

Year 1					
	Autumn TOPIC 1 INTRODUCTION TO SEASONAL CHANGES	Autumn 2 TOPIC 2 Animals Inc Humans	Spring 1 TOPIC 3 MATERIALS / SEASONAL CHANGES	Summer 1 TOPIC 4 PLANTS/SEASONAL CHANGES	Summer 2 TOPIC 5 PLANTS
Prior Knowledge	<i>EYFS Understanding the World Term 3- Hot & Cold Places</i>	<i>DM Understanding the World (3-4 Years) Spring Term</i> - Begin to understand the need to respect and care for the natural environment - Explore the natural world around them - Describe what they see, hear and feel whilst outside	<i>EYFS Mathematics-</i> exploring different materials and shapes <i>EYFS Understanding the World-</i> exploring collections of natural materials with similar/ different properties	<i>EYFS Understanding the World Term 3- Hot & Cold Places</i> <i>Year 1 Science-</i> Seasons	<i>DM Understanding the World (3-4 Years) Spring Term</i> - Plant seeds and care for growing plants - Understand the key features of the life cycle of a plant - Begin to understand the need to respect and care for the natural environment <i>Year 1 Science-</i> Plants continued
Key Inquiry Questions	- What do we know about weather? - What are the four seasons? - Are the seasons the same across the world? - How long is a day and how do we know? - What can we observe about the weather currently? How do we make observations? - How can we record our observations?	- How can we group different animals? - How can we classify different animals? - How does a skeleton help an animal to survive? - What is special about the human body? - What are my senses? - What are the different types of animal? - Am I a carnivore, herbivore or omnivore? - Whose skeleton is that?	SEASONAL CHANGES: - What can we observe about the weather? How do we observe? - How is this weather different? MATERIALS: - What are the different materials that you use every day? - How do we describe materials? - What do materials have in common and what is different about them? - Which material is best and why? (2 lessons)	SEASONAL CHANGES: - What can we observe about the weather? How do we observe? - How is this weather different? PLANTS: - What is growing now? - What would you find in your garden? - What does evergreen mean?	- What are the different parts of a plant? - How do plants change over their lifetime?
Key Vocabulary <i>Intentional and related vocabulary to be taught throughout the unit</i>	Weather, type, cloud, sun, rain, sunshine, wind/y, snow/y, hot, cold, warm, bright, blow, gust, thunder, lightning, fog, breeze, clear, frost, autumn, spring, summer, winter, forecast,	Classification, grouping, animals, skeletons, teeth, bones, survive, sense, taste, smell, touch, feel, sight, neck, head, arms, ears, mouth, loud, quiet, strong, subtle, volume, powerful,	Properties, materials, hard, soft, smooth, rough, stretchy, stiff, brittle, bumpy, waterproof, bouncy, resistant, plastic, paper, wood, rock, stone, metal, see-	Wild plant, garden plant, deciduous, evergreen, weed, observations <i>Re-visit vocabulary from term 1.</i> Plant, seed, soil, sunlight, stem, leaf/leaves, roots, evergreen,	root, stem, leaf/ leaves, flowers, blossom, petals, stem, root, trunk, branch, root, soil, energy, fruit/ bud, names of common plants, weed, grass reptile, bird, fish, amphibian, mammal, carnivore,

The Coombes Curriculum Map: SCIENCE

	measure, rainfall, wind, thunder, observation, thermometer, weather gauge, night, day, daylight, length		through, shiny, object, metal, wood, plastic, fabric, elastic,	needles, winter, stay green, forest, fir, season	herbivore, omnivore, diet, teeth, diet
NC Taught Curriculum <i>Substantive knowledge taught and covered in Kos</i>	<i>Understanding science</i> Knowing and applying vocabulary Working scientifically – Answering own questions Observe and talk about changes in the weather and seasons Testing & developing ideas Making observations and recording by making tables & charts about the weather	<i>Scientific knowledge & concepts:</i> 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 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense Working scientifically – Testing & developing ideas Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)	Working scientifically – Testing & developing ideas To distinguish between an object & the material it is made from <i>Answering own questions</i> Asking simple questions & recognising they can be answered in different ways <i>Understanding science</i> Identify and name materials	Working scientifically – Testing & developing ideas Observe and describe weather associated with the seasons and how day length varies Reporting finding (linked to Autumn 1) <i>Science & technology for the future – Implications</i> Understanding the impact of seasonal changes around the world	<i>Scientific knowledge & concepts:</i> Identify and name a variety of common, wild & garden plants Deciduous & evergreen trees Identify & describe the basic structure of common flowering plants <i>Understanding science</i> Knowing and applying vocabulary
Learning Experiences <i>How will children experience the learning? What will they produce?</i>	✓ Identify different weather types through media, observations and text ✓ Use vocabulary to describe different weather types- compare physical weather (e.g. rain) to weather observations (e.g. bright) on nature walk/ through videos ✓ Complete a matching activity linking key features of the 4 seasons in UK	Animals: ✓ Use clues to identify and classify animals according to different features- diet, physical features and habitat ✓ Guess an animal using a series of zoomed in/out photos of its features and justify classification using scientific vocabulary ✓ Revisit different skeletons of animals and their classification	✓ Compare, sort and group objects made from different materials ✓ Introduce descriptive scientific vocabulary to describe different materials ✓ Apply description using blind-folded sensory boxes – make predictions using descriptions (e.g. I think it is wood because it is hard, smooth etc) ✓ Compare objects made from different materials (plastic/glass	✓ Nature walk – what do you notice about the seasonal changes- revisit scientific vocabulary ✓ Make new observations using your weather stations and make compare results ✓ Identify and take photos of known plants in school grounds ✓ Collect different types of leaves, petals, seeds for comparison ✓ Use collected items and house plants to compare and discuss	✓ Identify different flowering plants through pictures and physical observations ✓ Study and dissect grown flowers to identify their different parts ✓ Make and record observations of how a potted plant vs cut flowers change over a week ✓ Plant a range of different things that grow and compare growth through observation (e.g. cress, daffodils, spring onions)

	- Explore treasure chests of items to link countries with typical weather types (e.g. sun- Australia/ Snow- Canada) - Create a weather station that the children can use to record data- rain gauge, wind vane, thermometer box - Record weather daily making observations using new vocabulary and wind/rain/temperature	- Use videos and photos and models of skeletons and suggest how they support animal to survive (tortoise shell, giraffe neck, gorilla arms/ shoulders, sloth arms) - Humans: - Put pictures/models of human body parts back together- learning about how they are positioned around the body - Use songs and rhymes to learn the names of our own body parts - Play a game of pairs matching the body part name or function with an image of it - Learn the importance of different body parts – head, neck, arms, elbows, legs, knees, face, ears, hair, mouth, teeth - Create a class life-size diagram of the human body and label it - Explore the senses using taste/smell/touch/sound test	- bottle, wood/plastic peg, metal/wooden spoons) - Create a real-life Venn diagram of materials/ properties - Explore natural vs man made materials in the school environment - Complete simple scientific enquiry: What is the best material for a raincoat? Pose question, complete inquiry and write up results	- differences- decide where they would be found - Make observations of different evergreen plants – tree hunt in the school grounds using vocabulary mat - Make rubbings of different leaf types - Use the story/ legend of the evergreen tree to identify trees that the bird could live in during winter	
Eco / Outdoor Learning Opportunities Where appropriate	- Nature walk to observe local weather - Ensuring weather station is placed in appropriate place to collect accurate data		Identification of materials in the outdoor natural environment	- Weather observations - Tree rubbings - Tree identification (linked to Forest school)	Planting and growing plants in the outdoor environment
Other cross-curricular learning links Where appropriate				Links to <i>Autumn 1 Science- Seasons</i>	Links to <i>Autumn 1 Science- Seasons</i>

The Coombes Curriculum Map: SCIENCE

Key Outcomes <i>To be used for assessment of learning</i>	- Identify and name key features of the 4 seasons in the UK - Describe how days have different lengths in different seasons - Make observations of weather using scientific vocabulary - Record weather changes using and reading simple scientific tools	- Identify different features of different groups of animals - Name and locate different body parts - Identify body parts associated with different senses - Understand what a carnivore, omnivore and herbivore are - Name the different groups of animals and animals within each group	- Identify and describe different materials and their simple properties - Compare and describe physical properties of objects made from the same materials - Group and sort materials according to their material or according to their properties Pose simple scientific questions and test them	- Recall scientific vocabulary to describe seasons - Make accurate observations - Identify and describe evergreen and deciduous plants - Identify and describe the structure of a flowering plant	- Name the parts of a flowering plant - Identify and name some common flowering plants - Make observations of and describe changes in plants over a period of time
--	--	---	--	--	--

Year 2						
	Autumn 1 TOPIC 1 HEALTHY LIVING	Autumn TOPIC 2 EVERYDAY MATERIALS	Spring 1 TOPIC 3 ANIMALS INCLUDING HUMANS and	Spring 2 TOPIC 4 LIVING THINGS & THEIR HABITATS	Summer 1 TOPIC 5 PLANTS	Summer 2 TOPIC 6 ANIMALS INCLUDING HUMANS PART 2

			LIVING THINGS & THEIR HABITATS			
Prior Knowledge	<i>Year 1 Summer Animals including humans-</i> What is special about the human body	<i>Year 1 Autumn 2 Materials-</i> Materials and common properties	<i>Year 1 Spring 1/ Summer 1 Seasonal Changes/ Plants-</i> Different animals & plant classification	<i>Year 1 Spring 1 Plants-</i> Observations of the natural environment	<i>Year 1 Autumn 1 Seasonal Changes –</i> Evergreen & native plants <i>Year 2 Spring 2 Living Things and their habitat – Scientific thinking linking to animal habitat and diet</i>	<i>Year 2 Autumn 1 Healthy Living-</i> Living healthily and caring for our bodies
Key Inquiry Questions	- What does exercise do to my body? - What would happen to the human body if you did not exercise? - Why is it important that we eat different types of food? - What else do i need to survive?	- What are the key differences between these materials? - How are different materials used? - Which materials are used for more than one thing? - Which is the most suitable material and why? - Which material did Charles Mackintosh invent? - How can we classify materials in our lives?	- What do you need as a human to survive? - Do animals only obtain food from plants? - What is a food chain? - What is the difference between living, dead and never been alive?	- Do all animals live in the same place? - Do animals change their habitats? - Why do animals need different living conditions? - What would happen if an animal was in the wrong habitat? - What's the difference between a habitat and a micro-habitat?	- If I put my plant in direct sunlight and water it every day, will it grow? - What does it mean to have a mature plant? - How can I recognise the difference between seeds and bulbs? - What difference does temperature have on the plants?	- What is meant by the word offspring? - What is a life cycle? - As we grow, what do we need to survive? - How can we measure the changes of animals? - What is meant by hygiene and why is it important? - How do our living habits differ from that of an animal
Key Vocabulary <i>Intentional and related vocabulary to be taught throughout the unit</i>	Nutrition, exercise, food groups, healthy, muscles, growth, survival, essential, alive, food source, balanced diet, dehydrate, energy, heart rate, pulse, blood, pumping, eatwell plate, fruit, vegetables, protein, dairy alternative, fat, salt, sugar,	Everyday materials, uses, suitable, unsuitable, properties, multi-purpose, flexible, rigid, absorbent, waterproof, stretchy, bend/bendy, durable, high-visibility, reflective/non-reflective, rubber, wool, clay, break, tear, rough, smooth, opaque,	Survival, humans, animals, food chain, diet, living, dead, near living, not living, alive, never been alive, indicators, signs of life	Rainforest, desert, seashore, forest, habitat, microhabitat, shelter, safety, minibeast, protection, urban, local,	Germination, shoot, grow, food store, life cycle, die, wilt, seedling, sapling, sunlight, nutrition, space, air	Offspring, reproduce, growth, baby, toddler, child, teenager, adult, develop, live young, basic needs, life cycle, frog, spawn, tadpole, froglet, tadpole with legs, stages, hygiene, germs, illness, infection/infectious, spread, water, food, air, nutrition, nourishment, mother

	carbohydrates, complex, wholegrain	transparent, translucent, recycle, pollution, natural, artificial				Healthy, hygiene, microbe, germ, unhygienic, spread, prevent,
NC Taught Curriculum <i>Substantive knowledge taught and covered in Kos</i>	Scientific knowledge & concepts Describe the importance of exercise, eating the right amounts of different types of food, and hygiene for humans	Working scientifically - Testing & developing ideas <i>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</i> Understanding science <i>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</i>	Understanding science <i>Explore and compare the differences between things that are living, dead, and things that have never been alive</i> Scientific knowledge & concepts 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	Scientific knowledge & concepts <i>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</i> Understanding science <i>Identify and name a variety of plants and animals in their habitats, including microhabitats</i>	Working scientifically- Answering own questions Observe and describe how seeds and bulbs grow into mature plants Understanding Science Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Scientific knowledge & concepts: <i>Notice that animals, including humans, have offspring which grow into adults</i> Working scientifically- Answering own questions <i>Observing, measuring and recording offspring (chicks)</i> Understanding Science <i>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</i>
Learning Experiences <i>How will children experience the learning? What will they produce?</i>	- Predict, compare and investigate effects of different exercises on the body (Stupendous Steppers- STEM.org) - Record findings in a suitable way - Consider the positive and negative impacts on the body of exercise- including heart strength, muscle strength, chemical responses	- Observational note taking of different materials (wood, metal, plastic, glass, brick, rock, paper) - Matching words to definitions and finding examples of those words in physical materials - Float or sink experiment - Carousel of squashing, bending, twisting and	- Identify different animal diets and use terminology (carnivore/ herbivore etc) - Complete matching quiz- include diet type as well as logical diets 9e.g. wolves can eat kangaroos but don't due to geography) - Pose scientific questions relating to	- Treasure hunt- living things/ things never been alive - Create a guess who style game where questions are to help identify the habitat style (does your animal live in a desert?) - Explore micro-habitats and the animals/organisms that live in a habitat	- Compare what a plant needs to live with what recently has been learnt about what an animal needs - Compare young plants with mature plants, including those with flowers, that are perennial/ annual and trees - Explore different seeds/ bulbs- cut them open and look at different types in	- Compare different baby animals - Match the offspring to the parent by observing body parts and ways baby animals feed Chicks to be brought in and monitored – research what chicks need to grow into healthy adults. - Compare what baby chicks need to survive and their stages of growth to other species – including for example marsupials/ mammals/ large mammals

	- Make links between food groups and organs in the body - Discuss Eatwell plate and use interactive (foodstandards.gov.scot) to learn about different components of a healthy meal - Review different food packaging to look at nutritional content - Write a letter in a bottle, asking for essential provisions for surviving on a desert island	- stretching – record evidence - Zoom in Zoom out activity (Explorify) - Use videos and images to see how different materials are used for different things- (BBC Bitesize) - Suggest different ways materials can be used (e.g. wood-table legs, matches, floors/ metal coins, cans, cars) - Tour school grounds finding examples of different ways materials are used - Consider different materials for different contexts (Hamilton Trust Materials Matter) in carousel of investigations - Write up scientific findings using appropriate vocabulary - Which material did Charles Mackintosh invent? - How can we classify materials in our lives	- different animals' diets- Is a bull shark is an omnivore?/ How many fish does a whale need to eat per day? Use age-appropriate research to answer these questions - Explore how different animals find food- eg compare hunters to scavengers / grazers to those who eat rarely (Venn diagram) - Create a research page detailing how an animal eats/find food and what diet it has - Look at images of different types of predator/ prey (include local wildlife as well as worldwide species e.g. sloth/ marmoset/ shark) - Identify which physical features these animals have to help them find food-present findings using scientific vocabulary to class - Complete the food chain circuit – give chn pictures and they are to organise into a food chain. Challenge	- at a smaller scale- link to food chains/ diet - Search for micro-habitats int he school grounds, recording findings scientifically - Create labelled dioramas of habitats across the world - Design a bug hotel for habitats across the world – explore how different structures will encourage different living things	- our lives (apple/ pumpkin/ melon/flowers/ onions/ daffodils etc) - Looks at different young and mature plants across the world to understand what they need to survive - Observe and scientifically record the growth of a plant and how it changes over time	- Record growth of chicks over time, using scientific vocabulary, photographs and observations (including time spent sleeping, eating etc) - Make links to human stages of growth - Consider what we know about hygiene and use pepper water to show how germs spread. Use soapy water to show how soap can eliminate germs - Record observations of what impact anti-bacterial gel, soap and water have on 'dirty' (pepper) hands - Using Explorify images, look at different types of germs and how they impact the human body at microscopic level - Consider ways we can stop germs from spreading, creating rules for this using scientific vocabulary. - Share hygienic choices with peers
--	---	--	---	--	---	--

The Coombes Curriculum Map: SCIENCE

			ideas if animal does not have physical features that can hunt / eat these animals - Compare food chains of different animals - Compare 'healthy balanced diets' for different animals			
Eco / Outdoor Learning Opportunities Where appropriate				Mini-beast hunting in Forest school		Consider different sources of germs outside (litter etc)
Other cross-curricular learning links Where appropriate		Links with Design & Technology (Year 1 Spring Term 2- Parachutes)				Links to PSHE unit- Healthy Me
Key Outcomes To be used for assessment of learning	- Describe the impact of exercise on the human body - Understand the basic needs of a human to survive - Describe how exercise and different food types are important for a healthy lifestyle - Recognise how different food types help the body in different ways	- Name and describe properties of different materials - Describe how the same object can be made from different materials - Identify suitable/unsuitable materials for a particular purpose - Describe properties of materials using scientific vocabulary	Animals including humans - Describe the basic needs of animals in order to survive - Describe the different diet and nutrition of a variety of animals Living things and their habitats - Give an example of a simple food chain - Explain how different species require different diets	- Describe habitats of a variety of different living things and explain how/why they are suited to it - Explain the difference between a habitat and a microhabitat - Raise questions about the local environment - Study living things in the environment to compare habitats and understand the term 'survival'	- Understand what plants need to grow and survive - Describe the growth and processes of reproduction in a plant - Recognise that the requirements for growth of a seed/ bulb is different to that of a plant	- Scientifically observe changes in growth - Ask questions about survival and suggest a way to find the answer - Describe the term 'offspring' - Understand there are different stages of life, and that of humans differs from other animals - Describe the importance of hygiene and how to help to stop the spread of germs

		Describe the findings of scientists who have found new materials	- Explain how not all animals find food in the same way - Explain how we know if something is living, never been living or dead			
--	--	--	--	--	--	--

Year 3						
	Autumn TOPIC 1 Plants	Autumn TOPIC 2 Rocks	Spring TOPIC 3 Forces and Magnets	Spring TOPIC 4 Forces Part 2	Summer TOPIC 5 Animals including Humans.	Summer TOPIC 6 Light
Prior Knowledge	<i>Year 2 Summer 1 Plants</i> Observing plants and what they need to survive and grow	<i>Year 2 Autumn 2 Properties of Materials-</i> Using scientific language to describe solids	NEW TOPIC	<i>Year 3 Spring 2 Introduction to Forces</i> – What a force and magnet is	<i>Year 1 Summer Animals including Humans-</i> Grouping animals and skeletons <i>Year 2 Spring 1 Animals including Humans-</i> Food & survival	<i>Year 1 Autumn 1 Seasonal Changes</i> – Observations of weather NEW TOPIC
Key Inquiry Questions	- Do all plants have the same features? - What is each of the parts of the plant for? - What do plants need to grow? Is it the same for all plants? - How is water transported in plants? - What is pollination? - What would happen to the life cycle of a plant if seed dispersal did not happen?	- How can we group these rocks? - How can you tell rocks apart just by their physical appearance? - What are fossils and how are they formed? - What is the rock cycle? - What happens to a rock when...?	- What is a force? - How do things move differently if the surface changes? - What makes magnets attract and repel? Does the type of magnet matter? - What are the properties of magnetic materials? - Who was Albert Einstein and what can we learn from him?	- Can an object be pushed by a magnetic in the same way it can be pulled by one? (2 lessons) - Does wrapping a magnet in a towel reduce its magnetic force? (2 lessons) - How can a magnet help us to get around?	- What is my body made of? - Do all animals have skeletons? - How can we group animals? - Do we all need to eat the same to survive? - What is nutritious for humans?	- How is the sun dangerous? - Does light reflect from all surfaces? - Why does my shadow change throughout the day? - Why do I not have a shadow when it is cloudy? How do you see where you are going when it is dark?
Key Vocabulary	Roots, stems, leaves, flowers, trunks, air, light, nutrient, soil, seed, dispersal, life cycle, scattered, seedling,	Rock, boulder, grains, crystals, fossil, soil, peat, marble, granite, sandstone, slate, chalk, powder, luster,	Magnet, force, push, pull, magnetism, poles, attract, repel, friction, surface, gravity, like, unlike, magnetic	Force, accelerate, decelerate, exerts, normal force, gravity, friction, air resistance, water resistance, gear, pulley, level,	Human, animal, skeleton, muscle, body part, functions, support, protection, movement, nutrition, diet,	Sun, moon, shadow, light source, light ray, cast, reflection, translucent, transparent, opaque, light

The Coombes Curriculum Map: SCIENCE

<i>Intentional and related vocabulary to be taught throughout the unit</i>	pollination, germination, pollinator, fertilisation, stigma, style, ovary, anther, filament	harness, texture, shape, size, minerals, properties, characteristics, permeable, impermeable	field, demagnetize, magnetic/ non-magnetic	fulcrum, earth's gravitational pull, streamlined, mechanism.	compare, group, healthy/unhealthy	beam, light spectrum, Isaac Newton, elongated, shortened, prism
	<i>Scientific knowledge & concepts</i> Identify and describe the functions of different parts of flowering plants; roots, stem/trunk, leaves and flowers. Working scientifically <i>Answering Questions, Testing & developing ideas/ reporting findings</i> 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. <i>Understanding science –</i> Explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal.	Working scientifically Testing and developing ideas – finding similarities and differences Compare different kinds of rocks on the basis of their appearance and simple physical properties. <i>Scientific knowledge & concepts</i> Describe how fossils are formed when things that have lived are trapped within a rock. Recognise that soils are made from rocks and organic matter. <i>Understanding science –</i> Group together different kinds of rocks on the basis of their appearance and simple physical properties.	Working scientifically Answering questions – (making predictions) Testing and Developing ideas (observations, comparing, grouping) Observe how magnets attract or repel each other and attract some materials 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 Predict whether two magnets will attract or repel each other, depending on which poles are facing. <i>Scientific knowledge & concepts</i> Describe magnets as having two poles.	Working scientifically Answering questions Testing and Developing ideas (observations, comparing, grouping) Compare how things move on different surfaces. Notice that some forces need contact between two objects but magnetic forces can act at a distance.	<i>Scientific knowledge & concepts</i> Identify that animals, including humans, need the right types and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. <i>Understanding science</i> Identify that humans and some animals have skeletons and muscles for support, protection and movement.	<i>Scientific knowledge & concepts</i> Recognise that they need light in order to see things and that dark is the absence of light. 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. Working scientifically Testing and developing (drawing conclusions/observations) answering questions Find patterns in the way that the size of shadows change. Notice that light is reflected from surfaces.
Learning Experiences	✔ Collate known vocabulary associated with plants	✔ Collect, observe and discuss grouping rocks in different ways	✔ Match scientific words to their definitions	✔ Scientific enquiry response to inquiry question through	✔ The Human Body Game (STEM.org)	✔ Suggest answers to how light travels from the sun

<i>How will children experience the learning? What will they produce?</i>	- Observe/ collect different types of plants in the local area and pose questions about their functions - Dissect a selection of flowers to compare their parts and identify common parts (stem, stigma, style etc) - Observe and label parts of plants and compare to parts of a flower - Plant seeds and complete observational experiment, recording information about plant growth with different factors (e.g. light, water) - Explore how unusual plants around the world grow in adverse circumstances - Use flower stems to identify how water is transported- complete colour water experiment - Explore different types of pollination and pollinators - Dissect or observe different flower structures that support pollination e.g. Burdock, Poppy, Sycamore, Dandelion	- Learn about and name of different types of common rocks and make observations through lenses - Compare different rocks and learn/ use new vocabulary used to describe them - Observe rocks at different stages through lenses and through the rock cycle (STEM.org lesson) - Explorify- Zoom in Zoom out fossil activity. - Create salt dough fossils and describe how they have been formed - Complete Rock Detective investigation (Stem.org) testing the properties of rocks and their reaction to acid test, hardness test and water test and summarise findings	- Explore different times/ objects forces are in action (e.g. friction- running with/without socks, gravity -pouring drinks, magnetic- fridge magnets, electrical- light bulbs, spring - trampoline, air resistance- dropping objects with/without parachute, tension- tug of war) - Pose scientific reasons and make predictions about why a toy car will vary in speed when travelling across different material - Create a fair test to test varying materials - Observe different types of magnets responding to each other - Magnet junk yard – sorting / using magnets to identify the magnetic from the non-magnetic. Record scientific results - Learn about theory of magnetism and Albert Einstein as well as other theories by Michael Faraday, William Gilbert - Apply Einstein's theory with compass making	planned investigation and write up Scientific enquiry response to inquiry question through planned investigation and write up: observational report on the impact Scientific enquiry response to inquiry question through planned investigation and write up: Make a compass using magnets	- Learn about functions of different body parts - Skeleton snap- make predictions and match bones to places in the body/ different animals including tails, wings, horns, beaks, etc - Discuss different functions of body parts according to habitat and food chain - Group animals according to skeletons and muscles - Look at the diets of different animals - Review human nutrition needs and how each type of food supports different parts of the body	- Use Nasa.gov videos and images of light forming and observations of the sun - Explore different sources of light and their properties and describe how the light travels - Complete investigation of light reflections off different surfaces - Review theory if light by Isaac Newton and compare it to findings of research - or shadow puppets investigation- explore how light and shadows change with the position of the light source and record results - Identify objects that opaque/ translucent and transparent and explore these in relation to the formation of shadows Understand dark is the absence of light and use a Shoebox Light for observations and summarise learning through these observations
--	--	---	--	--	---	---

Eco / Outdoor Learning Opportunities <i>Where appropriate</i>	Collecting and observing plants in the local area	Observing rocks and stones in the local area and making links to our location and weather	Utilising the school environment to produce a fair test			Observations of light
Other cross-curricular learning links <i>Where appropriate</i>						
Key Outcomes <i>To be used for assessment of learning</i>	- Identify and describe the functions of different parts of flowering plants - Use scientific vocabulary to describe how water is transported in plants - Understand the basic things plants need to survive and how this can differ according to type of plant - Describe the life cycle of flowering plant using associated vocabulary	- Describe and identify properties of common rocks - Describe how fossils are formed using scientific vocabulary - Classify rocks scientifically considering terminology to describe similarities and differences	- Accurately describe what a force is - Understand how magnets have attracting and repelling forces and when they will attract/repel - Make predictions using scientific knowledge - Name some magnetic materials and their properties - Recognise where magnets are used in every day life	- Ask simple scientific questions - Set up a simple practical investigation, ensuring it is a fair test - Record and present practical results using scientific language - Suggest improvements to testing to answer further questions - Identify and describe the impact of different locations on forces	- Use scientific evidence (of animals) to answer questions about skeletons, nutrition and diet of different animals - Describe how different foods provide different nutritional benefits for different parts of the human body - Understand how different animals use their skeletons and muscles for different reasons and describe how this relates to what we know about that animal (e.g muscles of a lion or snake skeleton).	- Name and describe different sources of light - Describe, using scientific vocabulary, how a shadow is formed - Describe, in simple terms, the theory of light formed by Isaac Newton - Identify the properties of materials that light can reflect off and describe why/why not using scientific terminology

Year 4						
	Autumn TOPIC 1 Electricity	Autumn TOPIC 2 Electricity	Spring TOPIC 3 Sound	Spring TOPIC 4 Animals including Humans	Summer TOPIC 5 Living things and their habitats	Summer TOPIC 6 States of Matter.

Prior Knowledge	Year 3 Spring 2 Forces NEW TOPIC	Year 4 Autumn 1 Electricity	NEW TOPIC	Year 3 Summer 2 Animals including Humans – Skeletons & survival	Year 2 Spring 2 Living things and their habitats- our local environment including habitats and microhabitats	Year 2 Autumn 2 Everyday Materials – Scientific properties of materials
Key Inquiry Questions	- How is electricity used in our lives? - Which scientists' work contributed to how we use electricity now? - What is natural electricity? - What is an insulator and what is a conductor? - Why should we be energy efficient? - What precautions do we need to take when dealing with electricity?	- What makes up a simple electrical circuit? - Who was the first person to discover man-made light? - How has Thomas Edison's work developed and can I make a lamp/buzzer work in a circuit? - How can I make the lamp brighter? - What is the purpose of a switch and how does it impact an electrical circuit?	- How many different sounds can I make with items around me? - How does vibration make sound? - What is the different between the pitch of a sound and the object producing it? - Is there a link between pitch and volume? - Does distance make a different to how loud a sound can be?	- What is the digestive system and why is it important? - How do teeth help the digestive system? - How can we keep our teeth healthy? - Do all living things have the same types of teeth? - What role do teeth play in a food chain? - Is it predator, producer or prey?	- What plants and animals are native to The Coombes? Is it the same the whole year round? - What would happen to our environment without plants and animals? - What is the human impact on natural habitats? - How can living things be classified? - How can we classify plants?	- Solid, liquid or gas? - How do states of matter change each other? - How does heat or cold change a state of matter? - Do all materials respond the same way to heating and cooling? - What is evaporation? - How much water do we waste?
Key Vocabulary <i>Intentional and related vocabulary to be taught throughout the unit</i>	Electricity, electrical, Appliances, devices, mains, plugs, conductors, insulators, mains, metal, non-metal, symbols, electrical circuit, positive, negative	Cell, battery, bulb holder, bulb, buzzer, switch, crocodile clips, wires, motors, symbols, component, positive, negative, loose connections, short circuits.	Vibration, sound wave, volume, pitch, amplitude, frequency, particles, vacuum, soundproof, travel, insulation, faint, loud.	Humans, animals, digestive system, mouth, tongue, oesophagus, stomach, large intestine, functions, teeth, molars, incisor, canine, pulp, root, enamel, food chain, producer, predator, prey	Organisms, life processes, respiration, sensitivity, reproduction, exertion, nutrition, habitat, environment, endangered, extinction, classification, vertebrates, invertebrates, specimens.	Solid, liquid, gas, heated, cooled, boiling point, freezing point, rigid, not rigid, particles, water vapour, melted, evaporate, condensation, precipitation, melt, burn, chemical change, reversible, irreversible
NC Taught Curriculum <i>Substantive knowledge taught and covered in Kos</i>	<i>Scientific knowledge & concepts</i> Identify common appliances that run on electricity Recognise some common conductors and insulators,	<i>Working scientifically- Testing and developing ideas</i> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	<i>Scientific knowledge & concepts</i> Identify how sounds are made, associating some of them with something vibrating <i>Understanding science</i>	<i>Scientific knowledge & concepts</i> Identify different types of teeth in humans and their simple functions	<i>Scientific knowledge & concepts</i> 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	<i>Understanding science</i> Compare and group materials together, according to whether they are solids, liquids or gases <i>Working scientifically Testing and developing ideas –</i>

The Coombes Curriculum Map: SCIENCE

	and associate metals with being good conductors.	Working scientifically - finding similarities and differences 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 Understanding science – 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 that vibrations from sounds travel through a medium to the ear Recognise that sounds get fainter as the distance from the sound source increases. Working scientifically Testing and developing ideas – finding patterns, recording findings and presenting data 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	Describe simple functions of the basic parts of the human digestive system Understanding science Construct and interpret a variety of food chains, identifying producers, predators and prey	things in their local and wider environment Understanding science – Recognise that environments can change and that this can sometimes pose dangers to living things.	finding patterns, recording findings and presenting data 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 Scientific knowledge & concepts Identify the part played by evaporation and condensation in the water cycle and associate the evaporation rate with temperature.
Learning Experiences How will children experience the learning? What will they produce?	- Identify different everyday objects that use electricity, including those that may be hidden/ unexpected - Learn about what electricity is, how it is formed and how it is measured - Create an electricity map – touring the school to identify areas of highest electricity use - Learn about the findings of Benjamin Franklin, Michael	- Explore different components of a circuit, making predictions about what is needed to ensure it is complete - Summarise the essential components of a simple circuit (including cells, wires, bulbs, switches and buzzers) - Learn about Thomas Edison and make links between theories of other scientists learned about last term	- Explore new terminology related to sound - Identify different sounds without context – what's that sound- Explorify - Make different sounds considering pitch, volume and material using different every day objects and define what sound is - Observe how vibrations represent sound waves using different objects e.g. rice/cling film,	- Use body model to identify different organs of the body and predict which are in/ important to the digestive system and why - Match organs with their purpose within the digestive system - Understand there are a series of systems in the body (digestive, circulatory, skeletal) that all work for different purposes	- Watch clips of Blue Planet- Galapagos iguana spurting salt water/ Flamingoes pink colour/ Rhinos in city in Nepal/ hyenas eating rubbish in African cities) to see impact in real time - Discuss and determine positive and negative changes to habitat e.g nature reserves, deforestation, litter, coral regrowth etc - Look at different aspects of animals to	- Group common objects according to state of matter - Understand terminology associated with states of matter - Question materials that are not 'typically' a solid/liquid/gas e.g toothpaste and make scientific suggestions as to their state - Explore the impact of solids/liquids and gases on each other- e.g. mentos into diet coke/ acid into bicarbonate of

The Coombes Curriculum Map: SCIENCE

	Faraday, and other notable scientists and summarise the impact it has on electricity use today ✓ Create lightning in a bottle (YouTube) and describe how natural electricity is formed ✓ Explore different materials and create an experiment to test if they insulate or conduct electricity & summarise findings using scientific vocabulary ✓ Understand how energy efficiency works and why it is important ✓ Explore switchedonkids.org to explore electrical safety in the home ✓ Create a report on findings about the hazards of electricity	✓ Compare light bulbs through history and observe how a light bulb uses electricity today ✓ Create simple circuits, adding and replacing components making systematic observations ✓ Explore different ways to amend components within a circuit to make a bulb brighter and report findings using a written explanation ✓ Make predictions about what a switch does within a circuit ✓ Create a circuit with different numbers of switches for different purpose, making observations of the outcome	cymbal, speaker, guitar string ✓ Make links between observations and representations of sound travelling into the ear ✓ Revisit different materials that made different sounds ✓ Make predictions and complete simple investigation as to which material makes which sound and why- see Bottle Orchestra – Explorify ✓ Record observations using scientific vocabulary ✓ Use Explorify The Sound of Silence to explore the importance of sound/silence in nature ✓ Complete series of investigations (see STEM.org & British Science Association Sounds like Science) and write up observations	✓ Explore what the body/ digestive system may do if we are unwell ✓ Use a model of teeth to understand their different functions ✓ Explain how teeth play a role in the digestive system ✓ Follow the path of the digestive system by creating their own using tights (STEM.org) ✓ Listen to an expert talk about how/why to look after teeth ✓ Brush teeth and use disclosing tablets/ mirrors to practice healthy oral routine ✓ Consider different shapes of teeth and functions and then use evidence of animal diet to match animal to teeth ✓ Compare teeth of herbivore and carnivore and consider why they are different ✓ Make links between plants and animals in the form of food chains ✓ Discuss the impact a break in the food chain may have and human responsibility to care for them	classify- including diet, amphibians/reptiles/mammals etc, linking back to teeth/diet, nocturnal/daytime etc ✓ Follow a simple classification key of animals within certain groups e.g. identifying vertebrates vs invertebrates ✓ Create simple classification key of animals ✓ Make observations of different plants and suggest how to classify- include flowering/non, grasses/ moss/ non-native/ native ✓ Gather, record, classify and present data in a variety of ways to help in answer questions	soda/ making butter in a jar when shaken) ✓ Create class investigations related to reversible changes and determine which materials are chemical changes while others change state (e.g. heat-paper vs heat-chocolate) ✓ Set up practical investigation to investigate melting point of different chocolates (STEM.org) ✓ Determine that not all solids melt at the same temperature- explore different examples of these ✓ Create observation of evaporation and pose scientific questions/ predictions about what will happen (thewaterproject.org) ✓ Experiment to measure how much water is wasted when cleaning teeth (environment agency&stem.org)
--	---	---	---	--	---	--

Eco / Outdoor Learning Opportunities <i>Where appropriate</i>						
Other cross-curricular learning links <i>Where appropriate</i>		DT Unit – Cross Curricular				
Key Outcomes <i>To be used for assessment of learning</i>	✔ To be able to describe what electricity is, how it is formed and some every day uses and sources of electricity. ✔ To understand the dangers of both man-made and natural electricity. ✔ To describe the properties and uses of insulators and conductors. ✔ To identify differences and similarities between materials, reporting on findings using simple scientific vocabulary.	✔ To describe and explain what makes a simple circuit using scientific vocabulary. ✔ To know how to create a full circuit and to problem solve when the circuit is not working. ✔ To know how to create a safe break in a circuit to make it fit for purpose. ✔ To use scientific vocabulary to describe observations.	✔ To understand that sound is made through vibrations and that the strength of the vibrations alters the level of the sound. ✔ To explain how and why different materials change the sound pitch and volume created ✔ To recognise that sound gets fainter as the distance from source is further ✔ To report on findings from enquiries including oral and written observations of results and conclusions	✔ To identify and describe different teeth and their uses and demonstrate by using scientific evidence ✔ To understand how each body part in the digestive system contributes to the whole process ✔ To explain the different parts of a food chain using scientific vocabulary ✔ To describe the impact of each point of a food chain, giving real life examples	✔ To be able to Identify the types of plants and animals we have in our local area. ✔ To test and observe what happens to a habitat when it is put under different challenges. ✔ To sort and group animals into different classifications.	✔ To be able to explain the difference between states of matter using scientific vocabulary appropriately ✔ To make observations of and accurately measure changes of states within an investigation ✔ To set up simple practical enquiries, comparative and fair tests ✔ To record and present data in a variety of ways

Year 5						
	Autumn TOPIC 1 Forces	Autumn TOPIC 2 Properties and change of materials	Spring TOPIC 3 Earth and Space	Spring TOPIC 4 Earth and Space	Summer TOPIC 5 Living things and habitats	Summer TOPIC 6 Animals including Humans.
Prior Knowledge	<i>Year 3 Spring Term 2 and Summer 1- Magnets and Forces</i> Understanding attracting and repelling, describing magnets as having 2 poles, understanding magnetic forces act at a distance.	<i>Year 3 Spring 2</i> Compare and group non/magnetic materials <i>Year 4 Autumn 1</i> Conductors and insulators <i>Year 4 Summer 2- States of Matter</i> <i>Change of state and properties of state</i>	<i>Year 3 Summer 1- Forces</i> Understanding of the Earth's gravitational forces	<i>Year 5 Spring 1</i> Understanding connections between earth, sun and moon	<i>Year 4 Spring 2- Animal teeth and how they adapt to the type of diet they eat</i> <i>Year 3 Summer 2- Humans, skeletons and the human body</i>	<i>Year 4 Spring 2- Classifying animals</i> <i>Year 5 Summer 1-</i> Understanding different types of living thing, evolution and the human body
Key Inquiry Questions	- Why is Isaac Newton's Theory of Gravity essential to understanding how unsupported objects fall towards earth? - Why do some things take longer to fall to the floor than others? - Are air resistance, water resistance and friction the same kind of force? - Do forces only act on objects that are falling? - Is there a way we can reduce to impact of a force? (2 lessons)	- Can we use materials properties to compare and group them? - Who is Spencer Silver and what is he best known for? - Do all materials dissolve? - Are materials able to change their properties? Is there a way to reverse this? - How can materials be separated? What happens do a material when it is filtered, sieved or evaporated? - What materials would be best to make blackout curtains?	- What is the Solar System and how have theories about it changed? (2 lessons) - How are the moon and Earth connected? - How do the Sun, Earth and moon compare? (2 lessons)	- Why do people think the Earth is flat? - How does Earth create day and night? (2 lessons) - Does the sun actually move? - Can we see the moon during the day?	- What are the different living things around us? - What are the plants and animals native to our local environment? - Who is Jane Goodall and how is her work so influential? - How have these animals developed and how do they breed now? - How does the life cycle of an animal compare to how long seeds take to germinate? - How does this differ around the world in varying environments?	- How did we get here and how do we differ? - How does our eyesight and hearing change over our life? - Are we the same or different or both? - How do humans' changes to differ to those of animals? - How does life expectancy of humans vary?

Key Vocabulary <i>Intentional and related vocabulary to be taught throughout the unit</i>	Gravity, friction, air resistance, water resistance, balanced, unbalanced, surface, push, pull, twist, mass, weight, float, sink, streamlined, downward, motion, transference, pulley, gear, buoyancy, mechanism	Material, Property. Hardness. Flexibility. Transparency, Conductivity, Solubility, Permeability, Density, Magnetism, Melting, Freezing, Evaporation, Condensation, Dissolving, Mixing, Reaction, Reversible Change, Irreversible Change, Chemical Change	Sun, moon, satellite, orbit, planet, star, solar system, axis, heliocentric model, geocentric model, sphere, rotate, astronomer, Ptolemy, Copernicus, proximity, names of planets, constellation, galaxy, Theory, gravity,	Life cycle, mammal, amphibian, insect, bird, reproduction, naturalists, sexual, asexual, rainforest, oceans, desert, prehistoric. Metamorphosis, behaviourist, tuber, stamen, carpel, pollination.	Eyesight, iris, eyelid, pupil, sclera, cornea, retina, ear, outer ear, middle ear, inner ear, cochlea, ear bones, hammer, stirrup, eardrum, pinna, ear canal, auditory nerve, anvil, gestation, life cycle, evolution, foetus, baby, child, adolescent, adult, elderly, umbilical chord, independent, puberty
NC Taught Curriculum <i>Substantive knowledge taught and covered in KS</i>	<i>Scientific knowledge & concepts</i> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object <i>Working scientifically Testing and developing ideas</i> Identify the effects of air resistance, water resistance and friction, that act between moving surfaces <i>Working scientifically Testing and developing ideas</i> Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	<i>Understanding science – 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</i> <i>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</i> <i>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</i> <i>Working scientifically Testing and developing ideas</i>	<i>Scientific knowledge & concepts</i> <i>Describe the movement of the Earth and other planets, relative to the Sun in the solar system</i> <i>Describe the movement of the Moon relative to the Earth</i> <i>Describe the Sun, Earth and Moon as approximately spherical bodies</i> <i>Understanding science- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</i>	<i>Understanding science –</i> 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.	<i>Scientific knowledge & concepts</i> Describe the changes as humans develop to old age <i>Working scientifically - finding similarities and differences</i>

		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 Scientific knowledge & concepts 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				
Learning Experiences <i>How will children experience the learning? What will they produce?</i>	✓ Determine whether facts about Isaac Newton are true/false ✓ Use videos and practical demonstrations of supported/unsupported objects to connect Isaac Newton's theory to real life. ✓ Make predications using scientific evidence to answer why some things take longer to fall	✓ Introduce and revisit properties (and vocabulary) of materials ✓ Create different criteria for grouping and classifying materials (e.g. soluble, transparent, conductive, magnetic) and explore this with different materials ✓ Research Spencer Silver/ Ruth Benerito and summarise their	✓ Look at different models of the solar system to observe it (photos/ models/ historic versions) ✓ Compare planet sizes, number of moons, distance from sun ✓ Create a simple model to demonstrate the order of the planets and their order from the sun (Solar system in a Box- Royal Greenwich Observatory stem.org)	✓ Consider why people may think the Earth is flat ✓ Make links to Isaac Newton's theory of gravity to explain how the Earth is a sphere ✓ Discuss the importance of direct evidence within science versus theories ✓ Critically analyse different sources of evidence relating to Earth including	✓ Use Explorify- Odd one Out to consider different ways to classify animals ✓ Discuss scientific vocabulary used to describe living things ✓ Observe and collate different living things and classify them according to different scientific criteria ✓ Use Explorify Blackbird Variation to consider differences in single	✓ Order a life cycle for the stages of human life, introducing and understanding new terminology ✓ Compare evolutionary life cycles and time lines compared to current day (e.g. age and knowledge) ✓ Make links to PSHE learning- naming and describing body parts using accurate vocabulary

✓ Create simple investigation to test theory and record results ✓ Create a class conclusion and then review scientific evidence to see if it was correct ✓ Match definition of air resistance/ water resistance and friction to examples ✓ Identify similarities and differences between different forces ✓ Create 3 class demonstrations of forces in action considering fair tests and note observations and conclusions to answer question (running across playground with large sheet of card/ balloon rocket/ sinking different weight objects) ✓ Explore forces in situations where objects don't fall- flying plane, hot air balloon, scuba diving, windmill etc) ✓ Identify and explain which direction forces are used in action	✓ inventions related to changing materials ✓ Create and write up a fair test investigation to try to dissolve series of different materials (Salt/ bicarbonate of soda/ sand/ soil etc) ✓ Review reversible and irreversible changes (including rust/ burning/ melting / baking etc) and make scientific observation of which processes do/don't reverse ✓ Use different materials to separate different mixed materials- sand/water, raisins/flour, paper clips/rice, salt/water and summarise each processes and which materials it is best for ✓ Create class mixture of different materials (e.g. sand, water, copper coins, salt, stones) and decide which order to use separation techniques for best effect ✓ Predict which material will be the most effective for the black out curtains and	✓ Discuss how theories have changed from those of Ptolemy and Copernicus (BBC bitesize) ✓ Use Britannica Encyclopaedia to consider the number of moons each planet has ✓ Use Nasa.gov to create a model of distance between Earth and moon ✓ Summarise knowledge of the moon as a celestial body using scientific vocabulary ✓ Understand relationship between Earth, sun and moon through a solar eclipse- looking at the relationship and how they occur ✓ Use Nasa data to understand the difference between a solar eclipse and a lunar eclipse (https://myNASAdata.larc.nasa.gov/) ✓ Predict which images match which eclipse using information given ✓ View animations of solar eclipse and discuss dangers- consider when the last	- historical theories of the relationship (Muggletonian Print) and how these changed with further evidence e.g satellite pictures ✓ Watch animations of how day and night are impacted by the rotation of the Earth ✓ Watch Science Museum Group animations of 'Where does the Sun go at night?' ✓ Create mini-Earth using ping pong balls and make observations of day/night using torches ✓ Summarise scientific findings using scientific vocabulary ✓ Suggest why the sun appears move across the horizon and use research to determine if this is correct ✓ Make observations of the position of the sun and shadows throughout different times of day and record scientifically ✓ Predict why we can see the moon during the considering scientific knowledge learnt over unit	- species and reasons for adaptation ✓ Consider whether the local environment is native or non-native plants and animals ✓ Research different living things to determine their origin and natural habitat ✓ Understand how native British plants/animals now live in other parts of the world (e.g. hedgehog) ✓ Use NatGeoKids.com to learn about Jane Goodall through interview ✓ Review research from Jane Goodall and David Attenborough to summarise their findings and significance on natural life. ✓ Using images, observe different local living things and suggest what stage of the life cycle they may be ✓ Compare life cycles – e.g. length, stages, animals vs plants ✓ Compare life cycles of mammal/amphibian/insect/ bird / plant	✓ Observe own eyes using mirrors, identify different parts of the eye and describe what they are used for ✓ Observe the impact of light on our eyes and the size of pupils ✓ Use model of an eye to understand sight ✓ Review facts relating to eyesight and hearing changes, creating a timeline of how they change/develop over a lifetime ✓ Plan and create a fair test observational investigation comparing the variation in the way people look ✓ Develop and refine suggestions about recording, observations, testing and presentation prior to completing investigation (Explorify- How much variation is there in how we look?) - Do we always stay the same height and weight? ✓ Compare different gestational periods/ foetal development of different animals
--	--	--	---	--	---

The Coombes Curriculum Map: SCIENCE

	✓ Pose scientific question relating to reducing impact of force- make suggestions as to how impact can be reduced. ✓ Design and complete simple investigation considering fair testing and recording to answer scientific question ✓ Is there a way we can reduce to impact of a force?	explain why using scientific vocabulary ✓ Test different materials to observe transparency ✓ Summarise findings using scientific vocabulary	one was and when next one is predicted to be ✓	✓ Use photos and animations to understand how the light of the moon can reach Earth during the day ✓ Observe different phases of the moon throughout the day to create a moon diary ✓ Use STEM.org Phases of the Moon to develop understanding of movement around the Earth (Royal Observatory Greenwich)	✓ Compare difference breeding / reproduction methods of animals and a/sexual plants ✓ Review life cycle of a plant and create scientific observations of the different stages of germination from seed and from propagation (comparative observations) – record data and summarise findings considering the causal relationships ✓ Predict whether this cycle is the same for all plants using scientific evidence to support suggestions ✓ Compare life cycle of perennials, biennials and annuals ✓ Consider life cycle of plants or animals in different biomes including extreme environments	✓ Compare pictures of animals at the same ages (e.g. giraffe at 3 days vs human at 3 days) ✓ Summarise comparisons/patterns of gestations between different animal classifications (e.g. mammals) ✓ Consider the relationship between gestation periods and life expectancy by comparing data ✓ Present data clearly using graphs to summarise findings
Eco / Outdoor Learning Opportunities Where appropriate	✓ Links to DT.	✓ Links to DT	✓ Links to Art		✓ Forest School Links	✓ Links to PSHE
Other cross-curricular learning links Where appropriate						

Key Outcomes					
<i>To be used for assessment of learning</i>					
- To be able to accurately describe the Newton's theory of gravity, using examples of it in action - To hypothesise, predict and test a scientific question relating to the use of forces - Use scientific vocabulary to describe the conclusion to an investigation - Label a scientific diagram, explaining the parts of gears/ pulls and their use within the mechanism	- Be able to compare and group materials and use accurate vocabulary to describe it. - To be able to manipulate materials to change their state of matter. - To be able to describe, using accurate scientific vocabulary, what is happening to materials. - To understand that some changes are reversible and some changes are irreversible.	- To understand the number and size of planets in our Solar system - To describe the Moon using scientific vocabulary - To ask and answer scientific questions about the Earth, moon and sun - Understand relationship between Earth, sun and moon through a solar eclipse- looking at the relationship and how they occur	- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky using appropriate vocabulary - To be able to make scientific observations and recordings and summarise findings scientifically - Create or interpret diagrams or models showing the Earth, Sun, and Moon system and demonstrate rotation and orbit.	- To be able to identify the different life cycles and how they differ between the different classifications. - To record changes of animals and plants over a period of time and settings. - To describe and explain the main stages in the life cycles of a mammal, an amphibian, an insect, and a bird, highlighting similarities and differences (e.g., metamorphosis in insects and amphibians vs. direct development in mammals and birds). - To use examples to illustrate life cycle stages and reproduction processes and explain why these processes are essential for survival of species.	- To be able to use clues from research and observations to form a hypothesis on how our bodies change. - To record the height of different humans and summarise findings of the results using scientific vocabulary. - To organise and sort comparative items to show the gestation period of humans and make predictions according to the type of animal.
	Year 6				
	Autumn 1- TOPIC 1 Electricity	Autumn 2- TOPIC 2 Light	Spring 1- TOPIC 3 Animals including humans	Summer 1- TOPIC 4 Evolution and Inheritance	Summer 2- TOPIC 5 Living things and their habitats
	Prior Knowledge	Year 4 Autumn 1 and 2- Introduction to electricity and the inventions of the light bulb	Year 3 Spring 1- Natural light and how shadows are formed Year 5 Spring Term- Earth and Space, including the position of the Earth in relation to the Sun (sun rise/set etc)	Year 4 Spring 2- the function of the human digestive system	New topic Year 4 Spring 2- The function of teeth in different animals' food chains
					Year 2 Summer 2- The spread of germs Year 4 Summer 1- Classification of animals

The Coombes Curriculum Map: SCIENCE

Key Inquiry Questions - How can we experiment with components in a circuit? - How are symbols used to represent circuits? - How can we use scientific vocabulary to describe the function of components? - How can we create a fair test to test component functions? - How can circuits be varied?	- How can we experiment with components in a circuit? - How are symbols used to represent circuits? - How can we use scientific vocabulary to describe the function of components? - How can we create a fair test to test component functions? - How can circuits be varied?	- Can light pass through all objects? - How does light travel? - How do pupils in our eyes react to light? - How are shadows formed? - What is white light?	- How does the human circulatory system work? - How do our lungs work? - How does our heart work? - How are water and nutrients transported using the digestive system? - How can we investigate our bodies? (2 lessons)	- When did human life start? - How did Charles Darwin develop his theory of evolution? - Why are all humans different? - What evidence is there to suggest evolution has occurred? - How have animals and plants adapted to suit different environments?	- How did Carl Linnaeus classify organisms? - What are the three different types of microbes? - How are microbes helpful? - How do infections spread and how can we prevent it? - What organisation types are there for different living things?
Key Vocabulary <i>Intentional and related vocabulary to be taught throughout the unit</i>	Light source, translucent, ell, battery, switch, bulb, motor, buzzer, series, parallel, circuit, crocodile clips, wire complete circuit, symbol, circuit diagram, fuse wire, bright, dim, filament, electromagnet, conductor, insulator, plug mains electricity	Light source, periscope, reflection, normal, incident ray, angle of incidence, reflection ray, refraction, spectrum, transparent, translucent, opaque, emit, receiver, eyes, light, filter, shadow, rainbow	Respiratory system, skeletal system, digestive system, circulatory system, organ, names of different organs, circulation, blood, involuntary, arteries, veins and capillaries, arteries, veins, capillaries, oxygen, carbon dioxide, oxygenated, deoxygenated, blood, lungs, inflate, deflate, atriums, ventricles, blood vessels, nutrients, digested, absorbed, hypothesis, observations, diet, exercise, drugs, lifestyle	Ancestor, breeding, characteristics, chromosome, DNA, environment, genes, homo sapiens, inherit, offspring, variety, Evolution, theory, natural selection, organisms, change, periods of time, variation, finch, Galapagos, Amber, ammonite, archaeologist, belemnite, cast fossil, coprolite, cretaceous, dinosaur, erosion, Jurassic, mold fossil, meozoic era, sediment, skeleton, Species, reproduction, adaptation, niche, camouflage, mimicry, migration, hibernation, predator, prey, habitat.	Classification, vertebrate/invertebrate, binomial system, observable characteristics, kingdom, phylum, class, order, family, genus, species, microbes, micro-organisms, bacteria, virus, fungus, cell, disease, germs, microbe, microscope, pathogen, culture, fermentation, reproduction, gas, colony, incubate, micro-organism, probiotics, yeast, fungus, harmful effect, beneficial effect, probiotic bacteria, variables, endemic, epidemic, muscus, droplets, influenzas, meningitis, tuberculosis, respiratory hygiene,
NC Taught Curriculum <i>Substantive knowledge taught and covered in Kos</i>	Working scientifically Testing and developing ideas Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzer and the on/off position of switches	Scientific knowledge & concepts Recognise that light appears to travel in straight lines Understanding science 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 Working scientifically Testing and developing ideas	Scientific knowledge & concepts Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Understanding science Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	Understanding science Recognise that living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago Scientific knowledge & concepts Recognise that living things produce offspring of the same kind,	Scientific knowledge & concepts Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms

	<i>Scientific knowledge & concepts</i> Use recognised symbols when representing a simple circuit in a diagram	<i>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then our eyes</i> <i>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</i>	<i>Working scientifically - finding similarities and differences</i> Describe the ways in which nutrients and water are transported within animals, including humans	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	<i>Understanding science-give reasons for classifying plants and animals based on specific characteristics</i>
Learning Experiences <i>How will children experience the learning? What will they produce?</i>	- Explore a range of practical activities revising circuit knowledge and components - Consider different ways components are used in circuits in computers - Match symbols to pictures and components - Consider how circuits are recorded in diagrams - Identify components through quiz - Identify how circuit is incomplete by amending the symbols - Propose different scenarios and explore/ predict potential scientific outcomes - Consider safety implications of using wires/ electricity - Discuss scientific findings to enquiry - Propose situation where different components of a circuit are required to have different output (e.g. buzzer on, light off)	- Review misconceptions about light - Consider how light travels from different sources (sun, torch etc) - Predict whether an item will let light pass through it using scientific vocabulary - Summarise investigation using accurate terminology - Use different models and descriptions to summarise how light travels - Use mirrors to investigate and record direction of light travel - Consider models and diagrams of the eye, labelling different functions and parts - Predict/ hypothesise outcome of investigation into reaction of eye - Describe how a shadow is formed - Investigate impact of light on shadows and summarise scientifically - Explore how the eye sees different colours/ colour blindness	- Review different systems within the human body and compare function and use - Utilise and explore different vocabulary - Draw the circulatory systems and explain its parts - Consider how we feel when our lungs are working and label each part using videos/ photos/ diagrams - Plan an investigation to measure lung capacity considering fair testing - Measure and record lung capacity using balloons - Consider purpose of heart and blood and how it supports the human body - Learn about different parts of the blood and how they work in the body - Make blood using household ingredients - Consider different stages of the digestive systems - Label parts and functions of digestive system	- Consider images and models of different animals and their potential links to human kind - Discuss and review evidence relating the origin of humans to the oceans and the lengths of the process - Create 'origin of life' timeline - Consider who Charles Darwin was and write questions to learn more about him - Consider images of bird beaks, determining which is the best beak – Battle of the Beaks - Consider how different features have been inherited from parents including misconceptions about inheritance - Discuss what dominant and recessive genes are - Use genetics diagram to predict gene outcomes - Consider and summarise findings of Mary Annings - Observe different types of fossil and suggest how they were formed	- Review Aristotle's ladder of life and discuss the limitations of this system - Discuss the 7 layers of the Linnaeus system and its advantages - Review 5 main groups of classification - Classify different animals accordingly - Observe different diagrams of bacteria/ fungus/ microbe - Make models using playdough, naming and identify its functions - Consider questions for a microbiologist - Consider how yeast is used as a micro-organism - Consider needs of micro-organisms to grow - Plan and complete a fair test, changing single variables to test best temperature for yeast to reproduce - Consider/ predict how far a sneeze travels - Observe impact of using tissue to stop spread of diseases

	✓ Create and test different variations of circuits to meet different needs ✓ Discuss scientific findings	✓ Summarise investigation in written outcome	✓ Create parts for game 'Operation', correctly detailing different bodily systems ✓ Summarise knowledge and suggest how to measure impact of diet/exercise/lifestyle on the body ✓ Propose scientific question, prediction and hypothesis ✓ Create fair test opportunity to measure single variable ✓ Discuss and consider recording systems for scientific data Summarise learning through scientific report on findings	✓ Make jelly fossils demonstrating different layers of rock and how they give information about the past ✓ Explore different adaptations of animals, including unexpected versions using STEM.org ✓ Summarise the impact of evolution on humankind now	✓ Record results to investigation scientifically ✓ Use scientific diagrams to sort animals (e.g. cladogram) ✓ Discuss dichotomus key and its uses ✓ Follow and then create a dichotomus key considering classification keys
Eco / Outdoor Learning Opportunities <i>Where appropriate</i>					
Other cross-curricular learning links <i>Where appropriate</i>					
Key Outcomes <i>To be used for assessment of learning</i>	✓ Compare variations in how components and give reasons based on circuit design and electrical principles. ✓ Build simple series circuits accurately and predict the effect of changing components or cell numbers on circuit performance. ✓ Draw clear circuit diagrams using standard symbols for components (e.g., cell, battery, bulb, buzzer, switch) and represent connections correctly.	✓ Explain why shadows form and why they have the same shape as the object casting them ✓ Plan and carry out investigations related to light (e.g., exploring shadow size or reflection), record observations accurately and use evidence to support explanations. ✓ Explain how we see objects and pose simple hypothesis and conclusions to investigations to test this.	✓ Name the main parts of the human circulatory system and describe their functions, including how blood is pumped and transported ✓ Describe how nutrients and water are transported within animals, including humans, and link this to the role of blood in carrying substances around the body. ✓ Explain how diet, exercise, drugs, and lifestyle choices affect the way the body functions, particularly the	✓ Explain that living things have changed over time and describe how fossils provide evidence about organisms that lived millions of years ago. ✓ Identify how animals and plants are adapted to suit their environment in different ways ✓ Use scientific terminology to explain how adaptation may lead to evolution over long period and justify with examples	✓ Identify examples of micro-organisms and explain their role in classification systems. ✓ Explain the contribution of Carl Linnaeus to classification and why his system is important for scientific understanding today. ✓ Describe how living things are classified into broad groups based on common observable characteristics and similarities/differences. ✓ Give clear reasons for classifying plants and animals

The Coombes Curriculum Map: SCIENCE

	✔ Explain how the number and voltage of cells in a circuit affect the brightness of a lamp and the volume of a buzzer, using correct scientific reasoning.	✔ Understand that light travels in straight lines and use this idea to explain how we see objects.	circulatory system and overall health. ✔ Investigate and compare similarities and differences in how nutrients and water are transported in different animals, record findings accurately, and use evidence to support explanations.	✔ Compare examples of adaptations in different species, explain why these adaptations help survival and use evidence to support ideas about evolution.	based on specific characteristics
--	---	---	--	---	--