William Penn
Curriculum Map – Science

	Autumn	Spring	Summer
Cycle A			
Year R	**Fantastic Fairytales**	**Amazing Animals**	**Helpful Heroes**
Year 1/2	**Community Heroes**	**Shiver and Sizzle**	**Oh I do like to be beside….**
Year 3/4	**Raging Rivers and Marvellous Mountains**	**The Roman Empire**	**Groovy Greeks**
Year 5/6	**We'll Meet Again (WWII links with Coolham airfield and Battle of Britain)**	**Rulers of the Rainforest (Ancient Mayan Civilization and rainforests)**	**Vikings (Life and Legend)**
Cycle B			
Year R	**Fantastic Fairytales**	**Amazing Animals**	**Helpful Heroes**
Year 1/2	**Who Lives Here?**	**Spring Has Sprung**	**Back in Time for…**
Year 3/4	**Ancient Ancestors (Stone Age to Iron Age)**	**We're Sailing down the Nile (Ancient Egypt)**	**Our World**
Year 5/6	**Wonders of the Universe**	**Super Settlers (Anglo Saxons and Scots)**	**Friends And Heroes (Quakerism and Democracy) A local History Study**

Subject Coverage Overview

Skills/Themes	Working scientifically	Plants	Animals, including humans	Materials	Evolution and inheritance
	Rocks	Living things and their habitats	Light	Forces and magnets	States of matter
		Sound	Earth and Space	Electricity	

	Autumn	Spring	Summer
Cycle A			
Year R	Fantastic Fairytales	Amazing Animals	Helpful Heroes
Year 1/2	Who Lives Here? Materials	Spring Has Sprung Working Scientifcally Habitats Plants	Back in Time for… Living Things
Year 3/4	Ancient Ancestors (Stone Age to Iron Age) States of Matter Teeth & Digestion	We're Sailing down the Nile (Ancient Egypt) Forces & Magnets Magnets & Springs	Our World Living things & their habitats Plants
Year 5/6	Wonders of the Universe Electricity Light	Super Settlers (Anglo Saxons and Scots) Classfying Criters Healthy Bodies	Friends And Heroes (Quakerism and Democracy) Viking Science Healthy Bodies
Cycle B			
Year R	Fantastic Fairytales	Amazing Animals	Helpful Heroes
Year 1/2	Community Heroes Animals	Shiver and Sizzle Working Scientifcally Animals	Oh I do like to be beside…. My Body
Year 3/4	Raging Rivers and Marvellous Mountains Rocks & Soils Fossils	The Roman Empire Circuits Light & Shadow	Groovy Greeks Health & Movement Sound
Year 5/6	We'll Meet Again (WWII links with Coolham airfield and Battle of Britain) Moon Gravity	Rulers of the Rainforest (Ancient Mayan Civilization and rainforests) Evolution Forces	Vikings (Life and Legend) Lifecycles Healthy Bodies

EYFS Coverage:

EYFS Expectations – Understanding the World – The world - Science overview			
Biology ELG - **- 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**			
Focus	**Living things and their habitats**	**Plants**	**Animals, including humans**
Reception	• Describe what they see, hear & feel whilst outside • Observational drawings of the natural world • Discuss how to care for the living things & their habitats • Observe how flora & fauna behave differently as the seasons change • Examine change over time • Use correct terms e.g. chrysalis, pupa when observing some life cycles • Express opinions on natural & built environments	• All plants need water, light and warmth to grow and survive • A seed produces roots to allow water to get into the plant and shoots to produce leaves to collects the sunlight • Extend vocabulary: blossom, buds, bulb, evergreen, deciduous • Describe what they see, hear & feel whilst outside • Name & describe some plants • Draw pictures of plants • Understand the effect of changing seasons on the natural world around them	• Shows some understanding that good practices with regard to exercise, eating, drinking water, sleeping & hygiene can contribute to good health • Describe what they see, hear & feel • Identify different parts of their body & animals • Be able to show care and concern for living things • Know the effects exercise has on their bodies • Have some understanding of growth and change • Talk about things they have observed including animals

EYFS Expectations – Understanding the World – The world - Science overview	
Chemistry & Physics ELG - **- 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**	
Focus	**Materials**
Reception	• Observe & interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object & a boat floating on water • Use vocabulary to name specific features of the natural world, both natural & man-made • Notice & discuss patterns around them

Key Stage 1 Coverage:

Year 1/2 Cycle B	Community Heroes	Shiver and Sizzle	Oh I do like to be beside….
	Animals	**Working Scientically Animals**	**My Body**
	By the end of these units: **Pupils will know:** **1.** Can you label body parts in a science drawing? How can we use our senses in science and what else could we investigate using our senses? **2.** What comparisons did you make between the structures of a variety of common animals, which you can sort into groups? **3.** Why is it important for scientists to be able to describe animals as endangered? **4.** What do pets need to keep them safe and healthy? **5.** What animals are herbivores, omnivores or carnivores? What happens if a food source disappears? **Children will be able to:** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats	**By the end of these units:** **Pupils will know:** **1.** What are the key parts of a penguin's body? Are there any other animals live in Antarctica, how are they adapted? **2.** In which temperature condition do you think an ice cubes will last? **3.** Do any animals live in Africa, how are they adapted? **4.** Does the surface area (the larger) the item make it more or less likely to float? Why? **5.** What were your predictions for the investigation? **Children will be able to:** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). • Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how	**By the end of these units:** **Pupils will know:** **1.** Which body parts they think is most important and why? What our bodies would be like without bones/skeleton? **2.** How are our oragans protected? **3.** Can you use your sense of touch to explore different textures, pressures, pain, cold and hot? How do our ears work? **4.** How can we detect the flavours of different foods? What happens if we turn off out sense of smell? **5.** How do digital microscopes help us? **Children will be able to:** • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. ***Essential vocabulary:*** **<u>Names of animal groups:</u>** fish, amphibians, reptiles, birds, mammals.

	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. • 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. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). ***Essential vocabulary:*** **Names of animal groups:** fish, amphibians, reptiles, birds, mammals. **Animal diets:** carnivore, herbivore, omnivore. **Human and animal body parts:** body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. **Human senses:** sight, hearing, touch, smell, taste. **Exploring senses:** loud, quiet, soft, rough. **Other:** human, animal, pet. **Survival and staying healthy:** basic needs, survive, food, air, exercise, diet, nutrition, healthy, balanced diet, hygiene, germs. **Food groups:** fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. **Life processes:** movement, sensitivity, growth, reproduction, nutrition, excretion, respiration.	different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including microhabitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). ***Essential vocabulary:*** **Names of animal groups:** fish, amphibians, reptiles, birds, mammals. **Animal diets:** carnivore, herbivore, omnivore. **Human and animal body parts:** body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. **Human senses:** sight, hearing, touch, smell, taste. **Exploring senses:** loud, quiet, soft, rough. **Other:** human, animal, pet. **Survival and staying healthy:** basic needs, survive, food, air, exercise, diet, nutrition, healthy, balanced diet, hygiene, germs. **Food groups:** fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. **Life processes:** movement, sensitivity, growth,	**Animal diets:** carnivore, herbivore, omnivore. **Human and animal body parts:** body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. **Human senses:** sight, hearing, touch, smell, taste. **Exploring senses:** loud, quiet, soft, rough. **Other:** human, animal, pet. **Survival and staying healthy:** basic needs, survive, food, air, exercise, diet, nutrition, healthy, balanced diet, hygiene, germs. **Food groups:** fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. **Life processes:** movement, sensitivity, growth, reproduction, nutrition, excretion, respiration. **Food chains:** food sources, food, producer, consumer, predator, prey.

	<u>Food chains:</u> food sources, food, producer, consumer, predator, prey.	reproduction, nutrition, excretion, respiration. **<u>Food chains:</u>** food sources, food, producer, consumer, predator, prey. **<u>Working Scientically:</u>** Experience, observe, changes, patterns, grouping, sorting, classifying, compare, identify (name), data, measure, record, equipment, questions, test, investigate, explore, magnifying, glass / hand lens, same, different	
Year 1/2 Cycle A	**Who Lives Here?**	**Spring Has Sprung**	**Back in Time for…**
	Materials	**Working Scientifically Plants**	**Living Things Habitats**
	By the end of these units: **Pupils will know:** **1.** If you were going to organise these materials into two groups, how would you do it? **2.** Which of these are natural and which are man-made and how would you describe them using your senses? **3.** Why are raw materials chosen to make some objects and not others? **4.** Why are certain raw materials used to make particular objects and is it good thing or a bad thing that not all materials can change shape? **5.** Can we recycle every material and what happens when we recycle a material? **Children will be able to:** ▪ Distinguish between an object and the material from which it is made; ▪ Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock; ▪ Describe the simple physical properties of a variety of everyday materials;	**By the end of these units:** **Pupils will know:** **1.** How can we work scientifically to investigate our questions? **2.** How can we observe and then record the weather? - Temperature **3.** What do seeds need to germinate and how will this effect what the bulbs grow into in a dark/light/cold/warm enviroment? **4.** What are the four stages of a frog's life cycle? **5.** What are the different parts of a flower and how can a plant's seeds spread away from the plant? **Children will be able to:** ▪ Observe and describe how seeds and bulbs grow into mature plants. ▪ Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. ▪ Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.	**By the end of these units:** **Pupils will know:** **1.** What can we call things that are not living? What are your rules that you would use to explain to someone what makes an object living, dead or never alive? **2.** What are the features of your creature that makes it a living thing? **3.** Where do animals and plants live and who lives in each habitat? **4.** Did Michael Fish get it right about the Great Storm of 1987? Does the UK have hurricanes? **5.** What can we do as a school to help the climate change, because what is the impact of rubbish being carried away by the wind? **Children will be able to:** ▪ Explore and compare the differences between things that are living, dead, and things that have never been alive. ▪ Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs

	▪ Compare and group together a variety of everyday materials on the basis of their simple physical properties. ▪ 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. ***Essential vocabulary:*** **Names of materials: wood**, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric. **Changing shape:** squash, bend, twist, stretch. **Properties of materials:** hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, transparent, opaque, waterproof, not waterproof, absorbent, not absorbent, sharp, stiff, strong, flexible, light, hard-wearing, elastic. **Other:** object, suitability, recycle, pollution.	▪ Identify and describe the basic structure of a variety of common flowering plants, including trees. ▪ Explore and compare the differences between things that are living, dead, and things that have never been alive. ▪ Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. ▪ Identify and name a variety of plants and animals in their habitats, including microhabitats. ▪ Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. ***Essential vocabulary:*** **Growth of plants:** germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling. **Needs of plants:** sunlight, nutrition, light, healthy, space, air. **Name different types of plant:** e.g. bean plant, cactus. **Names of different habitats:** e.g. rainforest, desert. **Life cycle stages:** baby, toddler, child, teenager, adult; frogspawn, tadpole, froglet, frog. **Living or dead:** living, dead, never living, not living, alive, never been alive, healthy.	of different kinds of animals and plants, and how they depend on each other. ▪ Identify and name a variety of plants and animals in their habitats, including microhabitats. ▪ Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. ***Essential vocabulary:*** **Names of habitats and microhabitats**: under leaves, woodland, rainforest, sea shore, ocean, urban, local habitat. **Habitats including microhabitats:** depend, shelter, safety, survive, suited, space, minibeast, air. **Being born and growing:** Young, offspring, live young, grow, develop, change, hatch, lay, fly, crawl, talk. **Young and adult names:** lamb and sheep, kitten and cat, duckling and duck.

Year 3/4

Key Stage 2 Coverage:

Year 3/4 Cycle A	Raging Rivers and Marvellous Mountains	The Roman Empire		Groovy Greeks	
	Rocks & Soils & Fossils	**Light & Shadow**	**Circuits**	**Health & Movement**	**Sound**
	By the end of these units: **Pupils will know:** **1.** What are some common rock types that you know that you can categorise? **2.** How did you plan and investigate different rock characteristics? What did your investigation show? **3.** Where are the rocks found that have different uses for particular jobs, more than others? **4.** What different types of soil are there and how do they effect the fossils that are formed? **5.** How do you identify fossil remains that you can excavate? **Children will be able to:** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties; • Describe in simple terms how fossils are formed when things that have lived are trapped within rock; • Recognise that soils are made from rocks and organic matter. ***Essential vocab:*** **Types of rock:** sedimentary rock, igneous rock, metamorphic rock. **Properties of rocks:** permeable, semi-permeable, impermeable, durable.	**By the end of these units:** **Pupils will know:** **1.** What is a light source? **2.** How can we create shadows? **3.** How would you define day and night? **4.** What was your predictions about the position of shadows that are cast by the sun? **5.** What were your results from your investigation about the length of a shadow during the course of the day? **Children will be able to:** ▪ Recognise that they need light Iin order to see things and that dark is the absence of light.	**By the end of these units:** **Pupils will know:** **1.** What is electricity? **2.** What is mains electricity and how do we keep each ourselves safe? **3.** What are conductors and insulators? **4.** What is a switch? **5.** How do you change the brightness of a bulb? **Children will be able to:** • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light	**By the end of these units:** **Pupils will know:** **1.** How does a balanced diet help humans get the nutrition they need? **2.** What does an animal's diet look like? **3.** Why do we have bones? **4.** What do we need to make us move? **5.** How do invertebrates support themselves? **Children will be able to:** • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify that animals, including humans, need the right types	**By the end of these units:** **Pupils will know:** **1.** What are sounds and how are they made? **2.** What happens to a sound the further away it gets? **3.** How can you change the pitch of sound? **4.** What happens to a string when you shorten it? **5.** What happens when air vibrates at different speeds? **Children will be able to:** • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between

	Names of rocks: e.g. marble, chalk, granite, sandstone, slate. **Formation of rocks and fossils:** natural, human-made, magma, lava, molten rock, sediment, erosion, fossilisation, layers, bone, fossil. **Soil:** sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost. **Other:** palaeontology. *Previously introduced vocabulary: soil, water, air.*	▪ Notice that light is reflected from surfaces. ▪ Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. ▪ Recognise that shadows are formed when the light from a light source is blocked by an opaque object. ▪ Find patterns in the way that the size of shadows change. ***Essential vocab:*** **Light and seeing:** dark, absence of light, light source, illuminate, visible, shadow, translucent, energy, block. **Light sources:** e.g. candle, torch, fire, lantern, lightning. **Reflective light:** reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon. **Sun safety:** dangerous, glare, damage, UV light, UV rating, sunglasses, direct.	in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. ***Essential vocab:*** **Electricity:** mains-powered, battery-powered, mains electricity, plug, appliances, devices. **Circuits:** circuit, simple series circuit, complete circuit, incomplete circuit. **Circuit parts:** bulb, cell, wire, buzzer, switch, motor, battery. **Materials:** electrical conductor, electrical insulator. **Other:** safety.	and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. ***Essential vocab:*** **Food chains and animal diets:** decomposer, food web. **Food groups and nutrients**: fibre, fats (saturated and unsaturated), vitamins, minerals. **Skeletons and muscles:** skeleton, muscles, tendons, joints, protection, support, organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton. **Names of human bones:** e.g. skull, spine,	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. ***Essential vocab:*** **Parts of the ear:** eardrum. **Making sound:** vibration, vocal cords, particles. **Measuring sound:** pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance. **Other:** soundproof, absorb sound.

		Previously introduced vocabulary: opaque, transparent, sunlight, sun.	*Previously introduced vocabulary: names of materials.*	backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula. **Other:** energy.	

Year 3/4 Cycle B	Ancient Ancestors (Stone Age to Iron Age)		We're Sailing down the Nile (Ancient Egypt)		Our World	
	Teeth & Digestion	**States of Matter**	**Forces & Magnets**	**Magnets & Springs**	**Living things & their habitats**	**Plants**
	By the end of these units: **Pupils will know:** **1.** What is a food chain? **2.** How many different types of teeth do humans have and what are their functions? **3.** How do you keep your teeth healthy to prevent tooth deacy? **4.** How does the digestive system work? **5.** How do you identify and classify carnivores, herbivores and omnivores? **Children will be able to:** • Describe the simple functions of the basic parts of the digestive system in humans; • Identify the different types of teeth in humans and their simple functions;	**By the end of these units:** **Pupils will know:** **1.** What comparisons can be made between solids and liquids? **2.** What are the properties of gases? **3.** How does the states of matter change when the materials are heated or cooled in degrees Celsius? **4.** How does the evaporation process work? **5.** What are the different parts of the water cycle and where does condensation play a part? **Children will be able to:** • Compare and group materials together, according to whether they are solids, liquids or gases.	**By the end of these units:** **Pupils will know:** **1.** What is a force and what is its impact on an object? **2.** How do you use a force meter to measure forces? **3.** What factors increase friction between solid surfaces and will describe how to measure forces? **4.** How does the Earth act like a giant magnet, how does this affect a compass? **5.** What happens when magnets are put together? **Children will be able to:** ▪ Compare how things move on. ▪ Different surfaces; ▪ Notice that some forces need contact between 2 objects, but magnetic forces can act at a	**By the end of these units:** **Pupils will know:** **1.** Which materials are magnetic? **2.** Which magnet has the strongest force? **3.** What happens to springs when they are compressed and stretched? **4.** How far does an object travel when an elastic band is stretched? **5.** How do you make sure your are conducting a fair test? **Children will be able to:** ▪ Compare how things move on. ▪ Different surfaces; ▪ Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. ▪ Observe how magnets attract or repel each other and	**By the end of these units:** **Pupils will know:** **1.** How do you identify habitats and the animals that live there? **2.** How do you group organsims based on their characteristics? **3.** Which classifications did you group your animals into, using the classification key? **4.** Which British plants did you identify and classify? **5.** What is the human impact on habitats and enviroments? **Children will be able to:** • Recognise that living things can be grouped in a variety of ways; • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider	**By the end of these units:** **Pupils will know:** **1.** What are the 4 main parts of a plant? **2.** What makes plants grow well? **3.** What are the functions of leaves in flowering plants? **4.** What are the stages of the life cycle of a plant? **5.** How do flowering plants disperse their seeds? What is the structure of seeds and their importance as a food source? **Children will be able to:** ▪ Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers; ▪ Explore the requirements of ▪ Plants for life and growth (air, light, water, nutrients from soil, and room to

	Essential vocab: **Digestive system:** digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gall bladder, small intestine, duodenum, large intestine, rectum, anus, faeces, organ. **Types of teeth and dental care:** molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth. *Previously introduced vocabulary: producer, consumer, prey, predator, excretion, habitat.*	• Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. ***Essential vocab:*** **States of matter:** solids, liquids, gases, particles. **State change:** evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour. **Water cycle:** precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail. **Other:** atmosphere.	distance. ▪ Observe how magnets attract or repel each other and attract some materials and not others. ▪ Compare and group together. ▪ A variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. ▪ Describe magnets as having 2 poles. ▪ Predict whether 2 magnets will attract or repel each other, depending on which poles are facing. ***Essential vocab:*** **How things move:** move, movement, surface, distance, strength. **Types of forces:** push, pull, contact force, non-contact force, friction. **Magnets:** magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole),	attract some materials and not others. ▪ Compare and group together. ▪ A variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. ▪ Describe magnets as having 2 poles. ▪ Predict whether 2 magnets will attract or repel each other, depending on which poles are facing. ***Essential vocab:*** **How things move:** move, movement, surface, distance, strength. **Types of forces:** push, pull, contact force, non-contact force, friction. **Magnets:** magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass. **Magnetic and non-magnetic materials:**	environment; • Recognise that environments can change and that this can sometimes pose dangers to living things. ***Essential vocab:*** **Living things:** organisms, specimen, species. **Grouping living things:** classification, classification keys, classify, characteristics. **Names of invertebrate animals:** snails and slugs, worms, spiders, insects. **Invertebrate body parts:** e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs. **Environmental changes:** environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct. *Previously introduced*	grow) and how they vary from plant to plant; ▪ Investigate the way in which water is transported within plants; ▪ Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. ***Essential vocab:*** **Water transportation:** transport, evaporation, evaporate, nutrients, absorb, anchor. **Life cycle of flowering plants:** pollination (insect/wind), pollen, nectar, pollinator, seed formation, seed dispersal (animal/wind/water), reproduce, fertilisation, fertilise, stamen, anther, filament, carpel (pistil), stigma, style, ovary, ovule, sepal, carbon dioxide. *Previously introduced vocabulary: life cycle.*

		Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide	attract, repel, compass. **<u>Magnetic and non-magnetic materials:</u>** e.g. iron, nickel, cobalt. *Previously introduced vocabulary: metal, names of materials.*	e.g. iron, nickel, cobalt. *Previously introduced vocabulary: metal, names of materials*	*vocabulary: carbon dioxide, fish, bird, mammal, amphibian, reptile, skeleton, bone, vertebrate, invertebrate, backbone, names for animal body parts, names of common plants, photosynthesis.*	

Year 5/6
Key Stage 2 Coverage:

Year 5/6 Cycle A	We'll Meet Again (WWII links with Coolham airfield and Battle of Britain)		Rulers of the Rainforest (Ancient Mayan Civilization and rainforests)		Vikings (Life and Legend)	
	Earth & Space	**Gravity & Friction**	**Evolution**	**Forces**	**Viking Science**	**Properties and changes materials**
	By the end of these units: **Pupils will know:** **1.** What is the Solar System? **2.** Can children make a simple model of the Solar system? **3.** What is the difference between the geocentric and heliocentric models of the Solar system? **4.** How have people's ideas of the Solar system changed over time? **5.** How does the moon orbit the Earth to cause a month? **Children will be able to:** ▪ Describe the movement of the Earth and other planets relative to the Sun in the solar system. ▪ Describe the movement of the	**By the end of these units:** **Pupils will know:** **1.** Why do unsupported objects fall to the ground? **2.** What factors affect how obejcts fall to the Earth? **3.** What is friction? **4.** Which forces slow things down? **5.** What did you create to show your understanding of forces? **Children will be able to:** ▪ 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	**By the end of these units:** **Pupils will know:** **1.** How do living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? **2.** How do animals and plants adapt to suit their environment in different ways? **3.** How are animals' adaptation lead to evolution? **4.** How have living things changed over time? **5.** How do fossils provide information about living things that inhabited the Earth millions of years ago? **Children will be able to:** ▪ Recognise that living things have changed	**By the end of these units:** **Pupils will know:** **1.** How do you construct a table for repeat readings? **2.** Can you draw up a line graph from a table? **3.** How do levers, springs, pulleys and gears transmit force and motion? **4.** Who is Rube Goldberg? **5.** What was included in your design to make a Rube Goldberg machine that contain at least four different simple machines? **Children will be able to:** ▪ Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the	**By the end of these units:** **Pupils will know:** 1. Do you know anything about the methods used to produce these dairy foods? 2. How do you classify microorganisms? 3. How could we test the effectiveness of a glue? 4. What is phenomena? 5. Where is the water line of boats with hull shapes? **Children will be able to:** ▪ Describe how living things are classified into broad groups according to common ▪ Observe characteristics and based on similarities and differences, including	**By the end of these units:** **Pupils will know:** 1. What are different materials used for and why? 2. What is the best foam to stop ice cream melting? 3. What factor affect dissolving? 4. **Children will be able to:** ▪ Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to

	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. ***Essential vocab:*** **Solar system:** star, planet. **Names of planets:** Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. **Shape:** spherical bodies, sphere. **Movement:** rotate, axis, orbit, satellite. **Theories:** geocentric model, heliocentric model, astronomer. **Day length:** sunrise, sunset, midday, time zone. *Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.*	between moving surfaces. ▪ Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. ***Essential vocab:*** **Types of forces:** air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. **Mechanisms:** levers, pulleys, gears/cogs. **Measurements:** weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. **Other:** streamlined, Earth. *Previously introduced vocabulary: air, heat, moon.*	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. ***Essential vocab:*** **Evolution and inheritance:** evolve, adaptation, inherit, natural selection, adaptive traits, inherited traits, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin. **Other:** selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA.	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. ***Essential vocab:*** **Types of forces:** air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. **Mechanisms:** levers, pulleys, gears/cogs. **Measurements:** weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. **Other:** streamlined, Earth. *Previously introduced vocabulary: air, heat, moon.*	microorganisms, plants and animals ▪ Give reasons for classifying plants and animals based on specific characteristics. ▪ Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ▪ Use test results to make predictions to set up further comparative and fair tests ▪ Report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written ▪ orms such as displays and other presentations ▪ Identify scientific evidence that has been used to support or refute ideas or arguments. ***Essential vocab:***	form a solution, and describe how to recover a substance from a solution ▪ Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating ▪ Give reasons, based on evidence from comparative and fair tests, for the particular ▪ uses of everyday materials, including metals, wood and plastic ▪ Demonstrate that dissolving, mixing and changes of state are reversible changes ▪ Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

			Previously introduced vocabulary: classification, offspring, characteristics, habitat, environment, adapt, variations, human, fossil, suited, cells, names of different habitats, names of animals and their body parts, species, sedimentary rock, lava, igneous rock, metamorphic rock, magma, heat, fossilisation.			***Essential vocab:***

Year 5/6 Cycle B	Wonders of the Universe		Super Settlers (Anglo Saxons and Scots)		Friends And Heroes (Quakerism and Democracy) A local History Study	
	Electricity	**Light**	**Healthy Bodies**	**Classifying Criters**	**Lifecycles**	**Healthy Bodies**
	By the end of these units: **Pupils will know:** **1.** What is needed to make a bulb light? **2.** How do you make a circuit from a diagram? **3.** How do you change components in a circuit? **4.** How did you draw your diagrams of the circuits that others made? **5.** How can alternative forms of energy help save our planet? **Children will be able to:** ▪ Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. ▪ Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness	**By the end of these units:** **Pupils will know:** **1.** How does light travel? **2.** How do you alter the size of shadows? **3.** How can we see things? **4.** What does white light consist of? **5.** What are the properties of light? **Children will be able to:** ▪ Recognise that light appears to travel in straight lines. ▪ Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. ▪ Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. ▪ se the idea that light	**By the end of these units:** **Pupils will know:** **1.** What are the different food groups and why they are important for our bodies? **2.** How does our body transport the nutrients in our digestive system to the rest of our bodies? **3.** What are the functions of the heart? **4.** How do muscles work to move different parts of the skeleton? **5.** Are drugs always harmful? **Children will be able to:** ▪ Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. ▪ Recognise the	**By the end of these units:** **Pupils will know:** **1.** How are livings things classified? **2.** How can I distinguish between organisms that have similar features? **3.** How are plants classified? **4.** What are the positive and negative consequences of scientific and technological developments? **5.** How do you use a key to classify physical features of micro-organisms? **Children will be able to:** ▪ Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms,	**By the end of these units:** **Pupils will know:** **1.** What is asexual reproduction? **2.** How do you define sexual reproduction? **3.** Can you think of some words to describe the environment near or around your school where plants and animals live? **4.** What does internal fertilisation mean? **5.** Who is Sylvia Earle? **Children will be able to:** ▪ Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. ▪ Describe the life process of reproduction in some plants and animals. ***Essential vocab:*** **<u>Reproduction:</u>** asexual reproduction, sexual	**By the end of these units:** **Pupils will know:** 1. How has scientific ideas about food and diet been tested in the past and how this has contributed to our knowledge of a balanced diet? 2. Why is a variety of foods is important for a healthy diet? 3. How is nutrients and water are transported in the human body? 4. What happens to the heart when we exercise and why? 5. How do muscles move the skeleton and how does muscle activity requires increased blood flow? What is the effect of tabacco, alchol ad other drugs? **Children will be able to:**

	of buzzers and the on/off position of switches. ▪ Use recognised symbols when representing a simple circuit in a diagram. ***Essential vocab:*** **Flow and measure of electricity**: voltage, amps, resistance, electrons, volts (V), current. **Circuits:** symbol, circuit diagram, component, function, filament. **Variations:** dimmer, brighter, louder, quieter. **Types of electricity:** natural electricity, human-made electricity, solar panels, power station. **Other:** positive, negative.	travels in straight lines to explain why shadows have the same shape as the objects that cast them. ***Essential vocab:*** **Reflection:** periscope. **Seeing light:** visible spectrum, prism. **How light travels**: light waves, wavelength, straight line, refraction. *Previously introduced vocabulary: names and properties of materials, absorb.*	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. ***Essential vocab:*** **Circulatory system:** circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells. **Lifestyle:** drug, alcohol, smoking, disease, calorie, energy input, energy output. **Other:** water transportation, nutrient transportation, waste products. *Previously introduced vocabulary: carbon dioxide.*	plants and animals. ▪ Give reasons for classifying plants and animals based on specific characteristics. ***Essential vocab:*** **Classifying:** Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation. **Microorganisms:** bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose.	reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation. *Previously introduced vocabulary: life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.*	▪ 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. ***Essential vocab:*** **Circulatory system:** circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells. **Lifestyle:** drug, alcohol, smoking, disease, calorie, energy input, energy output. **Other:** water transportation, nutrient

						transportation, waste products. *Previously introduced vocabulary: carbon dioxide.*