Science
Curriculum Map

EYFS	0 – 3 Preschool	3 – 4 EYFS 1	Reception EYFS 2	Links to KS1 Curriculum
EYFS area of Learning	Understanding the World: The Natural World			
Fundamental Knowledge	Repeat actions that have an effect whilst exploring materials inside and outside with different properties. Explore and respond to different natural phenomena in their setting or on trips.	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.	Explore the natural world around them and describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them.	Ask simple questions and recognising that they can be answered in different ways. Use their observations and ideas to suggest answers to questions. Observing closely, using simple equipment. Performing simple tests. Identifying and classifying. Gathering and recording data to help in answering questions.
Early Learning Goal	Explore the 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 know what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.			

Science
Curriculum Map

Year 1	Autumn 1 (1.1)	Autumn 2 (1.2)	Spring 1 (1.3)	Spring 2 (1.4)	Summer 1 (1.5)	Summer 2 (1.6)
National Curriculum	Identify, name and label the basic parts of the body and say which part of the body is associated with which sense.	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).	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.	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. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.		Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies.
Year 1	**What can my amazing body do?**	**Which animal would make the best pet?**	**Are paper shoes a good idea?**	**How does my garden grow?**		**Would it be good if it was always summer?**
Substantive knowledge	Identify and name key body parts (see vocabulary below)	Animals vary in many ways having different structures e.g. wings, tails, ears	Objects are made of one or more material. Identify and name common materials	Name trees and other plants that they see regularly		Name the four seasons and identify when in the year they occur Describe weather in different seasons over a year

Science
Curriculum Map

	Humans (and other animals) find out about the world using their senses. Humans have five senses – sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body. The bodies of boys and girls are different. Children should know the names of penis, testicles and vagina (refer to lesson within PSHE scheme and school RSE policy)	etc. They also have different skin coverings e.g. scales, feathers, hair. Key features can be used to identify a range of common animals. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. *[The children need to be able to name and identify a range of animals in each vertebrate group. They do **not** need to use the terms mammal, reptiles etc. or know the key characteristics of each.* *The children also do not need to use the words carnivore, herbivore and omnivore.]*	(see vocabulary below) Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Describe materials by obvious properties (see vocabulary below). Some materials (e.g. plastic) can be in different forms with very different properties.	Describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom Identify trees which lose their leaves and those that keep them the whole year Identify and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green	Describe days as being longer (in time) in the summer and shorter in the winter Describe other features that change through the year

Science
Curriculum Map

Disciplinary Knowledge	Ask questions about what they can see, hear, taste, feel and smell. Observe the way in which blocking their vision impacts on their hearing. Decide which equipment to use to block their vision (e.g. blindfold, dark glasses) and what equipment to use to test their hearing (e.g. musical instruments). Record observations in a simple, preprepared table. Answer the inquiry question either verbally or using simple written sentences.	Make first-hand, close observations of animals from each of the groups. Identify animals by matching them to named images. Compare two animals from the same or different groups. Classify animals using a range of features. Classify animals according to what they eat.	With support, create a question to investigate. With support, decide how to test absorbency of different materials. Observe which materials absorb water. Fill in preprepared table to show results. Answer the enquiry question verbally or in simple written sentences.	Observe development of sunflower seed from planting to flowering (approx. 12 weeks). Measure sunflower height each week in cm. Complete simple preprepared table to record height of sunflower. Record development of sunflower pictorially using drawings of photographs. Describe the development of the sunflower verbally or in simple written sentences.	Ask simple questions such as: Which is the warmest season? Is it always sunny in the summer? Use a range of sources (books, videos, first hand observation) to find out about the seasons.
Scientific Enquiry	Pattern Seeking: Is our sense of hearing better when we can't see?	Classifying	Comparative/Fair Testing Which materials would make waterproof shoes?	Observing Change over Time How does my sunflower change each week?	Research What happens in each season?

Science
Curriculum Map

Curriculum Links	In EYFS, children begin by exploring the world around them. They describe what they see, hear and feel outside. In 2.1, children will notice that animals, including humans, have offspring. They will also look deeper into the basic needs of animals.	In EYFS, children start by exploring their world and observing closely. In 2.3 and 2.4, children will begin looking at the sustainability of everyday materials.	In EYFS, children begin by exploring the world around them. In 2.5, children will delve deeper into what a plant needs to grow healthily. Building on 1.4, the children will experience growing plants from seeds. They will use their previously taught knowledge to support them in caring for their plants.	In EYFS, children will gain an understand the effects of the changing seasons on the natural world around them. In 2.6, children will learn about how climate change effects the weather around the world.
Formative Assessment Tasks	TAPS Focused Assessment Tasks Body Parts: Y1plan_Body_parts_2020.docx	(TAPS not suitable)	Waterproof: Y2plan Waterproof - Plan.docx	Seasonal Change: Y1plan_Seasonal_change_2020.docx
Enriching Experiences	Art – Tiger in a Tropical Storm - Henri Rousseau	Art - Mona Lisa – Jane Perkins	Design – Honeysuckle – William Morris Poetry – Daffodils (William Wordsworth)	Poem – Six weather Haiku – George Hunter
Vocabulary	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue penis, testicles, vagina [in line with school RSE policy] object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, fragile, stretchy, stiff, bendy, waterproof, absorbent, rough, smooth, shiny, dull, transparent leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area weather, sun, rain, wind, snow, thunder, lightning, clouds, frost, rainbow, seasons, winter, summer, spring, autumn,			

Science
Curriculum Map

Year 2	Autumn 1 (2.1)	Autumn 2 (2.2)	Spring 1 (2.3)	Spring 2 (2.4)	Summer 1 (2.5)	Summer 2 (2.6)
National Curriculum	Explore and compare the differences between things that are living, dead, and things that have never been alive. Notice that animals, including humans, have offspring which grow into adults. .	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	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.	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.	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.	
Year 2	**Animals, including Humans**	**Living Things and their Habitats**	**Use of Everyday Materials**	**Healthy Living**	**Plants**	

Science
Curriculum Map

Substantive Knowledge	All objects are either living, dead or have never been alive. [Dead things include parts of plants and animals that are no longer attached e.g. leaves shells, fur, feathers. An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive] Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some	Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. A habitat provides the basic needs of the animals and plants – shelter, food and water and that within a habitat there are different micro-habitats [e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves.] Plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals can be shown in a food chain.	All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. A material can be suitable for different purposes and an object can be made of different materials. Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. This can be a property of the material or depend on how the material has been processed e.g. thickness.	All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. To grow into healthy adults, they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.	Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.

Science
Curriculum Map

	animals do not look like their parents e.g. tadpoles.				
Disciplinary Knowledge	Ask yes/no question to aid sorting. Sort objects into living /dead/ never alive Discuss reasons for placing items in each group.	Ask a question about where animals choose to live that is looking for a pattern based on observation. Decide what equipment to use from a choice e.g. magnifying glass. Observe where they find most animals (e.g. worms, ants) and record in premade table. Present results orally and using pictures and simple sentences.	Identify the question to investigate from a scenario or from a range provided. Choose equipment from a range and decide what to do or what to observe in order to answer the question. Make observations linked to answering a question. Record data using tally chart, pictogram or block chart. Present results orally and using pictures and simple sentences.	Ask simple questions linked to the topic of healthy living. Use a variety of sources of information. Present what they have learnt verbally, using pictures or as an information text.	Ask a question about what might happen. Observe development of seed (bean) and bulb. Complete simple preprepared table to describe observed changes. Record development of seed (bean) and bulb pictorially using drawings or photographs. Describe the observed changes verbally or in simple written sentences.
Scientific Enquiry	Classifying	Finding patterns What conditions do ants prefer to live in?	Comparative/Fair Test Which material would be best for the roof of the little pig's house?	Research What food do you need in a healthy diet and why?	Observing over time What happens to my bean after I have planted it?
Curriculum Links		Year 1: Animals (including humans), Plants	Y1: Everyday materials Y3: Rocks, Forces and Magnets		

Science
Curriculum Map

		Year 4: Animals (including humans), Living things and their habitats	Y5: Properties and changes of materials		
Formative Assessment Tasks	TAPS Focused Assessment Tasks				
	Living and Non-Living: Y2plan Living and nonliving - Review.docx	Woodlouse Habitat: Y2plan Woodlice habitat - Do.docx	Materials: Y1plan_Materials_-_Transparency.docx	(No suitable TAP resource)	Plant Growth: Y2plan Plant growth - Do.docx
Enriching Experiences	Poetry – The Owl and the Pussycat (Edward Lear)		Poetry – Woolly Saucepan (Michael Rosen)		
Vocabulary	Habitat, life cycle, off-spring, food chain, reproduction, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly) property (of a material), observe, opaque, transparent and translucent, reflective, non-reflective, flexible, rigid seed, bulb, germinate, shoot, seedling, heartbeat, breathing, hygiene, germs, disease,				

Science
Curriculum Map

Year 3	Autumn 1 (3.1)	Autumn 2 (3.2)	Spring 1 (3.3)	Spring 2 (3.4)	Summer 1 (3.5)	Summer 2 (3.6)
National Curriculum	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.	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.	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.	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.		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 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.
	Rocks and Fossils	**Light**	**Animals including humans**	**Plants**		**Forces and magnets**
Substantive Knowledge	Rock is a naturally occurring material. There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. [The rock cycle and the formation	We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects are sources of light.	Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need. Food contains a range of different nutrients – carbohydrates (including	Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. Roots absorb water and nutrients from the soil and anchor the plant in place. The stem transports water and nutrients/minerals around the plant and holds the leaves and		A force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater

Science
Curriculum Map

	of igneous, sedimentary and metamorphic rocks is not required at this level] Rocks can be hard or soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders). Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter). The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil. Some rocks contain fossils. Fossils were formed a long time ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter was	Objects are easier to see if there is more light. Some surfaces reflect light. The light from the sun can damage our eyes and therefore we should not look directly at the sun and should protect our eyes in bright light. Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.	sugars), protein, vitamins, minerals, fats, sugars, water – and fibre that are needed by the body to stay healthy. A piece of food will often provide a range of nutrients. Humans, and some other animals, have skeletons and muscles which help them move and provide protection and support.	flowers up in the air to enhance photosynthesis, pollination and seed dispersal. The leaves use sunlight and water to produce the plant's food. [No further knowledge of photosynthesis required at this stage] Some plants produce flowers which enable the plant to reproduce. Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways. Different plants require different conditions for germination and growth.	compared to walking on ice in normal shoes. A magnet attracts magnetic material. Iron and nickel and other materials containing these are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. Like poles repel. Unlike poles attract. For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.

Science
Curriculum Map

	replaced by minerals from the water.				
Disciplinary Knowledge	Ask a range of yes/no questions to aid sorting of rock samples. Use a classification key to identify rock types. Decide ways in which rocks can be sorted. Compare rocks based on obvious observable characteristics. Suggest improvement e.g. a wider range of objects. Suggest new questions arising from the investigation.	Ask a range of questions linked to a topic. Decide what to measure or observe. Decide how often to take a measurement. Make observations linked to answering the question. Use results from first two measurements to make a prediction about further results. Present data in bar charts with preprepared axes. Refer directly to their evidence when answering their question. Produce a written explanation of their investigation. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation.	Ask a range of questions linked to the foods we eat. Present what they learnt about food groups as information text including a labelled diagram of the proportions needed in a healthy diet. Suggest limitations to research e.g. number of sources of evidence, etc. Suggest new questions arising from the investigation.	Ask a range of questions linked to plants. Decide what to measure or observe e.g. what happens to the celery, how far the colour moves up the stem, difference between different thicknesses of celery etc Make observations linked to answering the question and record these in a table that they have drawn. Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary. Refer directly to their evidence when answering their question. Produce written description of findings. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation.	Ask a range of questions linked to magnets. Decide what to measure or observe to determine whether the size and shape of magnets affect their strength. Make observations linked to answering the question. Measure using standard units where not all the numbers are marked on the scale. Prepare own tables to record data. Refer directly to their evidence when answering their question. Produce written explanation of findings. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation. Use results from this investigation to make a prediction about a further result.

Science
Curriculum Map

Scientific Enquiry	Classifying	Comparative Test/Fair Test How does the distance between the shadow puppet and the screen affect the size of the shadow?	Research Why do different types of vitamins keep us healthy and which foods can we find them in?	Observe over time What happens to celery when it is left in a glass of coloured water?	Finding Patterns Does the size and shape of a magnet affect how strong it is?
Curriculum Links					English: Iron Man (Trust Core Text)
Formative Assessment Tasks	TAPS Focused Assessment Tasks				
	Rock Report: Y3plan Rocks report - Review.docx	Make Shadows: Y3plan Make shadows - Do.docx	Skeleton Qs: Y3plan Skeleton Qs - Plan.docx	Function of a stem: Y3plan Function of stem - Review.docx	Magnet Tests: Y3plan Magnet tests - Do.docx
Enriching Experiences	Visit to the	Attraction (Shadow theatre group from Britain's Got Talent)			
Vocabulary	pollen, insect/wind pollination, male, female, seed dispersal (wind dispersal, animal dispersal, water dispersal), nutrients, minerals, soil, absorb, transport Nutrition, carbohydrates, sugars, protein, vitamins, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine Light source, shadow, opaque, reflective attract, repel, magnetic material, poles, north pole, south pole				

Science
Curriculum Map

Year 4	Autumn 1 (4.1)	Autumn 2 (4.2)	Spring 1 (4.3)	Spring 2 (4.4)	Summer 1 (4.5)	Summer 2 (4.6)
National Curriculum	Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.	Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	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	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.	

Science
Curriculum Map

	Recognise some common conductors and insulators, and associate metals with being good conductors.				
	Electricity	**Sound**	**States of Matter**	**Animals Including Humans**	**Living Things and their Habitats**
Substantive Knowledge	Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on and off. Metals are good conductors so they can be used as	A sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds	A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid. Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is $0^{o}C$. Boiling is a change of state from liquid to gas that happens when a liquid is heated	Food enters the body through the mouth. Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. Here the water is removed	Living things can be grouped (classified) in different ways according to their features. Classification keys can be used to identify and name living things. Living things live in a habitat which provides an environment to which they are suited (Year 2 learning). These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering). These environments also change with the seasons; different living things can be found in a habitat at different times of the year.

Science
Curriculum Map

	wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity.	decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively. Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds	to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100oC. Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.	for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet. Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).	Living things can be classified as producers, predators and prey according to their place in the food chain.
Disciplinary Knowledge	Ask a range of questions linked to electrical circuits. Decide what to measure or observe.	Ask a range of questions linked to the topic of sound. If there is a pattern, is it the same in	Ask a range of questions linked to the topic of States of Matter. Decide what to measure or observe.	Ask a range of questions linked to topic of teeth. Research work of dentist from range of sources (including a visit from a	Ask a range of yes/no questions to aid sorting. Use a classification key to identify animals found during playground or pond investigation. Decide

Science
Curriculum Map

	Make observations linked to answering the question. Measure using standard units where not all the numbers are marked on the scale. Use dataloggers with light sensor if available. Present data in line graph. Refer directly to their evidence when answering their question. Produce written explanation of findings. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation. Use results from first two measurements to make a prediction	every area of the school? Decide what and where to measure. Take measurements linked to answering the question. Use dataloggers to measure over time. Refer directly to their evidence when answering their question. Provide oral or written explanations for findings. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation. Use results from investigation to make a prediction about a further result.	Make observations linked to answering the question. Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary. Prepare own tables to record data. Present data in time graphs. Refer directly to evidence when answering question. Provide oral or written explanations for findings. Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation. Use results from investigation to make a prediction about a further result.	dentist if possible). Present what they learnt verbally, using labelled diagrams or as information text. Be able to answer their questions using simple scientific language. Suggest limitations e.g. limited range of evidence. Suggest new questions arising from the investigation.	ways in which animals can be sorted. Compare animals based on obvious observable characteristics. Spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs. Draw simple conclusions for patterns Suggest improvement e.g. a wider range of animals. Suggest new questions arising from the investigation.

Science
Curriculum Map

	about further results.				
Scientific Enquiry	Comparative test/Fair test How does the thickness of a conducting material affect how bright the lamp is?	Pattern Seeking Is there a link between how loud it is in school and the time of day?	Observing over time How does the level of water in a glass change when left on the windowsill?	Research How do dentists fix broken teeth?	Classification
Curriculum Links					
Formative Assessment Tasks	TAPS Focused Assessment Tasks Electricity Conductors: Y4plan Elect conductors - Review.docx	Pitch: Y4plan Pitch - Plan.docx	Drying: Y4plan Drying - Plan.docx	(No suitable TAPS assessment)	Environment Survey: Y4plan Local survey - Do.docx
Enriching Experiences					
Vocabulary	Classification, classification keys, environment, human impact, migrate, hibernate Digestive system, digestion, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, insulation Electricity, electrical appliance/device, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol				

Science
Curriculum Map

Year 5	Autumn 1 (5.1)	Autumn 2 (5.2)	Spring 1 (5.3)	Spring 2 (5.4)	Summer 1 (5.5)	Summer 2 (5.6)
National Curriculum	Describe the changes as humans develop to old age. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.		Describe the movement of the Earth and other planets relative to the sun in the solar system. Describe the movement of the moon relative to the Earth. Describe the sun, Earth and moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	Compare and group together everyday materials on the basis of their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and 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.	
Year 5	**Life Cycles & Human Development (Puberty)** **Animals including humans**		**Earth & Space**	**Forces**	**Materials**	

Science
Curriculum Map

Substantive Knowledge	As part of their life cycle, plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults. In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis. Plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. Gardeners may force plants to reproduce asexually by taking cuttings. Sexual reproduction occurs through pollination, usually involving wind or insects. When babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills.	The Sun is a star. It is at the centre of our solar system. There are 8 planets [can choose to name them, but not essential]. These travel around the Sun in fixed orbits. Earth takes 365¼ days to complete its orbit around the Sun. The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky. The Moon orbits the Earth. It takes about 28 days to complete its orbit. The Sun, Earth and Moon are approximately spherical	A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall. Air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object. A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force	Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. Mixtures can be separated by filtering, sieving and evaporation. Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

Science
Curriculum Map

	At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce. [Further details of content to be found in Changing Me unit in PSHE]			moves a small distance, e.g. a crowbar or bottle top remover. Pulleys, levers and gears are all mechanisms, also known as simple machines.	
Disciplinary Knowledge	Ask a range of questions and identify the type of enquiry that will help to answer the questions. Decide how often to make observations and how these should be recorded. Be able to answer their questions, describing the change over time. Provide oral and written explanations for their findings. Create labelled diagram of life cycle of	Ask a range of questions and identify the type of enquiry that will help to answer the questions. Recognise variables [country where found, nocturnal/diurnal etc] and understand that they cannot be completely controlled. Prepare own tables to record data. Be able to answer their questions identifying patterns. Provide oral and written explanations for their findings. Explain their degree of trust in their results e.g. range of animals surveyed, variables that may not have been controlled	Ask a range of questions (recognising that some can be answered through research and others may not). Choose suitable sources to use. Present research in a range of ways e.g. different graphic organisers. Be able to answer question using scientific evidence gained from a range of sources. Be able to talk about degree of trust in the sources used.	Ask a range of questions and identify the type of enquiry that will help to answer questions. Recognise and control variables. Measure using standard units using equipment that has scales involving decimals. Prepare own tables to record data. Choose an appropriate form of graph or chart to present results. Be able to answer question, describing causal relationships. Provide oral and written explanations for findings. Explain	Be able to ask a range of Yes/No questions to aid sorting materials and decide which ways of sorting will give useful information. Identify specific clear questions that will help to sort materials without ambiguity. Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry. Be able to use data to show that materials that are grouped together have more in common than with items in other groups. Be able to explain using evidence that the branching database or classification key will only work for the materials it was created for.

Science
Curriculum Map

	butterfly using own observations. Explain their degree of trust in their results e.g. were all stages observed. Use results to make predictions about other life cycles.			their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results. Ask further questions based on results.	
Enquiry Type	Observation over time How does a butterfly change as it develops from egg to adult?	Pattern Seeking Is there a relationship between a mammal's size and its gestation period?	Research How have our ideas about the solar system changed over time?	Comparative/Fair Test: Which shape parachute takes the longest to fall?	Classification
Curriculum Links					
Formative Assessment Tasks	TAPS Focused Assessment Tasks				
	Life Cycles: Y5plan Life cycles - Review.docx	Growth Survey: Y5plan Growth survey - Do.docx	Solar System Research: Y5plan Solar system research - Review.docx	Aquadynamics: Y5plan Aquadynamics - Review.docx	Sugar Cubes: Y5plan Sugar cubes - Do.docx

Science
Curriculum Map

Enriching Experiences					
Vocabulary	life cycle, reproduce, sexual, fertilises, asexual, runners, tubers, bulbs, cuttings [Vocabulary from Changing Me unit in PSHE curriculum – to be taught in line with academy RSE policy: puberty menstruation periods sanitary towels sanitary pads tampons ovary vagina womb/uterus sperm semen testicles/testes erection ejaculation wet dream larynx facial hair growth spurt hormone] Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), Solar System, rotate, star, orbit Force, gravity, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears				

Science
Curriculum Map

Year 6	Autumn 1 (6.1)	Autumn 2 (6.2)	Spring 1 (6.3)	Spring 2 (6.4)	Summer 1 (6.5)	Summer 2 (6.6)
National Curriculum	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 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.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans.	Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	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 buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.	Recognise the impact of diet, exercise, drugs and lifestyle on the way their body's function.
Year 6	**Classification**	**Evolution and Inheritance**	**Animals including Humans / Circulatory System**	**Light**	**Electricity**	**Diet & Healthy Living**

Science
Curriculum Map

Substantive Knowledge	Living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other livings things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot. Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics. Invertebrates can be divided into a number	All living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other. Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. Over	The heart pumps blood in the blood vessels around to the lungs. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.	Light appears to travel in straight lines, and we see objects when light from them goes into our eyes. The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen. Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.	Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. The same thing happens if a battery with a higher voltage is used. Adding more bulbs, motors or buzzers to a circuit will make each bulb less bright, each motor spin more slowly and each buzzer quieter. Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. Recognised circuit symbols can be used to draw	Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well out heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins. [Further details of content to be found in Healthy Me unit of PSHE curriculum]

Science
Curriculum Map

	of groups, including insects, spiders, snails and worms. Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.	time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution. Fossils give us evidence of what lived on the Earth a long time ago and provide evidence to support the theory of evolution. More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.			simple circuit diagrams.	
Disciplinary Knowledge	Be able to ask a range of Yes/No questions to aid sorting and decide	Ask a range of questions (recognising that some can be	Ask a range of questions and identify the type of enquiry	Ask a range of questions about the formation of shadows	Ask a range of questions and identify the type of	Ask a range of questions (recognising that

Science
Curriculum Map

	which ways of sorting will give useful information. Identify specific clear questions that will help to sort without ambiguity. Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry. Create branching databases (tree diagrams) and keys to enable others to name livings things. Be able to talk about the features that living things share and do not share based on the information in the key. Be able to use data to show that livings things that are grouped together have more things in common than with things in other groups. Be able to explain using evidence that the branching database or	answered through research and others may not). Choose suitable sources to use. Present research in a range of ways e.g. different graphic organisers. Be able to answer question using evidence gained from a range of sources. Be able to talk about degree of trust in the sources used.	that will help to answer the questions. Recognise and control variables where possible. Prepare own tables to record data, including columns for taking repeat readings. Choose an appropriate form of presentation, including line graphs. Provide oral and written explanations for their findings. Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results. Use test results to ask further questions and make predictions for further investigations.	and identify the type of enquiry that will help to answer the questions e.g. Recognise variables and understand that they cannot be completely controlled. Prepare own tables to record data. Be able to answer their questions identifying patterns. Provide oral and written explanations for their findings. Explain their degree of trust in their results e.g. precision in taking measurements, variables that could not be controlled, and accuracy of results. Use test results to ask further questions and make predictions for further investigations.	enquiry that will help to answer the questions. Recognise and control variables. Measure using light sensor (if available). Prepare own tables to record data. Be able to answer their question, describing causal relationships. Provide oral and written explanations for their findings. Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results. Use test results to ask further questions and make predictions for further investigations.	some can be answered through research and others may not). Choose suitable sources of information. Choose how to present learning e.g. different graphic organisers. Be able to answer their questions using scientific evidence gained from a range of sources. Be able to talk about their degree of trust in the sources they have used.

Science
Curriculum Map

	classification key will only work for the living things it was created for.					
Scientific Enquiry	Classify	Research What happened when Charles Darwin visited the Galapagos islands?	Observation over time How does my heart rate change over the day?	Pattern Seeking How are shadows affected by the type of material that an object is made from?	Fair test Does the length of the wire affect the brightness of the bulb in a circuit?	Research How might diet choices impact on our ability to learn?
Curriculum Links			English: Pig Heart Boy			
Formative Assessment Tasks	TAPS Focused Assessment Tasks Invertebrate Research: Y6plan Invertebrate research - Review.docx	Fossil Habitats: Y6plan Fossil habitats - Review.docx	Heart Rate Poses: Y6plan Heartrate pose - Plan.docx	Light Questions: Y6plan Light questions - Plan.docx	Bulb Brightness: Y6plan Bulb brightness - Plan.docx	(No suitable TAPS assessment)
Enriching experiences						
Vocabulary	vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system offspring, sexual reproduction, vary, characteristics, adapted, environment, inherited, species, fossils, evolve, evolution Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage [use of term but not full understanding of voltage]					