Smawthorne Henry Moore Academy

Science Overview

Science Long Term Plans: EYFS

#TheSmawthorneExperience

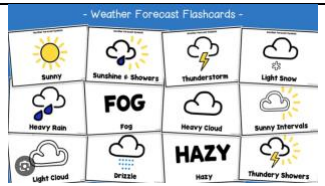
	Main area of the EYFS curriculum	Development Matters 2-3years	Development Matters 3-4years	Development Matters Reception	Early Learning Goals	Examples of how this might be taught/covered…
Curriculum Enrichment		Visit from a new baby Caterpillars to Butterflies	Visit from a new baby Caterpillars to Butterflies	Farm visit Eureka		
	Understanding the World Exceptional explorers - show curiosity about the world around them Compassionate citizens - help to look after their community and care for the environment and living things	✓ Explore and respond to different natural phenomena in their setting and on trips. ✓ Use all their senses in hands-on exploration of natural materials. ✓ Explore collections of materials with similar and/or different properties. ✓ Explore materials with different properties. ✓ Explore natural materials, indoors and outside.	✓ Use all their senses in hands-on exploration of natural materials. ✓ Explore collections of materials with similar and/or different properties. ✓ Talk about what they see, using a wide vocabulary. ✓ Plant seeds and care for growing plants. ✓ Understand the key features of the life cycle of a plant and an animal. ✓ 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.	✓ Explore the natural world around them. ✓ Understand the effect of changing seasons on the natural world around them.	The Natural World ✓ Explore the natural world around them, making observations and drawing pictures of animals and plants. ✓ Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. ✓ Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	❖ Pzaz science lessons and investigations ❖ Water and sand tray ❖ Gloop/cornflour/ice/decay experiments ❖ Access to the outdoor space in all weathers ❖ Experiencing and discussing different weather types ❖ Morning weather report ❖ Non-fiction texts ❖ Cross-curricular topics; Colour andLight, Space ❖ Sensory walks ❖ Autumnal investigations ❖ Investigation station ❖ Gardening spaces ❖ Planting seeds/growing plants ❖ Life-cycles ❖ Caterpillar/Butterfly eggs ❖ Visits to farm ❖ Growth of animals ❖ Marvellous Me topic – learning about self and body parts

* The EYFS Science curriculum is not taught at an explicit time throughout the year, but rather as and when the children encounter experiences, but by the end of the year, all objectives will have been covered.

Science Long Term Plans: Year 1

#TheSmawthorneExperience

	Autumn Term		Spring Term		Summer Term
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer
	Animals including Humans – Our Bodies and Our Senses	**Seasonal Changes**	**Everyday materials**	**Plants**	**Animals, including Humans**
Curriculum Enrichment					
Unit overview	Children will: • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) • Use their senses to compare different textures, sounds and smells.	Children will: • Observe and describe weather associated with the seasons (spring- showers, summer-sunshine, autumn-windy, getting cooler, winter- cold, snowy) and how day length varies (winter- days shorter, summer- days longer)	Children will: • Distinguish between an object and the material from which it is made (pencil- wood, window-glass, tub- plastic, jumper- fabric, car-metal) • 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 (glass-waterproof, wood- rough, plastic-smooth, strong, metal-strong, rusty, rock-jagged) • Compare and group together a variety of everyday materials on the basis of their simple physical properties (absorbant- sponge, kitchen roll, fabric/non-absortbant- metal, plastic, foil)	Children will: • Identify and name a variety of common wild and garden plants (e.g. daffoldil, dandelion, buttercup, clover, rose, lavender), including deciduous and evergreen trees • Identify and describe a variety of common flowering plants and trees (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem)	Children will: • Identify and name a variety of common animals including fish, amphibians (frog, toad, newt), reptiles (snake, turtle, chameleon), birds (owl, blackbird, seagull) and mammals (dog, polar bear, human, elephant) • Identify and name a variety of common animals that are carnivores (tiger, shark, crocodile, snake), herbivores (rabbit, snail, cow, squirrel) and omnivores (hedgehog, bear)
Substantive knowledge (What children will learn)	Children will know: • That the skin is the part of the body responsible for the touch sense and the nose for smell • That the eyes are used for sight and the ears for hearing • Parts of the human body (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) • The parts of the body associated with each sense (skin- touch, nose-smell, eyes-see, ears-hear, mouth-taste)	Children will know: • There are 4 seasons called spring, summer, autumn and winter. • The weather patterns are different in each season (spring- showers, summer-sunshine, autumn-windy, getting cooler, winter- cold, snowy). • A weather forecast is a statement saying what the weather will be like today, the next day or for the next few days. • Weather forecasts use different symbols which are helpful	Children will know: • Objects are things that you can touch or see (e.g. tree, pencil, bird, table, book etc) • Objects are made from materials such as plastic, glass, fabric, metal, rock • Which materials some objects are made from (pencil- wood, window-glass, tub- plastic, jumper- fabric, car-metal) • Words to use to describe materials (hard, soft, bendy, jagged, smooth, waterproof) • Which materials are natural (ice, stone, fur, sand, wool) and which are man-made (paper, paint, plastic, glass, metal)	Children will know: • The names of some common garden plants (daffodil, rose, lavender, tulip) • The names of some common wild plants (dandelion, buttercup, clover) • Deciduous trees lose their leaves in autumn • Evergreen trees have leaves all year round. • Deciduous trees include oak, silver birch and horse chestnut. • Evergreen trees include conifer, holly and yew tree • The parts of common trees and plants such as leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem	Children will know: • That vertebrates are animals with a backbone • That invertebrates are animals without a backbone • That mammals are animals/people that feed their young, breath air, grow hair/fur • That fish are animals that live under water- they have gills to help them breath and fins to swim • That birds are animals with a beak, 2 legs, feathers and wings • That reptiles have scales on their skin and breath air • That amphibians are animals that live in water as babies and move onto the land when they get older

		 • When the weather changes, you need to wear the correct clothes (coat when cold/ raining, sunhat when sunny) • You can record the temperature using a thermometer to see how warm or cold it is.			
Disciplinary knowledge (How children will learn)	Children will: • Label the different parts of the body and describe what each part does (see medium term planning) • Draw around one of the pupils in the class using chalk - label the different parts of the body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) • Complete a simple exercise (such as a star jump) and describe which parts of the body move. • Participate in a sensory experience where you taste, feel, look at and see different foods (check for allergies first). • Use senses to compare different textures, sounds and smells. • Discuss activities where you might use more than one sense (e.g. playing football).	Children will: • Name the seasons and put them in the correct order (spring, summer, autumn and winter) • Describe some of the things that happen in each season (spring- baby animals are born, summer- hot days/pools/sunshine, autumn- leaves fall off the trees, winter- cold/dark/snowy) • Say that day length in summer is longer than winter • Say that different parts of the world have different daylight hours • Say that the seasons are opposite in different hemispheres • Recognise places as being in the northern (America, Europe, North Pole) or southern hemispheres (South America, Australia, Antarctica) • Describe different types of weather • Associate types of weather with particular seasons	Children will: • Identify how objects are similar / different based on the materials they are made from • Identify how materials are similar / different to each other (e.g. glass and metal- similar because they are both waterproof/ different because glass can break more easily) • Sort natural materials from man-made materials • Investigate: - What is the best material for an umbrella? - What is the best material for a lining a dog basket? - What is the best material for a superhero costume? - What is the best material for curtains? - What is the best material for a bookshelf?	• Plant a bean or a seed and watch it grow. Record your observations in a diary. • Go on a wild plant hunt! Tick how many of each plant you have found and then use the information to answer questions (adult led- How many ____ did you see? Which plant was the least popular?) • Plant some garden plants, care for them and watch them grow. • Go on a tree hunt • Collect fallen leaves and identify which tree they came from using pictures to help you. Sort the leaves between deciduous and evergreen trees. • Label the parts of a plant showing where the leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, and stems are.	Children will: • Use observations in the local environment to compare animals or through videos and photographs • Describe how to identify and group animals • Group animals according to what they eat • Research how to take care of animals taken from the local environment and how to return them safely
New Vocabulary	head, body, eyes, ears, mouth, teeth, leg, arm, skin, touch, nose, smell, sight, hear, neck, elbows, knees	weather, seasons, spring, summer, autumn, winter, weather forecast, thermometer, temperature, United Kingdom	absorbent, bendy, dull, elastic, fabrics, foil, man-made, metal, natural, opaque, plastic, rock, rough, shiny, smooth, soft, stiff, stretchy, transparent, waterproof	bulb, deciduous, evergreen, flower, leaf/ leaves, petal, plant, roots, seed, stem, tree, trunk, weed, wild	backbone, carnivores, gills, herbivore, invertebrate, omnivore, temperature, vertebrate, warm-blooded, cold-blooded, mammals, reptiles, amphibians
Prior Learning	• Know how to keep healthy by doing exercise and eating healthily. • Know some rhymes about the body (e.g. Heads, Shoulders, Knees and Toes)	• The country I live in is the United Kingdom. • Where the United Kingdom is and locate it on a map. • There are different types of weather.	• Objects feel and look different based on the material they are made from. • Use different materials when painting and making art.	• Plants can grow.	• The names of some common animals.

Future Learning	Year 2 Year 3 Year 4 Year 5 Year 6	On going (see geography LTP)	Year 2 Year 5	Year 2 Year 3 Year 5	Year 2 Year 3 Year 4 Year 5 Year 6

Science Long Term Plans: Year 2

#TheSmawthorneExperience

	Autumn Term		Spring Term		Summer Term	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Animals, including Humans – Food hygiene.	**Everyday materials and their uses**	**Plants**		**Living things and their habitats.**	
Curriculum Enrichment					Visit to Anglers Country Park Renewii workshop	
Unit overview	Children will: • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene • Notice that animals, including humans, have offspring which grow into adults	Children will: • 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	Children will: • 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		Children will: • 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 • Explore and compare the differences between things that are living, dead, and things that have never been alive. • 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.	
Substantive knowledge (What children will learn)	Children will know: • That a life cycle shows the changes that a living thing goes through in their life • That animals need air, water, food and shelter to survive • That humans need a to eat healthy food, drink water, exercise, sleep and keep clean to stay healthy.	Children will know: • That materials are used to make objects •That objects can be made from wood, metal, plastic, glass, brick, rock, paper and cardboard •That properties of materials make them suitable for a particular use (e.g. tubs are made from plastic because it is strong, windows are made from glass because it is waterproof, cars are made from metal because it is strong/tough, teddy bears are made from fabric because it is soft, glasses (lens) are made from glass because it is transparent) • You can change the shape of materials by squashing, bending, twisting and stretching	Children will know: • That plants are living things and need water, light and the right temperature to grow • That we eat some plants such as apples, bananas, lettuce, brocolli, carrots and cauliflower. • That trees have roots, truck (stem) and leaves. • That plants have roots, stem, leaves and flowers.		Children will know: • That things can be split into 3 groups: living, dead and never been alive. • That living things move, eat, reproduce and grow. • That dead things were once alive but now they are not. • That living things have characteristics: they move, feed, grow and reproduce. • That different animals live in different places and these are called habitats. • That smaller living things live in micro–habitats, such as in the bark on a tree, leaf litter. • That animals and plants live in a habitat to which they are best suited. • That animals get their food from plants and other animals. • That a simple food chain shows the order in which living things depend on one another. • If a food chain is broken for any reason, the rest of the chain cannot survive.	
Disciplinary knowledge (How children will learn)	Children will: • Match baby animals to adults •Make a timeline of human development •Match animals to their needs; draw and label the basics for survival •Explain why food/water/air are essential	Children will: • Compare the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs)	Children will: • Sort through pictures to show which things are living, which are dead and things which have never been alive. • Go on a plant/tree hunt. What do you notice about what they look like? What are their features? • Plant a bulb or a seed and watch it grow. Record your observations in a diary. E.g. day 1: seed in compost, day 4: Seed has a shoot etc. Compare the growth of that plant with a plant (using the		Children will: • Observe carefully a microhabitat and sketch the plants you find. Can you find any evidence of plants being eaten? What other living things can you see? • Compare two different habitats and explain what animals and plants can be found there. • Go on a minibeast hunt. What minibeasts can you find? Why can they survive in their habitat? Tick what minibeasts you see. Talk about findings as a class.	

	•Introduce food groups and balanced diets •Sort foods into groups (carbohydrates, proteins, fruits/veg, dairy, fats) •Create a healthy meal plate •Track heart rate before and after exercise (discuss benefits) •Importance of washing hands, brushing teeth etc.	• Observe closely the uses of different materials, and record your observa- tions. • Distinguish between absorbent and waterproof materials. Discuss what happens when water is placed on these materials. • Consider why some properties of materials make them suitable or unsuit- able for different uses. • Investigate if some items can be made by more than one material (e.g. cutlery) and explain why. • Investigate if some materials can be used to make more than one thing. • Discuss which materials are recyclable and why. Follow the recycling process. • Investigate how some objects can be changed by squashing, bending, twisting and stretching. • Find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam	same bulb or seed) where one of the conditions is different (no water, no light, a smaller container). • Plant a seed on a wet cotton bud. Does it grow? Why might it grow for a little while and then stop? • Dissect a variety of fruits and locate where their seeds are. • Eat a variety of vegetables and identify which part of the plant they come from (note: do not taste nuts in school as they are allergens).	• Compare two different microhabitats. What do you notice about the minibeasts that live in each one? Why do you think that is? Discuss how the minibeasts help keep the microhabitat healthy. • Use your knowledge of biomes to describe the types of animals and plants that live there. Match animals and plants to their habitats (e.g. forest, ocean, poles, desert). • Answer questions such as 'Why would a polar bear not survive in the desert?' • Create simple food chains that begin with a plant. Discuss what would happen if one of those living things in a food chain did not exist.
<u>New Vocabulary</u>	Balanced diet, disease, exercise, healthy, hygiene, life cycle, change, air, shelter, offspring	Absorbent, bendy, elastic, fabrics, foil, glass, man-made, metal, natural, opaque, plastic, properties, rock, rough, shiny, smooth, soft, squash, stiff, stretchy, transparent, twist, waterproof	Branches, bulb, , common, crop, deciduous, evergreen, flower, flowering, fruit, garden, herb, leaf /leaves, nutrients, petal, plant, reproduce, roots, seed, stem, tree, trunk, vegetable, vegetation, weed, wild	carnivore, food chain, habitat, herbivore, microhabitat, minibeast, omnivore, offspring, survive
<u>Prior Learning</u>	• There are five types of vertebrates (mammals, fish, reptiles, amphibians, birds) • Vertebrates are animals that have a backbone. • Some animals are suitable to be kept as pets but others are not. • Some animals give birth to live young but others lay eggs. • Doctors and nurses give us medicine when we are poorly.	• Objects are things that you can touch or see. • Objects are made from materials. • Some materials that objects are made from (e.g. glass, wood, plastic) • Some words to describe materials (e.g. shiny, soft, rough absorbent) • Materials which are natural and which are man-made.	• Plants can grow. • The names of some common garden plants (e.g. poppy, rose) and the names of some common wild plants (e.g. daisy, dan- delion, nettle). • Deciduous trees lose their leaves in the autumn every year. • Evergreen trees have green leaves all year round. • The parts of a plant including petals, fruits, roots, bulbs, seeds, stem, trunks and branches.	• Which things are living, dead and things which have never been alive. • The names of some common plants and types of trees.. • Some animals are suitable to be kept as pets but others are not. • All animals need water, air and food to survive • Animals can be grouped into vertebrates and invertebrates • Animals can be grouped into carnivores, herbivores and omnivores • Animals, including humans, have offspring which grow into adults. • Different vegetation belts and biomes around the world.
<u>Future Learning</u>	Year 3 Year 4 Year 5 Year 6	Year 5	Year 3 Year 5	Year 4 Year 5 Year 6

Science Long Term Plans: Year 3

#TheSmawthorneExperience

	Autumn Term		Spring Term		Summer Term
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer
	Light	Animals, including Humans – Skeletons/muscles	Rocks	Plants	Forces and Magnets
Curriculum Enrichment					
Unit overview:	Children will: • 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 change	Children will: • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get their nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Children will: • 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	Children will: • 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 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	Children will: • Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance Children will: • 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
Substantive knowledge. (what children will learn)	Children will know: • That a light source is anything that makes its own light, for example: sun, candle, lamp, bulb, torch, TV • That we need light to be able to see in the dark (dark is the absence of light) • That the moon, curtains, mirror, eyes etc. are not sources of light • That light travels in straight lines from a light source	Children will know: • That an endoskeleton is an animal with a skeleton inside its body • That an endoskeleton gives structure to the body • That an exoskeleton is an animal with a skeleton on the outside of its body • That an exoskeleton help to maintain the shape of the animal • That a vertebrate is an animal with a backbone • That an invertebrate is an animal without a backbone • That humans have a skeleton and this helps with movement, support and protection • That joints are where two bones meet • Without joints, we would not be able to move	Children will know: • That there are 3 types of rocks • That igneous rocks are formed when magma from volcanoes cools and solidifies • That sedimentary rocks are made from sediments compacted together • That metamorphic rocks were once igneous or sedimentary rocks that were subjected to high temperature and pressure • That fossils are the preserved remains of a dead plant or animal • That soil is made up of minerals, air, water and organic matter (living things that are either dead or alive)	Children will know: • That a plant is made up of roots, stem, leaf/leaves and flower • That the roots hold the plant in the ground and take in water and nutrients from the soil • That the stem provides support (keeps the plant upright) and carries water and nutrients to different parts of the plant • That the leaves make food for the plant • That the flower makes seeds that is needed to make new plants • That plants need air, light, water and the right temperature to grow	Children will know: • That forces are a push or pull acting on an object • That friction is a force between two surfaces • That different surfaces have different amounts of friction- a smooth surface doesn't have much friction so doesn't have much affect on an object, a rough surface has lots of friction so slows an object down • How magnets have two ends called the North and South Pole • That two South Poles repel • That two North Poles repel • That a North Pole and a South Pole attracts • That there are three magnetic materials- iron, nickel and cobalt

		• That the following are all joints: knee, elbow, hip, shoulder • That the following are all bones & where to identify them in their body: ribcage, cranium (skull), pelvis, spine, femur			
Disciplinary knowledge. (How children will learn)	Children will: • Investigate the brightness of torches - can you put torches in order from brightest to dimmest? What would make it a fair test? • Ask: why do lights seem brighter in the dark? • Explore which objects form shadows when light is shone on them. • Ask: how can you change the size and shape of shadows by using the same object? • Ask: what happens when light is reflected from different surfaces? What happens when light is reflected from a mirror? Ask: what happens when the angle of the mirror (or light source changes?)	Children will: • Identify and group animals with and without skeletons and compare the ways in which they move. • Match animals to their skeletons and explain your reasons for this. • Explore ideas about what would happen if humans did not have skeletons. • Identify which bones are used for support (e.g. backbone), which are used for protection (e.g. cranium) and which are used for movement (e.g. joints) • Create a presentation to show how muscles contract and relax. • Compare the size of straight arms and bent arms. Measure around the top of an arm when it is straight and when it is bent . What do you notice?	Chrildren will: • Explore the types of rocks you can find in the local environment. • Explain why rocks are used for different purposes based on their properties. • Research the different living things whose fossils are found. • Explore the different kinds of soils , including those you can find in the local environment. • Compare different types of soils by saying what is similar and what is different using scientific vocabulary. • Investigate what happens when rocks are rubbed together. • Investigate what happens to rocks when they are in water. • Sort different types of rocks based on how rough or smooth they are, whether they have grains or crystals, how permeable they are, how easily they can break down, how strong they are and what they look like.	Children will: • Compare the effect of different factors in plant growth (e.g. the amount of water, the amount of light and the amount of fertiliser). Discuss what would make this a fair test. • Place white carnations in dyed water to observe how plants transport water. • Discover how seeds are formed by observing plant life cycles. • Dissect fruits to observe their structure and use this to explain how seeds are dispersed. • Dissect a flower and identify each of the different parts that help with fertilisation.	Children will: • Investigate the amount of friction created by different surfaces. Use measures (such as length) to show how far or fast an object travels. • Compare how different things move and group them. • Observe how a magnetic field attracts iron filings by using a bar magnet. • Investigate how magnets are used in everyday life. • Investigate which materials are magnetic and sort between objects that are magnetic and those that are non-magnetic. • Investigate if the size of a magnet affects how strong it is (using chains of paper clips of varying lengths) • Investigate if all metals are magnetic. • Observe what happens when magnets with similar poles are placed next to each. Repeat this for when the poles are different.
New Vocabulary	Angle, bright, dark, dim, electricity, emits, light, mirror, opaque, reflects, shadows, source, sunglasses, surface, torches, translucent, transparent	Backbone, bones, contract, elbow, endoskeleton, exoskeleton, joints, muscles, organs, protect, relax, skeleton, support, tendons, vertebrate	Absorb, bedrock, decaying, grain, igneous, imprint, leaf, magma, man-made, metamorphic, mineral, molten, natural, nutrients, palaeontology, permeable, porous, preserve, pressure, properties, rock, sediment, soil, surface, surrounding, volcano, weathered	Absorb, anther, bulb, carbon dioxide, climate zone, dispersed, fertiliser, flower, flowering, germination, healthy, leaf / leaves, life cycle, nutrients, ovule, petal, pollen, pollination, roots, seed, stem, stigma, structure, temperature, transported, trunk	Attract, friction, force, gravity, magnet, magnetic field, metal, motion, non-magnetic, opposite, position, pull, push, resistance, surface
Prior Learning	• Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights) • Shiny materials do not make light but do reflect it. • Shadows are caused when certain materials block light.	• The parts of the human body and what they do. • There are five types of vertebrates (mammals, fish, reptiles, amphibians, birds) • Vertebrates are animals that have a backbone.	• The role of Mary Anning in palaeontology and the discovery of fossils. • Soil contains nutrients and these help plants to grow. • The meaning of the word absorb.	• Which things are living and which are not. • A variety of common wild and garden plants, including deciduous and evergreen trees and how to identify them.	• The shape of some materials can be changed when they are stretched, twisted, bent and squashed. • Know how different toys move. • Know what a force is and be able to explain that a push and pull are types of forces. • That when forces are applied to an object they allow them to move or stop moving. • The strength of the force determines how far and fast an object moves.

		• Invertebrates are animals that do not have a backbone. • All animals need water, air and food to survive. • The different ways in which humans can be healthy.	• That magma is molten rock that is formed in very hot conditions inside the earth. • Why some materials are used for certain purposes because of their properties	• The structure of common flowering plants, including trees (including leaves, flowers, fruits, roots, bulbs, seeds, stem, trunks and branches) • Seeds and bulbs grow into mature plants • Plants need water, light and a suitable temperature to grow and stay healthy. • Different vegetation belts and climate zones around the world • Plants and animals depend on each other to survive.	
Future Learning	Year 6	Year 4 Year 5 year 6	**Geography***	Year 5	Year 5

Science Long Term Plans: Year 4

#TheSmawthorneExperience

	Autumn Term		Spring Term	Summer Term	
	Autumn 1	Autumn 2	Spring	Summer 1	Summer 2
	Animals, Including Humans – Digestive System/Teeth.	States of Matter	Living things and their habitats and Animals, Including Humans (food chains)	Electricity	Sound
Curriculum Enrichment					
Unit overview	Children will: 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	Children will: 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 Identify part played by evaporation and condensation in water cycle and associate the rate of evaporation with temperature	Children will: Recognise that living things can be grouped in a variety of ways. Use classification keys to help group, identify and name a variety of living things in local & wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things Construct and interpret a variety of food chains, identifying producers, predators and prey	Children will: 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 loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors	Children will: 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
Substantive knowledge (What children will learn)	Children will know: • That teeth have different functions but work together to break food down so that it can travel through the body • That teeth need brushing twice a day for approximately two minutes, using fluoride toothpaste • Incisors are sharp and flat, and are used to cut and bite food • Canines are sharp and more pointed, and are used to rip and tear food.	Children will know: • That a particle is a tiny piece of an object • That solids are hard and cannot break or change shape easily-unless a force is applied to them. • That liquids can flow or be poured eaily • That gases are invisible and do not have a fixed shape- they spread out to fill the shape of the container • That solids are made up of particles that are tight together • That liquids are made up of particles that are close to each other but can move around easily	Children will know: • That living things can be grouped in a variety of ways, such as: large and small animals, those that live on land, air, sea, the number of legs they have, if they have fur, feathers, scales etc. • That a classification key is a set of questions about the characteristics of living things. You can use one to identify a living thing or decide which group it belongs to • That environments can change due to earthquakes, floods, storms, hurricanes, wildfires and droughts • That a producer is something that makes its own food e.g. plant • That a producer always starts a food chain • That a predator is a wild animal that hunts and kills other animals for food • That prey is an animal that is eaten by another animal	Children will know: • Electricity comes from a wide range of sources, such as: solar panels, power stations, hydroelectric dams, fossil fuels and batteries • That some appliances are powered by mains electricity (plug) e.g. kettle, iron, toaster, microwave, PlayStation • Some appliances are powered by batteries e.g. lamp, weighing scales, watch, torch • That an electrical circuit has wires for the electricity to flow through	Children will know: • A sound is a form of energy which moves in waves of vibrating particles • A sound is created from vibrations- the louder the sound, the bigger the vibration • The sound waves travel to the ear and makes the eardrum vibrate. This sends a message to the brain which recognises the vibrations as sounds • That higher frequency sound waves will produce a higher pitch and lower frequency sound waves will produce a lower pitch

	• Molars are wide and bumpy, and are used to chew and grind food.	• That gases are made up of particles that are spaced apart • The particles in water slow down when the water is cooled • The particles in water move more quickly when the water is heated • The water cycle includes water evaporating from the sea into the air, water vapour forms clouds, water falls as precipitation (rain) and the water returns to the sea		• An electrical conductor is a material that allows electricity to pass through it easily • An electrical insulator is a material that does not allow electricity to pass through it easily	
Disciplinary knowledge. (How children will learn)	Children will: • Investigate the amount of sugar in drinks and learn how sugar leads to an increase in plaque and how this destroys tooth enamel. • Compare the teeth of carnivores, omnivores and herbivores. What do you notice? • Match animals to their teeth and explain your reasons for this. • Identify the parts of the digestive system and explain their functions • Create a presentation to show how our food is digested.	Children will: • Group materials according to their states. • Explain the particle structure of solids, liquids and gases. • Explore the effect of temperature on substances such as chocolate, butter, cream. Compare their melting points and place them in a table. • Research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. • Observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting. • Present what you know about the water cycle using a variety of skills using appropriate vocabulary (The Water Cycle Knowledge Organiser). • Observe evaporation and condensation in action by using bowls of water and mirrors /glass (The Water Cycle Knowledge Organiser).	Children will: • Sort vertebrate and invertebrate animals into groups, describing their key features. Use a classification key to identify which group of vertebrates animals belong to and then create your own. • Sort plants into groups (e.g. flowering plants and non-flowering plants) and then create a classification key to help others identify plants. • Carefully observe minibeasts in a microhabitat and use a classification key to identify them. • Use simple computer software programmes to create a branching classification key. • Explore examples of human impact (both positive and negative) on environments.	Children will: • Research how to work safely with electricity. • Make a variety of circuits, investigating which circuits work and why. • Name the basic parts including cells, batteries, wires, bulbs, switches, motors and buzzers. • Draw circuits using pictorial representations (not circuit symbols). • Create circuits using switches. • Investigate which materials are electrical conductors and insulators.	Children will: • Fill identical jars with different volumes of water to see which one creates the highest pitch? • Which material would make the best sound defender? How can you investigate this? • Make musical instruments using different length strings. How do their pitches differ?
New Vocabulary	Absorb, canine, carnivore, decay, digestion, enamel, excretion, faeces, herbivore, incisor, ingested, intestines, molar, muscles, nutrition, oesophagus, omnivore, organ, plaque, premolar, process, saliva, stomach	Condensation, cooling, evaporation, freezing, freezing point, gas, heating, liquid, melting, melting point, particles, precipitation, process, properties, solid, temperature, vibrations, water cycle, water vapour	Biomes, carnivore, classification key, criteria, deciduous, environment, evergreen, excretion, food chain, habitat, herbivore, invertebrate, life processes, microhabitat, minibeast, nutrition, omnivore, organism, reproduction, respiration, sensitivity, urban, vegetation, vertebrate	Appliances, battery, bulb, buzzer, cell, circuit, component, conductor, current, device, electricity, energy, fuel, generate, insulator, mains, motor, power source, switch, wires	Amplitude, decibel, electricity, energy, frequency, medium, pitch, power, sound waves, source, transmit, travel, vibrations, volume
Prior Learning	• The parts of the human body and what they do. • All animals need water, air and food to survive. • The different ways in which humans are healthy.	• Why some materials are used for certain purposes because of their properties • The water cycle, and the processes of evaporation, condensation and precipitation.	• Animals can be grouped into vertebrates (and then further into fish, reptiles, amphibians, birds and mammals) and invertebrates • Animals can be grouped into carnivores, herbivores and omnivores • The differences between the teeth of carnivores and herbivores. • The names of some common wild and garden plants and deciduous and evergreen trees.	• Electricity is a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices. • Sources of light and sound may need electricity to work.	• Hearing is one of my five senses. • Sounds can be combined using musical instruments. • What the word vibration means.

	• Animals get nutrition from what they eat. • Humans and some animals have skeletons and muscles for support, protection and movement. • What carnivores, omnivores and herbivores are. • Excretion is one of the seven living processes.		• Examples of habitats (including microhabitats) and the animals and plants that can be found there. • Living things depend on each other to survive. • How food chains and food webs work. • How land use has changed over time and the effects this has on the environment (e.g. urban development)		
<u>Future Learning</u>	Year 5 Year 6	Year 5	Year 5 Year 6	Year 5 –	N/A

Science Long Term Plans: Year 5

#TheSmawthorneExperience

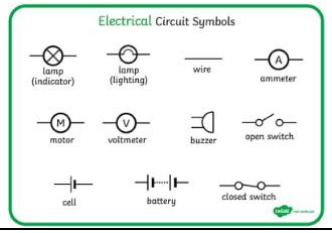
	Autumn Term		Spring Term	Summer Term	
	Autumn 1	Autumn 2	Spring	Summer 1	Summer 2
	Living things and their habitats.	**Forces**	**Properties and Changes of materials**	**Earth and Space**	**Animals, including Humans - (Puberty)**
Curriculum Enrichment			Magna		
Unit overview:	Children will: Describe 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	Children will: 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	Children will: 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 Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic 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 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	Children will: 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	Children will: Describe the changes as humans develop to old age
Substantive knowledge (What children will learn)	Children will know: • That reproduction means to have babies or offspring • To reproduce, animals need a male and a female • Plants reproduce to make new plants through sexual and asexual reproduction • Plants that reproduced asexually, such as strawberries and spider plants, contain both the male and female part of the plant • Sexual reproduction involves pollen from one flower fertilising the egg of another to produce a seed • That life-cycles change in a variety of living things, for example, plants in the vegetable	Children will know: • That gravity is a force that pulls everything to the centre of the earth • That unsupported objects (apples, leaves) fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Air resistance is a type of friction between air and other material. For example, when an aeroplane flies through the air, air particles hit the aeroplane making it more difficult for it to move through the air. • Water resistance is a type of force that uses friction to slow things down that are moving through water • Friction is a force between two surfaces that are sliding, or trying to slide, across each other	Children will know: • When a substance dissolves, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution. • That solubility refers to the ability of a material (solute) to be dissolved in a solution. • Materials such as sugar, salt and baking powder are soluble. • Materials such as sand and flour are insoluble. • Some changes to materials, such as dissolving and mixing, are reversible. The materials can be seperated as no new materials have been formed • Insoluble materials can be seperated from a liquid by sieving or filteration • Soluble materials can be seperated from a liquid by the process of evaporation • That transparency refers to the quality of being easily seen through • Electrical conductors allow electricity to pass through them with ease • How to group materials based on their properties, such as; hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets	Children will know: • That the Earth rotates (spins) in front of the sun • It takes one day (24 hours) to make a rotation • When parts of the Earth face the sun, it is daytime • When parts of the Earth are in the shade, it is nighttime • Earth takes 365 ¼ days to orbit around the sun • The seasons are caused by the Earth's tilt and orbit around the sun • In summer, when Earth is tilted towards the Sun, light and heat reach the surface of Earth directly, so their energy is concentrated and results in high temperatures. • In winter, when Earth is tilted away from the Sun,	Children will know: • That there are six stages in the human life cycle • The six stages of the human life cycle include foetus (growing inside mum's womb), baby, childhood (learn to walk and talk), adolescence (become teenagers), adulthood and old age • Puberty is the word given to the time in a person's life when their body begins to change from a child's body to an adult's body one that is capable of reproduction

	garden or flower border, and animals in the local environment	• Some surfaces cause more friction than others. Surfaces that slow movement down most are described as high friction, while those that allow more movement are described as low friction. Rough surfaces cause more friction than smooth ones. • That some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	• Thermal conductors are materials which allow heat to travel through them easily e.g. saucepan • Thermal insulators are materials which do not allow heat to travel through them easily • An electrical conductor is a material that allows electricity to pass through it easily • An electrical insulator is a material that does not allow electricity to pass through it easily e.g. plastic, wood, glass, rubber	light and heat reach the surface of Earth at an angle, so their energy is spread out and less concentrated, resulting in lower temperatures • It takes 28 days for the moon to orbit the Earth • The Solar System refers to the planets • There are eight planets that orbit around the sun • The planets are called Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune	
Disciplinary knowledge (How children will learn)	Children will: • Dissect a flower and identify the different parts of it. Label the different parts and explain their functions. • Grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. • Compare the life cycles of mammals, amphibians, insects and birds. What is similar about their life cycles? What is different? • Observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. • Compare what you already know about David Attenborough, and compare his work to that of Jane Goodall's.	Children will: • Test the force of gravity using Newton meters. • Investigate the connection of mass and friction. • Investigate how area can affect air and water resistance • Investigate whether levers, pulleys and gears, allow a smaller force to have a greater effect.	Children will: • Find the best material to stop an ice cube from melting. • Place the same amount of a hot liquid in a thermal insulator and conductor. Measure the temperature over time and plot these on the same line graph. Use the line graph to ask and answer questions. • Find out if thermal conductors also make good electrical conductors. • Explain the difference between dissolving and melting. • Investigate which materials are soluble and insoluble. • Design an experiment that investigates dissolving - consider which variables you could change including: size of beaker, amount of liquid, number of stirs, size of solid, temperature of solid (remember that for a fair test all other variables must remain the same). • Create a variety of mixtures using materials such as salt, sand, water, paper clips and rice and use a variety of methods to separate them. • Observe and compare the changes that take place when cakes are baked or bicarbonate of soda mixes with vinegar.	Children will: • Compare the time of day at different places on Earth. • Construct shadow clocks and sundials. • Keep a Moon diary over the course of a month - what do you notice?	Children will: • Research the gestation periods of other animals and comparing them with humans • Collect data around school about height and hand span of different age ranges of pupils. Create a graph summarising results. • Create a life story for a fictitious adult that has made healthy life choices. • Compare the growth pattern of humans to other animals. • Consider why humans take so long to learn to walk in comparison to other animals. • Create a Venn diagram to show what the similarities and differences are between children, adolescents and adults.
New Vocabulary	Anther, cell, dispersed, dissect, embryo, fertilisation, flower, flowering, function, gamete, germination, life cycle, mature, metamorphosis, ovary, ovule, petal, plant, pollen, pollination, reproduction, seed, stigma, structure, sexual, asexual	Force, gravity, earth, air resistance, water resistance, friction, mechanisms, levers, pulleys, gears, balance, drag forces, mass, springs, force meter, Newton meter (N), floats	Circuit, condensation, conductor,dissolves , electricity, evaporation, filtering, flexible, gas, insoluble, insulator, irreversible, liquid, magnetic, melting, particles, permeable, process, properties, rate, resistance, reversible, solid, soluble, solution, state, temperature, thermal, transparent, variable, water cycle	Asteroid, axis, comet, galaxy, gravity, leap year, meteorite, orbit, planet, shadow, Solar System, sphere, spin, star, time zones, universe	Adolescence, adulthood, development, foetus, genitals, gestation, growth, hormones, independent, infancy, life cycle, life processes, mature, menopause, menstruation, offspring, organ, puberty, rapid, reproduction, toddler, vertebrate
Prior Learning	• Animals can be grouped into vertebrates (and then further into fish, reptiles, amphibians, birds and mammals) and invertebrates • Some examples of life cycles (including those of plants and humans)		• A variety of everyday materials including wood, plastic, glass, metal, water and rock. • The physical properties of a variety of everyday materials (including those that are transparent) and to compare and group materials on the basis of these properties • How materials are suitably used based on their properties. • How magnets and electrical circuits work. • Some materials which are magnetic.	• We have four seasons (autumn, winter, spring and summer). • The Sun is a source of light but the Moon is not. • Know that a shadow is caused when an object blocks light from passing through it. • The properties of a sphere.	• Animals can be grouped into vertebrates (and then further into fish, reptiles, amphibians, birds and mammals). • Some examples of life cycles (including those of plants and humans)

	• The processes of dispersal, fertilisation and germination • Reproduction is one of the seven life processes. • Parts of a plant, their features and what their functions are. • The work of David Attenborough. • The word metamorphic means 'a change of form' (in the context of rocks)		• How shapes of solid objects can be changed by squashing, bending, twisting and stretching. • Materials that are solids, liquids and gases and their particle structure. • Some materials change state when they are heated or cooled and the temperature at which this happens. • The roles of melting, evaporation and condensation in the water cycle and the role temperature has on the rate of evaporation. • Some rocks are permeable.		• Reproduction and growth are two of the seven life processes. • How to live a healthy lifestyle.
<u>Future Learning</u>	Year 6	N/A	N/A	N/A	Year 6

Science Long Term Plans: Year 6

#TheSmawthorneExperience

	Autumn Term		Spring Term		Summer Term	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Light	**Electricity**	**Evolution**	**Animals, including Humans – circulatory system (Sex Ed)**	**Living things and their habitats**	
Curriculum Enrichment						
	Children will: 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	Children will: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuits 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	Children will: 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	Children will: 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	Children will: 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	
Substantive knowledge (What children will learn)	Children will know: • Light travels in a straight line from a light source • Light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Shadows are caused when certain materials block light • When light is blocked by an opaque object, a dark shadow is formed. The further away the light source is, the smaller the shadow is	Children will know: • The brightness of a lamp or the volume of a buzzer will vary depending on the number and voltage of cells used in the circuit • How to compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • To use recognised symbols when representing a simple circuit in a diagram 	Children will know: • Evolution is the process of adaptation (gradual change) over a long period of time • An adaptation is a feature of a plant or animal that helps them to survive in their habitat • The theory of evolution has been proven through evidence from fossils as well as living animals and plants	Children will know: • Blood vessels are a series of tubes inside our body • The circulatory system is made up of blood vessels that carry blood away from and towards the heart. • Some choices, such as smoking and drinking alcohol, can harm the circulatory system • Regular exercise is good for your brain, as well as your body • Physical activity makes your body release more of the chemicals which make it easier to focus. • Exercise also causes more blood to flow to your brain helping it to work better	Children will know: • That animals can be classified in different ways • Animals can be sorted into 2 main groups: animals with a back bone (vertebrates) and animals without a backbone (invertebrates) • That animals can also be sorted according to their characteristics: fish, amphibians, reptiles, birds and mammals • That organisms are classified into broad groups and that these groups can be broken down further	

Disciplinary knowledge (How children will learn)	Children will: • Know what happens when light is reflected from different surfaces? What happens when light is reflected from a mirror? What happens when the angle of the mirror (or light source changes?) • Draw diagrams to show how light travels and what happens when light is reflected from a mirror. • Draw diagrams to show how we see. • Design an experiment to measure shadow length by changing a variable. Show your results in a line graph to show the relationship between distance of light source and shadow length. Explain your findings using scientific vocabulary. • Create shadow puppets to show how light travels and to demonstrate that a shadow has the same shape as the object that casts them. • Make a periscope and explain how it works using diagrams and scientific vocabulary. Use the idea that light appears to travel in straight lines to explain how it works. • Research how mirrors are used in different contexts (e.g. rear view mirrors, on a dangerous bend) and explain why and how they work. • Explain why objects look bent in water. • Explore different contexts in which light travels including rainbows, colours on soap bubbles and coloured filters.	Children will: • Match circuit symbols to their meanings and their words. • Predict, then investigate what happens when more batteries are added to a circuit. Explain why this happens. • Predict, then investigate what happens when more bulbs, motors are added to a circuit. Explain why this happens. • Systematically identify the effect of changing one component at a time in a circuit. • Use circuit symbols when representing a simple circuit in a diagram. • Design and make a set of traffic lights, a burglar alarm or some other useful circuit. • Investigate what happens when the voltage of the battery changes. • Investigate what happens when the length of the wires changes. • Investigate what happens when you add a resistor to a circuit. • Use ammeters to measure the current in a circuit.	Children will; • Research the work of Charles Darwin and Alfred Russel Wallace. • Create a fact file of an animal or plant identifying how it has adapted to its environment and how it has evolved to survive. • Create a new planet and describe the environmental features. What animals and plants can live there? How have they adapted to survive?	Children will: • Investigate how does your pulse change with exercise and decide which is the most efficient way to present data • Investigate which exercise produces the fastest pulse	Children will: • Classify animals using common characteristics. • Investigate whether humans are a primate and present their findings. • Identify 5 different tpyes of microrganisms • Investigate how microorganisms spread. • Investigate microbial growth
New Vocabulary	Angle, dark, dim, electricity, emits, light, mirror, opaque, reflects, shadows, source, surface, torches, translucent transparent	Ammeter, appliances, battery, bulb, buzzer, cell, circuit, component, conductor, current, device, electricity, energy, fuel, generate, insulator, mains, motor, power, resistance, resistor, source, switch, voltage, wires	Adaptation, ancestor, biodiversity, biome, breeding, characteristics, environment, evolution, extinct, fossil, generation, inherit, maladaptation, mutation, natural selection, offspring, palaeontology, reproduction,	Aorta, arteries, atrium, blood vessels, capillaries, carbon dioxide, circulatory system, deoxygenated, heart, lungs, nutrients, organ, oxygen, oxygenated, pulse, respiration, veins, vena cava, ventricle	Vertebrates, fish, amphibians, reptiles, birds, invertebrates, mammals, insects, spiders, snails, worms, flowering, non-flowering, micro-organism

			speciesm survive, theory, variation		
Prior Learning	• Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights) • Shiny materials do not make light but do reflect it. • Shadows are caused when certain materials block light. • Light travels in straight lines. When light is blocked by an opaque object, a dark shadow is formed. • The further away the light source is, the smaller the shad-ow is. The closer the source of the light, the bigger the shadow.	• Electricity is a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices. • Sources of light and sound may need electricity to work. • Where electricity cones from • Which appliances need electricity • What a circuit is, the components of a circuit and how it works. • What electrical conductors and insulators are. • What happens when a switch is added to a circuit. • What forces and resistance are.	• Which things are living and which are not. • Identifying animals (e.g. amphibians, reptiles, birds, fish, mammals, invertebrates) and plants using classification keys • Animals that are carnivores, herbivores and omnivores. • Animals have offspring which grow into adults. • The basic needs of animals for survival (water, food, air) • Some animals have skeletons for support, protection and movement. • Food chains, food webs and the role of predators and prey. • Features of habitats and the animals and plants that exist there (biodiversity) . • Examples of different biomes • The life cycle of some animals and plants • Sometimes environments can change and this has an effect on the plants and animals that exist there • Living things breed to produce offspring which grow into adults. This is called reproduction. • The role of Mary Anning in palaeontology and the discovery of fossils. • The features of some rocks and the role they play in the formation of fossils	• Which things are living and which are not. • Classification of animals (e.g. amphibians, reptiles, birds, fish, mammals, invertebrates) Animals that are carnivores, herbivores and omnivores. • Animals have offspring which grow into adults. • The basic needs of animals for survival (water, food, air) • The importance of exercise, hygiene and a balanced diet. • Animals get nutrition from what they eat. • Some animals have skeletons for support, protection and movement. • The basic parts of the digestive system. • The different types of teeth in humans. • Respiration is one of the seven life processes. • The life cycle of a human and how we change as we grow.	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Describe the life process of reproduction in some plants and animals.
Future Learning	N/A	N/A	N/A	N/A	N/A