correlation between the volume of a sound and the strength of vibrations that produce it.	Use and construct food chains to identify producer's predators and prey. Know the part played by evaporation and condensation in the water cycle.	Know that Living things can be grouped in different ways according to their features. Use classification keys to identify and name living things in the local and wider environment Know how changes to an environment can endanger living things. Habitats may change naturally e.g. through flooding, fire, earthquakes etc.

				Recognise that sounds get fainter as the distance from the sound source increases.		Humans also cause the environment to change. This can be in a good way or in a bad way.
Lower KS2 Skills (Working Scientifically) End Points: ● Asks relevant questions and use different types of scientific enquiries to answer them. ● Sets up simple practical enquiries, comparative and fair tests. ● Makes systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Gathers, records, classifies and presents data in a variety of ways to help in answering questions. ● Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions . ● Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. ● Identifies differences, similarities or changes related to simple scientific ideas and processes. ● Use straightforward scientific evidence to answer questions or to support their findings	● Identifies differences, and similarities of different types of teeth according to herbivore, omnivore and carnivore. ● Can record the teeth in their mouth (make a dental record). ● recreate the human stomach and observe representation of how food breaks down. ● Label the different parts of the digestive system.	● Construct and investigate a range of circuits. ● Investigate which materials can be used instead of wires to make a circuit . ● Classify materials that conduct electricity and those that don't following investigation and record findings.. ● Investigate the effect of a switch and combinations of switches in simple circuits. ● Investigate switches and consider variations for specific uses, such as a pressure switch for a burglar alarm. ● Apply their knowledge of conductors and insulators to design and make different types of switch	● Observe closely and classify a range of solids and liquids. ● Explore making gases visible ● Classify materials according to whether they are solids, liquids and gases. ● Observe a range of materials melting. ● Investigate how to melt ice more quickly. ● Observe the changes that are non-reversible relating (common ingredients). ● Investigate melting point of different materials. ● Explore freezing different liquids. ● Observe and measure temperature of icy water, tap water, hot water. ● Observe water evaporating and condensing. ● Set up investigations to explore changing the rate of evaporation. ● Using their data, can explain what affects how quickly a solid melts.	● Experiment with at least three different instruments to observe and explore volume and pitch. ● Make predictions and draw conclusions about the pitch and volume of sounds. ● Note how vibrations make sounds of different volumes and travel to our ears. ● Identify and show how sound travels through particles and into the ear. ● Make own instruments that produce a range of pitches.	● Construct and interpret a variety of food chains, identifying producers, predators and prey. ● Can create food chains based on research. ● Use secondary sources to find out about the water cycle. ● Present learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet.	● Observe plants and animals in different habitats throughout the year and use recordings to compare and contrast the living things observed. ● Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. ● Classify living things found in different habitats based on their features. ● Create a simple identification key based on observable features. ● Use research to explore human impact on the local environment e.g. litter, tree planting.* ● Use secondary sources to find out about how environments may naturally change. ● Use secondary sources to find out about human impact, both positive and negative, on environments and write a report on this.

			● From their data, can explain how to speed up or slow down evaporation.			

	Autumn 1	Autumn 2 and Spring 1	Spring 2	Summer 1	Summer 2
YEAR 5	**Topic: Forces and Magnets**	**Topic: Properties and Changing Materials**	**Topic: Living Things and their habitat**	**Topic: Animals Including Humans**	**Topic: Earth and Space**
	Knowledge coverage:	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**
	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and	• 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.	• Describe the changes as humans develop to old age.	• 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.

		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			
	Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**
	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, levers, pulleys, gears	Properties, including changes of, materials Hardness, Solubility, Transparent, Opaque, Translucent, Magnetic, Filter, Evaporation, Dissolving, Mixing, Thermal conductor, thermal insulator, electrical conductor, electrical insulator	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty;	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets, Axis, Day, Night Phases, Constellation
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**
	Know what gravity is and its impact on our lives. Identify and explain the effect of air and water resistance. Identify and know the effect of friction.	Compare and group together materials based on their properties. e.g. hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets	Know the lifecycle of different living things. E.g. mammal, amphibian insects and birds. Know the differences between different life cycles. Know the process of reproduction in plants.	Create a timeline to indicate the stages of growth in a human. Label the timeline to show an understanding of the changes humans make.	Know about and explain the movement of the earth and other planets relative to the sun. Know about and explain the movement of the moon relative to the earth.

	Explain how leavers, pulleys and gears allow a smaller force to have a greater effect.	Know and explain how a material dissolves to form a solution Show how to recover a substance from a solution Demonstrate how some materials can be separated E,g, through sieving, filtering and evaporating. Demonstrate how some changes are reversable and some are not. Know how some changes result in the formation of a new material and that it is usually irreversable.	Know the process of reproduction in animals.		Demonstrate how night and day are created Describe the sun earth and moon (using the term spherical)
Upper KS2 Skills End Points (Working Scientifically): ● Plans different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. ● Takes measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. ● Records data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	● Investigate the pull on different objects using a newton meter and record forces in Newtons (N). ● Report on conclusions relating to an object's mass and its weight in Newtons. ● Investigate the effect of friction in a range of contexts . ● Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water, pulling shapes e.g. boats along the surface of water. ● Investigate the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats.	● Investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat ● Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate ● Investigate rates of dissolving by carrying out comparative and fair test and records findings ● Separate mixtures by sieving, filtering and evaporation, choosing the	● Grow and observe plants that reproduce asexually e.g. strawberries, spider plant, potatoes ● organise mammals into different groups - sea and land and marsupials and use scientific evidence to refute/support correct/incorrect statements (such as 'dolphins are fish'). ● Draw and label appropriate scientific diagrams following use of secondary sources and first hand observations relating to the life cycle of a range of animals. ● compare and contrast the life cycles of different living	Records a timeline using diagrams, labels. Demonstrates an understanding of growth using graphs.	● Use secondary sources to help create a model e.g. role play or using balls, to show the movement of the Earth around the Sun and the Moon around the Earth. ● Use secondary sources to create a model to show why day and night occur ● Make first-hand observations of how shadows caused by the Sun change through the day ● Make a sundial and report on findings following observation of the changing place of the shadow, making conclusions as to what this demonstrates and

● Reports and presents 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. ● Uses test results to make predictions to set up further comparative and fair tests. ● Identifies scientific evidence that has been used to support or refute ideas or arguments.	● Explore how levers, pulleys and gears work. ● Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	most suitable method and equipment for each mixture ● Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning ● Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? ● Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton)	things and present findings identify which insects complete which type of metamorphosis and present findings ● identify the key differences between some amphibians – for example, toads and frogs, and present findings in different forms. ● Use data to compare and find patterns, for example to compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth/Look for patterns between the size of an animal and its expected life span)		how the sundial was used to indicate the time. ● Research time zones ● Consider the views of scientists in the past and how evidence was used to deduce the shapes and movements of the Earth, Moon and planets before space travel.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
YEAR 6	**Topic: Evolution and Inheritance**	**Topic: Animals including humans**	**Topic: Living Things and Their Habitats**	**Topic: Electricity**	**Year 6 SATS**	**Topic: Light**
	Knowledge coverage:	**Knowledge coverage:**	**Knowledge coverage:**	**Knowledge coverage:**		**Knowledge coverage:**
	• 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	• 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.	• 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.	• 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	**Science is embedded through other subjects including -** **DT: Electricity Circuits**	• 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

	different ways and that adaptation may lead to evolution.			simple circuit in a diagram.		straight lines to explain why shadows have the same shape as the objects that cast them.
	Vocabulary:	**Vocabulary:**	**Vocabulary:**	**Vocabulary:**		**Vocabulary:**
	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage		(Year 3) Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, reflective mirror, sunlight straight lines, light rays
	End Point Knowledge:	**End Point Knowledge:**	**End Point Knowledge:**	**End Point Knowledge:**		**End Point Knowledge:**
	Know how the Earth and living things have changed overtime. Know how fossils can be used to find out the past. Know about reproduction and offspring	Identify and name the main parts of the human circulatory system. Describe the functions of the heart, blood vessels and blood.	Classify living things into groups according to observable characteristics and based on similarities and differences Know how living things have been classified.	Know how the number of cells and voltage in a circuit links to the brightness of the lamp and the volume of a buzzer. Compare and Give reasons for variations in how components		Know how light travels Know and demonstrate how we see objects. Know why shadows have the same shape as the object that casts them.

	(recognising how offspring normally vary and are not identical to their parents) Know how animals and plants are adapted to suit their environment. Link adaptation over time to evolution. Explain what Evolution is.	Know that diet, exercise, drugs and lifestyle have an impact on the way our bodies function. Know the ways in which nutrients and water are transported in animals including humans.	Give reasons for classifying animals and plants in a specific way	function and do not function including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Darw circuit diagrams using recognised symbols		Know how simple optical instruments work. Including: periscope, telescope, microscope, binoculars, mirrors and magnifing glasses.
Upper KS2 Skills End Points (Working Scientifically): ● Plans different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. ● Takes measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. ● Records data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ● Reports and presents 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.	● Follow lines of enquiry to support Explanation of the process of evolution. ● Demonstrate an understanding, with specific examples, of how an animal or plant has evolved over time e.g. penguin, peppered moth. ● Identify characteristics that will make a plant or animal suited or not suited to a particular habitat. ● Identify how Charles Darwin and Alfred Wallace used observation to support their theory of natural selection and evolution. ● Referring to and using examples of fossil evidence that support the theory of evolution, including learning about the work of Mary Morland and William Buckland	● Plan and conduct a scientific enquiry to identify different food groups. ● Use labelled diagrams to support understanding of how nutrients and oxygen are delivered around the body. ● Use information to identify the main components of the heart. ● Predict what will happen to the heart during exercise. ● Construct and analyse the variables that make a fair test. ● Conduct a fair investigation on the effects of exercise on the heart. ● Use scientific equipment to track results and record data using tables and graphs.	● Classify plants and animals and record conclusions from the use of classification keys. ● Use information about the characteristics of an unknown animal or plant to assign it to a group. ● Use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important. ● Research an unfamiliar animal or plant using its characteristics to establish where it belongs in the classification system.	● Draw circuit diagrams of a range of simple series circuits, using recognised symbols. ● Communicate structures of circuits using circuit diagrams with recognised symbols ● make electric circuits and demonstrate, following investigation, how variation in the working of particular components can be changed. ● Plan and select resources for a fair scientific enquiry, deciding which variables to control. ● Record results from an experiment using tables and graphs ● Evaluate and explain their investigation, results and conclusions.		● Plan and conduct a test to investigate how light travels and explain/present the findings. ● Investigate the use of mirrors to reflect light and record using straight line diagrams to indicate the direction of light. ● Use mirrors, torches and protractors to demonstrate and record how light is reflected in a mirror and how we see ourselves in a mirror. ● Measure and record the angle of incidence and angle of reflection using a protractor and detailed diagram.

● Uses test results to make predictions to set up further comparative and fair tests. ● Identifies scientific evidence that has been used to support or refute ideas or arguments.		● Analyse whole class data after investigation to compare and reflect on findings and draw conclusions. ● Use information acquired to write a scientific report on how the human circulatory system works				