Aston and Cote Church of England School- Progression Map- Science

Science Intent: At Aston and Cote, we recognise science's invaluable role within the school curriculum and everyday life in understanding the world around us. Our children have a variety of practical, first-hand experiences, which develop a natural curiosity and an understanding of working scientifically. Children use these skills, covering a range of exciting topics each year- building on their prior knowledge to 'grow their talents' and become scientists.				
Skill to develop over the key stages				
	EYFS	**KS1**	**LKS2**	**UKS2**
Skill	- Make comments about what they have heard and ask questions to clarify their understanding. -Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. -Offer explanations for why things might happen, making use of recently introduced vocabulary. -Begin to use their own ideas to suggest	- Asking simple questions and recognising that they can be answered in different ways -performing simple tests - observing closely, using simple equipment -gathering and recording data to help in answering questions. -identifying and classifying -using their observations and ideas to suggest answers to questions	-asking relevant questions and using different types of scientific enquiries to answer them – -setting up simple practical enquiries, comparative and fair tests -making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables -reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations -using test results to make predictions to set up further comparative and fair tests

~ Aspiring to be the people God created us to be by growing the talents He gave us ~

	answers to questions		-using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes -using straightforward scientific evidence to answer questions or to support their finding		- identifying scientific evidence that has been used to support or refute ideas or arguments	
Substantive Concept/ Strand- Plants							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic	Six Weeks of Spring						
National Curriculum Objective	Explore the natural world around them, making observations and drawing pictures of animals and plants	-identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - identify and describe the basic structure of a variety of common flowering plants, including trees	-observe 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 describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant			

				-investigate the way in which water is transported within plants -explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal			
Sticky Knowledge/ Retrieval	-Talking about observations of plants, making predictions about growing. -Makes careful observations and uses increasing mature vocabulary when discussing the natural world e.g soil, roots, stems -Drawing shows a detailed observation of a plant.	-identifying different flowering plants. -Link to countries of the UK (daffodil, rose, thistle, leek, shamrock) -Knowledge of key vocabulary to be able to label the key parts of a plant -How to record the growth of plants from seedlings	-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 describe the functions of different parts of flowering plants: roots, stem, leaves, petals, flower, stamen, stigma, ovules, ovary, pollen. - Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant			

Aston and Cote Church of England School- Progression Map- Science

	-Observe changes over time. to know what a plant needs to grow. -Name the basic parts of a plant.	-Describe the structure of a plant and what it needs to grow.		- Describe the way in which water is transported within plants - Explain the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Vocabulary	Nursery-Seed, water, sun, nutrients/food, leaves, petals. Reception - seed, soil, stem, leaf, water, sun, petal, roots, grow decay/die, observe, look closely	Bulb, roots, stem, leaves flower (blossom), petals, fruit, seeds, trunk, branches, twigs. Record and measure daffodil, shamrock, thistle, rose, leek sunlight, nutrients, soil, water, growth	water, light, temperature, growth, bulb, seed, conditions, survival, observe, record, accuracy	flower, plant, roots, stem, leaves, petals, flower, stamen stigma, ovules, ovary, pollen, air, light, water, nutrients, water transportation, pollination, seed formation, seed dispersal, function.			
Substantive Concept/ Strand- Animals, including humans							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic	Nursery-						

~ Aspiring to be the people God created us to be by growing the talents He gave us ~

Aston and Cote Church of England School- Progression Map- Science

	Reception- Marvellous Me Wonderful Winter Six Weeks of Spring						
National Curriculum Objective	Explore the natural world around them, making observations and drawing pictures of animals and plants Understanding the importance of healthy food choices	-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) - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	-identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - identify that humans and some other animals have skeletons and muscles for support, protection and movement	-describe the simple functions of the basic parts of the digestive system in humans - identify the different types of teeth in humans and their simple functions - construct and interpret a variety of food chains, identifying producers, predators and prey	-describe the changes as humans develop to old age	-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

		- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense					
Sticky Knowledge/ Retrieval	FS1-Natural world compare different environments to their own. FS2- Show an understanding that we need to care for living things, e.g handling insects FS1 and 2 Senses - what are our senses/why do we need them? Name the 5 senses. Healthy foods and unhealthy foods Eat a healthy range of foodstuffs and understand the	Describe the different features of the 6 classifications of animals. Sort animals based on their classification Compare animals and how they are adapted to survive in the polar regions Descirbe the weather in the UK and how the weather/days are different in the polar regions.	Observe different habitats in the school surroundings. Name animals for different habitats. Explain what happens to plants when you change their habitat? Put cactus in the freezer, ocean plant on the radiator, tropical plant in water. Describe what a microhabitat is and they are within a habitat.	Explain that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	-identify the different types of teeth in humans and their simple functions. Explain how food is digested-Label all names of organs and define topic-specific vocabulary.	Explain that girls and boys experience puberty differently. Summarise the changes in the human life cycle and identify the changes as adults move into old age.	Explain what the circulatory system is and its components. What does the heart do To identify the main parts of the heart show and evaluate the effect of exercise on the heart To know the link between the respiratory and circulatory system To know why HR and breaths are affected during exercise.

	eed for variety in food FS2 Show an understanding that we need to care for living things, e.g handling insects FS1- Looking at where children fit in with their families.		Compare microhabitats on school. Make own microhabitat for given minibeast.				
Vocabulary	Habitat, animals (e.g. tiger, lion, elephant), minibeast, jungle, pet(s), tail, whiskers, vet, trees, grass, waterfall, Fs1- Mummy, Daddy, brother, sister, Grannie, Grandad, Auntie, Uncle, Cousin. - Step families Older, Younger Touch, Skin, Taste, tongue, Smell, nose,	mammals, fish, reptiles, insects, birds and amphibians warm/cold blooded, scales, gills, webbed feet, invertebrates, vertebrate, carnivore, herbivore and omnivore blubber, camouflage, polar, suitability, adapted Weather, wet, dry, windy, snowy,sunny,	Habitat, non-living, living, never alive, fossil, carnivore, herbivore, omnivore, movement, respiration, sensitivity, growth, reproduction, excretion, nutrition, conditions, survive, urban, woodland, mammal,	Exercise, diet, fitness, health, nutrition/nutrients, Carbohydrates, including sugars, protein, vitamins, minerals, fibre, fat, water, support, protection, movement, skeleton, endoskeleton, exoskeleton, vertebrate, invertebrate, bones, skull, joints, muscles, contract, relax	producer, consumer, herbivore, prey, predator, healthy, diet, carbohydrate, food chain, food web, protein, fruit and vegetables, dairy. Vertebrates Invertebrates Environment Habitats Mammals Reptiles Amphibians Insects Classify Features	Sexual reproduction asexual reproduction -water -protein -carbohydrates -fats -nutrients (vitamins/ minerals)	water -protein -carbohydrates -fats -nutrients (vitamins/ minerals) -absorb heart, lungs, blood vessels intestine, stomach

	Sight, eyes, Hear, Ear FS2- touch, taste, smell, feel, hear see, sight, hearing, smelling Eyes, ears, nose, mouth, tongue, hands, feet, skin. sweet/sour	foggy Temperature, hot, cold, freezing, degrees					
Substantive Concept/ Strand- Everyday materials/ Rocks/ States of matter/ Properties changes of materials							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective	Changing states of matter	-Distinguish between an object and the material from which it is made - identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - describe the simple physical properties of a variety of everyday materials compare	-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,	-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	Compare and group materials together, according to whether they are solids, liquids or gasses - 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)	Compare and group together everyday materials on the basis of their properties Know that some materials will dissolve in liquid to form a solution. demonstrate dissolving and mixing and reversible changes Use knowledge of S,L and G to decide how	

		and group together a variety of everyday materials on the basis of their simple physical properties	bending, twisting and stretching		- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	mixtures might separate, including filtering, sieving and evaporation Explain that some changes result in the formation of new materials and that this kind of change is not usually reversible	
Sticky Knowledge/ Retrieval	Baking/Cooking Describing the difference between raw food and cooked food - Is there a difference? Describe food with skin on and then without the skin on.	-Compare and describe the properties of different materials -Categorise the different materials. -Think about which materials would be the most suitable for our pirate ship. -Identify materials that float and sink -Name different materials	-Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, tissue, fabric, 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.	-Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (appearance, colour, texture) - How permeable and impermeable rocks are (touch on - erosion) - Describe in simple terms how fossils are formed when things that have lived are trapped within rock	-Identify the properties of solids, liquids and gases. • Explain how materials change state. Know that some materials are good thermal insulators that prevent the transfer of heat from warm to cold Skills -Ask relevant questions and suggest ways to answer them.	-To explain why different liquids move at different speeds. To describe how the molecules in solids, liquids and gases move and compare the differences between them. To demonstrate how to change materials from one state to another. To recognise the difference between	

Aston and Cote Church of England School- Progression Map- Science

		-Identify different materials and sort them based on their properties. -Investigate different materials to find out their properties/ Which material would be the most suitable to make a big top? Why?	-Recognise if a given material is waterproof, strong or flexible. -Understand the structure of an experiment. How to conduct a fair test	- Recognise that soils are made from rocks and organic - Compare how things move on different surfaces	-Make predictions using scientific evidence. -Record data, including keys and bar charts	reversible and irreversible changes	
Vocabulary	Hot, cold, steam, Liquid, gooey, sticky, hard, bouncy, bumpy, rough, smooth.	Object, material, properties Wood, plastic, glass, paper, water, metal, rock, brick, fabric, elastic, foil, rubber, wool, clay Hard/soft, bendy/not bendy, rough/bumpy/ smooth, stretchy/squashy/ brittle/stiff /rigid, shiny/ dull, waterproof/not waterproof, absorbent/not absorbent/	material, properties, waterproof, strength, flexibility, wood, plastic, glass, metal, water, rock, hard, soft, stretchy, shiny, dull, rough, rigid, not waterproof, investigate, fair test	rocks, soils, natural, man-made, limestone, sandstone, granite, marble, chalk, slate, fossil, palaeontologist, igneous, sedimentary, metamorphic, permeable, absorbent, impermeable, sediment, crystals, gemstones, erosion	solid, liquid, gas, state, heat, cool, melt, freeze, evaporate, condense, thermometer, temperature, degrees celsius, The water cycle, precipitation, thermal insulator	Solids, liquids and Gases. Melting, condensation, Viscosity, freezing, evaporating, density. reversible, irreversible	

		,opaque/ transparent					
Substantive Concept/ Strand- Seasonal changes/ Sound and hearing/ Earth and Space							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective	-Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps; -Understand some important processes and changes in the natural world around them, including the seasons and changes states of matter	-Observe changes across the 4 seasons. Observe different weather -Observe and describe weather associated with the seasons and how day length varies	-Observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies		-Identify how sounds are made, associating some of them with something vibrating -recognise that vibrations from sounds travel through a medium to the ear -find patterns between the pitch of a sound and features of the object that produced it -find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from	-describe the movement of the Earth, and other planets, relative to the Sun – -describe the movement of the Moon relative to the Earth – -describe the Sun, Earth and Moon as approximately spherical bodies -Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky -Describe the movement of the Earth, and other	

					the sound source increases	planets, relative to the Sun in the solar system -Describe the movement of the Moon relative to the Earth -describe the Sun, Earth and Moon as approximately spherical bodies -Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	
Sticky Knowledge/ Retrieval	FS2- the seasons of Autumn & Winter Autumn - Notice the changes in the trees, e.g. falling leaves, conker seeds, acorn seeds. Winter - Dependent on	-Observe and record the weather in the UK and how the weather/days are different in the polar regions.	-Observe and record the weather in the UK and how the weather/days are different in the rainforest and the UK woodlands.,		Children learn how a sound changes in different mediums; such as solids, liquids and gases. Children identify that a sound is	To describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To show the movement of the Moon around the Earth and identify the	

	weather - snow, frost and ice.				produced from a vibration. Children explore the parts of the ear that work to hear sounds. To find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Design and evaluate earmuffs from a variety of different materials to investigate which provides the best insulation against sound. To and play their own instruments by using what they have found	different phases of the moon. To summarise why we have day any night, demonstrating their understanding of the Earth's rotation. To recall that the Sun, moon and Earth are spherical bodies in our solar system. To recall prior knowledge of the planets in our solar system. Children take ownership of planning their own chemical experiment, manipulating the quantity of different chemicals to create a desired effect.	

					out about pitch and volume	Identifying patterns using the measurements recorded and observations made to help answer questions. Can use fair testing to find the most absorbent material from a range of materials. Children will apply their knowledge of forces and fair testing to investigate which material provides the best protection when travelling in space (in a space buggy)	
Vocabulary	Autumn, Winter, Spring, Summer seasons, leaf/leaves, conkers, acorns,	Weather, wet, dry, windy, snowy,sunny, foggy Temperature, hot,	Weather, wet, dry, windy, snowy,sunny, foggy Temperature,		vibration -sound -source -sound wave -volume	The planets Heliocentric Geocentric Spherical Star Planet Moon	

	snow, frost, ice melting, cold, freezing, weather, change	cold, freezing, degrees	hot, cold, freezing, degrees change, difference, contrast, humidity		-ear, -ear drum	Waxing Waning Crescent Gibbous chemical reaction dissolve pressure Variables Reactants Absorbent Hypothesis Dependent Independent	
Substantive Concept/ Strand- Living things and their habitats/ Evolution and inheritance							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective	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;	Recognise that living things can be grouped in a variety of ways explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things	Identify and name a variety of plants and animals in their habitats, including microhabitats. Identify most living things live in habitats. Describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on others.		Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group Identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can pose dangers	Describe the difference in the life cycle of mammals, amphibians, insects and birds. Describe the life process of reproduction in some plants and animals.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics. recognise that living things have changed over time and that fossils provide

			Basic needs of animals, including humans, for survival (water, food, oxygen)				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
Sticky Knowledge/ Retrieval	FS2- to find where minibeasts live. To know that animals live in different habitats. To gain an understanding of the human and frog/butterfly lifecycle	Describe the different features of the 6 classifications of animals. Understand how to sort animals based on their classification Compare animals and how they are	To observe different habitats in the school surroundings. Name animals for different habitats. Investigation- what happens to plants when you change their habitat. Put		Analyse features of living things that make them different, so they are able to group by different factors. Explore how to use classification keys to group by practising this.	To explain what a gestation period is and that this can vary depending on each mammal. To compare the life cycles of mammals, insects, amphibians and birds	Categorise animals based on similarities and differences Categorise based on the Linnaean system (universal sorting system) To know what thLinnaeanan system is. identify differences or

		adapted to survive in the polar regions Observe and record the weather in the UK and how the weather/days are different in the polar regions	cactus in freezer, ocean plant on radiator, tropical plant in water. Know what a microhabitat is and they are within a habitat. Explore microhabitats on school and compare Make own microhabitat for given minibeast.		Explore their local and wider environment to identify the living things there. Be able to discuss and classify these living things. Evaluate the changes in the environment and the impact this has,		similarities can be classified in different ways based on their characteristics. To identify microorganisms To know that microorganisms can be harmful and helpful To know what inheritance is Understand and identify the differences between inherited and learned characteristics. To be able to explain: - survival of the fittest - adaptation - natural selection Can explain that adaption is a mistake and not a forced evolution. Fossils are evidence of evolution

Aston and Cote Church of England School- Progression Map- Science

Vocabulary	FS2-egg, caterpillar, chrysalis, butterfly, frogspawn, froglet, tadpole, frog, baby, toddler, child, teenager, adult. FS2- habitat, animals (e.g. Polar Bear, Lion), minibeast, Savannah, pet(s), tail, whiskers, vets, trees, grass waterfall	mammals, fish, reptiles, insects, birds and amphibians warm/cold blooded, scales, gills, webbed feet, invertebrates, vertebrate. carnivore, herbivore and omnivore blubber, camouflage, polar, suitability, adapted Weather, wet, dry, windy, nowy,sunny, foggy, Temperature, hot, cold, freezing, degrees	Habitat, ocean, tropical rainforest, arctic, desert, survive, prediction, investigate, evaluate, microhabitat, minibeasts		Vertebrates Invertebrates Environment Habitats Mammals Reptiles Amphibians Insects Classify Features Characteristics classification - similarities and differences	Sexual reproduction asexual reproduction	climate - characteristics - classification - similarities and differences - microorganisms - linnaean system - classify - helpful and harmful survival of the fittest -natural selection - inheritance - evolution adaption fossil evidence aquired
Substantive Concept/ Strand- Light							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective				Recognise that darkness is the absence of light Notice that light is reflected from surfaces			Recognise that light appears to travel in straight lines Use the idea that light travels in

~ Aspiring to be the people God created us to be by growing the talents He gave us ~

				Recognise how light can be dangerous and that there are ways to protect their eyes Recognise shadows are formed when the light source is blocked by an opaque object Find patterns in the way that the size of shadows change.			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 e y e s . - use the idea that light travels in straight lines to explain why shadows have the same shape as the objects t
Sticky Knowledge/ Retrieval				Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces.			Know how we see things Know how light travels in straight lines and at the speed of light. Can identify different sources o f light and know the difference between a source and reflector.

				Recognise transparent means light can pass through an object, translucent means that some light can pass through an object but is scattered and opaque means that light cannot pass through an object. 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. Recognise the importance of the work of Thomas Edison - invention of the lightbulb			Can explain what colour is light made up and name the colour spectrum Can explain how we see colour and how a filter can block certain colours, Understand and explain how light follows a law of reflection (angle in, angle out) Know how what is refraction (bent) and how it affects light Can explain how a shadow is formed
Vocabulary				Light, dark, shadow, illuminate, opaque, translucent,			shadow visual spectrum reflection angle of incidence angle of reflection

				transparent, reflect, source, retroreflective,			reflection refraction absorb filter block light source reflector colour spectrum medium density ray of light opaque transparent translucent elongated cast prism natural man made
Substantive Concept/ Strand- Electricity							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective					Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is		Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches

					part f a complete loop with a battery. Recognise that a switch opens and closes a circuit Recognise common conductors and insulators		Use recognised symbols when representing a simple circuit in a diagram
Sticky Knowledge/ Retrieval					Identify and be able to articulate the basic parts of a series circuit Recogniser and analyse effectiveness of common conductors and insulators Understand how a circuit woks and the process electricity takes Analyse the effectiveness of batteries, cells, switches, bulbs		Name different parts of a circuit and identify/ draw the correct symbols for each, understanding what they do Create a series circuit to power a bulb/ buzzer/ motor Manipulate a circuit to affect the brightness of a bulb or the sound of a buzzer Understand that electricity flows through a circuit

					Explore how circuits differ when they are taken apart and changed		and know how to stop it Explain what volt is and how the volts affect a circuit Apply knowledge to investigate independently
Vocabulary					cell -battery -bulb -switch -buzzer -circuit -series -conductors -indicators		circuit -electricity -battery -cell -series -bulb -buzzer -motor -switch -wire -volts -current -complete and incomplete circuit
Substantive Concept/ Strand- Forces and Magnets							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Topic							
National Curriculum Objective	Investigate and experience things and 'have a go'			Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other		Explain that unsupported objects fall towards the Earth because of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction that act	

				and to some materials and not others Compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing		between moving surfaces Recognise that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect Compare and group together everyday materials on the basis of their properties Know that some materials dissolve in liquid to form a solution Demonstrate dissolving and mixing and reversible changes Use knowledge of L,S, and G to decide how mixtures might separate, including	

						filtering, sieving and evaporation Explain that some changes result in the formation of new materials and that this kind of change is not usually reversible	
Sticky Knowledge/ Retrieval				Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other		Recall different types of forces that can act on abject Explain the effects of gravity on planet Earth Describe how a range of forces can be acting on one object at the same time Explain why different liquids move at different speeds Describe how the molecules in solids liquids and	

				depending on which poles are facing		gases move and compare the differences between them Demonstrate how to change materials from one state to another Recognise the differences betweenn reversible and irreversible changes	
Vocabulary				Force, push, pull, predict, evaluate, friction, surface, rough, smooth, bumpy, fair test, investigate		Push, pull, friction, resistance, gravity, levers, gear, streamline, Isaac Newton and Galileo Galilei, solids, liquids and gases, melting, condensation, viscosity, freezing, evaporating, density, reversible, irreversible	