Woodside Academy Progression Map for *Science*

INTENT: Woodside Academy has made science a key subject in our curriculum. This means that this is taught weekly by class teachers. Our intention for science is to ensure that there is a natural progression in their learning through the topics they are taught. We follow the 2014 National Curriculum to ensure that each year they will be taught new skills and build on their previous scientific knowledge. We will also be including an Eco topic for each year group to follow to extend the children's understanding of the world around them.

By the end of their primary education we aim to ensure that all children can:
- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future implement.

AUT TERM	EYFS	KS1		KS2			
	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
KNOWLEDGE	• Begin to notice and comment on changes in the environment during autumn. • Notice changes in us from a baby to the present day. • To name most of our body parts and	Woodland environment • To be able to identify simple basic flora and fauna. • To identify changes to flora during the 4 seasons. • To identify the 4 seasons. • To compare different environments/ habitats to my home.	Everyday materials • I know what a material is. • I know the difference between a material and an object. • I can name a variety of materials. • I can describe a material's properties using adjectives. • With support: I can explain why some materials are better suited for different purposes than others. Seasonal changes • I know that the weather is always	Living in habitats • I know the difference between things that are living, things that are dead and things that have never been alive. • I can name the seven life processes that all living things need to be able to do to stay alive. • I know that all living things will eventually die. • I know what a habitat is. • I know that all living things need to live in a habitat that can provide them with the things they need to stay alive.	Rocks, fossils and soils • I know that most of our planet is made up of rock and that rocks are made up of a mixture of minerals that are pressed tightly together. • I can distinguish between rocks that are naturally occurring and those that are not. • I know that erosion is the process when something is worn away by water, wind or other natural materials over time.	States of matter • I know the difference between a liquid and a solid. • I know how to tell if a material is a liquid or a solid. • I know that gases have mass. • I can describe the properties of a solid, liquid and gas. • I can explain what would happen if a solid, liquid and gas were poured into a container. • I know that solids, liquids and gases behave differently because the particles of each behave differently.	Forces in action • I know that the Earth's gravitational force causes objects to have weight, and that gravity pulls objects towards the centre of the Earth. • I know that friction is the force that acts as resistance between two objects when moving over one another. • I know that air resistance is the force that occurs when air pushes against a moving object, making it slow down. • I can explain examples of how air resistance is used.	Healthy bodies • I know that people have not always known that disease and illnesses were often related to diet, such as scurvy. • I know that James Lind is credited as being the scientist who conducted the world's first clinical trial to explore the effects of diet on scurvy. • I can describe the importance of the different food groups and why each one is important for keeping our bodies healthy. • I can use food labels to assess how healthy a food is, explaining

	some bones. • To know where our bones are. • Begin to know about our 5 senses.		changing and that we have many different types of weather. • I know that there are four seasons in the UK. • I can name the months each season occurs in. • I can identify the main features of each of the different seasons. • I can describe different clothing that is appropriate to wear during each season. • I can identify differences between each of the four seasons. • I can describe how animals are affected by each of the four seasons, and how their behaviour changes during each one. • I can describe some of the ways humans adapt to the different seasons, e.g. by what we wear, eat and do. • I know that the number of hours of daylight changes throughout each of the four seasons.	• I can suggest what type of animals might live in a variety of different habitats. • I can match animals to their correct habitat. • I can identify and name some of the plants and animals that live in a seaside habitat. • I know that the plants and animals in a habitat are all dependent on each other for survival. • I can describe some habitats and their features in other parts of the world, such as rainforest, desert and Arctic habitats. • I can describe why some animals are well suited to their rainforest, desert or Arctic habitats. • I can describe what a microhabitat is. • I can identify some of the minibeasts that live in microhabitats. • I know that plants and animals in a habitat are linked to each other through food chains. • I know that plants get their energy from the sun.	• I know that a pedologist is a scientist that studies soil. • I can explain why soil is so important to our planet. • I know that there are different layers of soil and that each layer is known as a horizon. • I can describe the features of each different soil horizon. • I know that the three main types of soil are clay, sand and silt. • I know that scientists split rocks into three main groups: igneous rock, sedimentary rock and metamorphic rock. • I know that igneous, sedimentary and metamorphic rock can change over millions of years in a process known as the rock cycle. • I know that a fossil is the petrified remains of plants and animals from more than 10,000 years ago.	• I know that water turns from a liquid to a solid at 0°C and from a liquid to a gas at 100°C. • I know that metals all have different melting points and that these are usually very high temperatures. • I know that the process of a liquid turning into a gas is called evaporation. • I know that the process of a gas cooling and turning into a liquid is called condensation. • I can explain how evaporation and condensation are part of the water cycle. **Circuits & Conductors** • I know that atoms generate electricity when they are rubbed together. • I know that current electricity needs a complete circuit in order to work properly. • I can use diagrams to explain which circuits will and won't work. • I can explain the difference between mains and battery powered electricity.	• I know that water resistance is the force that pushes against objects as they pass through the water. • I know that the shape of an object dictates how much water resistance it will meet as it moves through the water. • I know that pulleys and levers make heavy objects easier to lift and can explain why. • I know that gears allow a smaller force to have a greater effect. **Earth and Space** • Can children describe the Sun, Earth and Moon's shape as roughly spherical? • Are children able to clearly define the word orbit? • Can children describe the Sun, Earth and Moon's movements in relation to one another? • Can children explain how the rotation of Earth on its axis creates day and night? • Can children explain the apparent movement of the Sun across the sky?	reasons for my choices. • I know that it is our circulatory system that transports nutrients around our bodies, and that the two organs associated with the circulatory system are the heart and lungs. • I can describe the functions of the heart and lungs. • I can describe how the circulatory system works. • I know that it is important to keep our hearts healthy and that exercise is a crucial part of this. • I know that it is the muscles in our bodies that allow us to move. • I can explain the difference between smooth muscles, cardiac muscles and skeletal muscles. • I can name some of the different muscle groups in the human body. • I can define what a drug is. • I know that some drugs are very beneficial and others are very harmful, and that some drugs are

			• I know that there are more hours of sunlight during the summer than during the winter.	• I can construct some simple food chains for a variety of habitats. **Exploring materials** • I can use a range of appropriate vocabulary to describe the properties of different materials. • I know the difference between a natural and a man-made material. • I know that the same product, e.g. a table, can be made from a variety of different materials, and can suggest suitable materials for each object. • I can explain how glass, pottery and paper are made. • I know that some materials can change shape permanently, some can change shape and go back to their original shape, and some can't change shape. • I can name a variety of materials that can change shape, can change shape temporarily and cannot change shape. • I know that there are lots of different types of plastic that can be	• I can explain how fossils are formed. • I know that a palaeontologist is a scientist who studies fossils. • I know that some fossils are common and some fossils are very rare. • I can identify some organisms from their fossils. **Light and shadows** • I know that we need light in order to see. • I can name a variety of natural and man-made light sources. • I know that the Sun is the most powerful light source. • I know that we have night and day because the Earth rotates on its axis once every 24 hours. • I can describe the difference between dawn and dusk. • I know that shadows are formed when light is blocked by an object. • I know that we have more	• I can describe some of the ways in which people can stay safe when using mains electricity. • I can distinguish between objects that use mains electricity and those that use battery-powered electricity. • I can write a definition for the words 'conductor' and 'insulator'. • I can explain why some appliances are made with conductors on the inside and insulators on the outside. • I can explain how switches work to complete a circuit.	• Can children identify how long it takes Earth to make a full rotation? • Can children describe the different changes that happen between seasons? • Can children use Earth's tilted axis to explain how seasons are created? • Can children describe the differences in seasons between two locations in opposite hemispheres? • Can children name the different phases of the Moon? • Are children able to order the phases of the Moon? • Can children describe how the phases of the Moon are created? • Are children able to define what a solar system is? • Can children explain the differences between geo- and heliocentric models of the solar system are? • Can children name the eight planets in our solar system? • Are children able to name the eight	legal and some are illegal. • I can describe the short-term and long-term effects of drugs such as tobacco and alcohol. **Classifying organisms** I can match organisms to their correct group (plant, mammal, amphibian, reptile, bird, fish, insect, crustacean, arachnid or mollusc, as well as echinoderm, myriapod and annelid) using what I know about the features of each group. • I can explain why it is important to be able to classify organisms. • I know the difference between vascular and non-vascular plants. • I can describe the difference between flowering and non-flowering plants. • I know that Carl Linnaeus is known as the Father of Taxonomy because of the system he developed to help classify organisms. • I know that the Linnaeus system uses Latin names for organisms so that

				used for different purposes. • I can explore the suitability of plastic and metal for different purposes, and explain why each material has been chosen for each different purpose. • I know that paper and cardboard are made from wood and can describe the benefits of using paper and cardboard over wood for different purposes. • I can name some objects that can all be made from wood, plastic and metal, e.g. chairs. • I can suggest appropriate materials for an object to be made from, based on what the object will be used for and who will use it.	shadows on a sunny day than on a cloudy day and can explain why. • I know the difference between transparent, translucent and opaque objects. • I know that opaque objects will cast a shadow, translucent objects will cast a faint shadow, and transparent objects will not cast a shadow. • I know that we can see objects because light is reflected from their surfaces; light travels in a straight line from the source to the objects, then bounces off the object to our eyes. • I know that some objects reflect more light than others. • I know that when a surface is very smooth, like a mirror, it reflects a lot of light which is why we can see a reflection.		planets in order from nearest to farthest from the Sun? • Can children use researching skills to find relevant information on a topic?	there was a globally recognised naming system. • I can describe what each of the seven levels on the classification system are: kingdom, phylum, class, order, family, genus and species. • I can describe what a micro-organism is. • I know that micro-organisms can be classified into the kingdoms of protists, bacteria and fungi. • I can describe some examples of micro-organisms, such as in food production and illnesses.

S K I L L S		**Woodland environment** • I can identify simple fauna • I can follow instructions to find flora •I can ask open-ended questions. • I can identify simple patterns. • I can sort trees into seasons with changing leave patterns.	**Everyday materials** • I can follow instructions to perform a simple test to see whether a material is waterproof or not. • I can use my observations to suggest which materials would be best for an umbrella. **Seasonal changes** • I can transfer data from a tally chart into a pictogram to show what seasonal clothing was worn. • I can use collected data to answer questions	**Living in habitats** • I can classify things that are living, things that are dead and things that have never been alive. • I can explore and observe microhabitats in the local environment. • I can experiment with ways of separating a variety of materials from water, choosing suitable equipment for the task. **Exploring materials** • I can suggest different ways of sorting materials based on their properties and characteristics. • I can sort materials into those that are natural and those that are man-made. • I can experiment with what happens to different materials when you bend, twist, stretch and squash them, recording my observations. • I can make predictions about how materials will behave. • I can experiment with ways of making a paper bridge that is strong enough to hold a toy car.	**Rocks/fossils/soil** • I can classify rocks that are natural and those that are man-made. • I can identify a variety of natural and man-made rocks in my local environment. • I can suggest which criterion has been used to sort rocks into two groups. • I can sort rocks into Venn diagrams and Carroll diagrams based on specific criteria. • I can use my own criteria for sorting rocks into a Carroll diagram. • I can generate ideas for an experiment to test different rocks to see how much they erode. • I can carry out an experiment to test the erosion rate of different rocks, making predictions and recording my findings appropriately. • I can use a variety of sources of information to help	**States of matter** • I can compare and classify materials according to whether they are solids or liquids. • I can carry out an investigation to see if air weighs anything and report on my findings. • I can draw diagrams to show how the particles in solids, liquids and gases behave differently. • I can experiment with pneumatics and make observations about what I'm doing. • I can research the melting points of a variety of materials. • I can plan and carry out an experiment to see the different melting points of chocolate and evaluate the fairness of my experiment. • I can give different everyday processes which involve melting and freezing. • I can draw diagrams and use written examples to show the processes of evaporation and condensation. • I can label a diagram of the water cycle to	**Forces in action** • I can carry out an investigation to explore the effect of gravity on falling objects, taking careful measurements and observations to draw conclusions. • I can carry out independent research to find out about the roles Newton and Galileo played in helping our understanding of gravity, presenting my findings appropriately. • I can suggest ways to plan an experiment to find out which surface has the most friction when an object is moved across it. • I can carry out a fair test to explore the friction of different surfaces, recording my results accurately and using them to draw conclusions. • I can analyse a variety of statements, explaining which I agree with and why. • I can plan, set up and carry out an investigation to explore how the size of a parachute affects the speed at which it falls to the ground,	**Healthy bodies** • I can plan an experiment, as James Lind, to see whether eating different foods can cure scurvy. • I can suggest ways in which James Lind could have expanded his clinical trial. • I can plan a clinical trial to explore the effects of different foods on our bodies, explaining how I will make it a fair test and what I expect the results to show. • I can allocate a variety of foods to their correct food group. • I can assess a variety of food labels to assess which of a group of foods has e.g. the most and least fat, or the most and least carbohydrate. • I can use a diagram of the human heart to suggest how it works. • I can write a detailed report about how the circulatory system works. • I can dissect a heart to explore the heart's chambers, veins and arteries, writing a recount of my findings.

					me find out about specific rocks and their uses. • I can use observation to explore different soil samples and rank them according to different criteria. • I can classify fossil samples according to various criteria. **Light and shadows** I can identify a variety of light sources around my school. • I can predict which light sources would be strongest, comparing my predictions with a partner and discussing any differences. • I can explain in my own words why we have night and day, using appropriate vocabulary. • I can test whether an object is transparent, translucent or opaque by testing what kind of shadow it casts.	show what is happening. **Circuits & Conductors** • I can test different materials using a simple circuit to see whether they are conductors or insulators. • I can use what I found out about conductors and insulators to draw conclusions. • I can classify objects into those that are conductors and those that are insulators. • I can draw diagrams to show appliances that have conductors on the inside and insulators on the outside. • I can experiment with a variety of objects and materials in a simple circuit to create a working switch. • I can incorporate a buzzer into a circuit that makes a sound when the switch is on. • I can plan, set up and carry out an investigation to find out how you can change the brightness of a bulb, making sure it is a fair test.	recording my results appropriately and using them to draw conclusions. • I can make predictions about which shape of plasticine would fall quickest in a pot of water, giving scientific explanations for my choices. • I can carry out an experiment to test my predictions, recording my results using a stopwatch and using evidence to draw conclusions. • I can create some simple pulleys, exploring the different forces needed to pull the same object and drawing conclusions from my findings. • I can use card or construction toys to create different transmissions, exploring the movement and torque of the driver and follower gears.	• I can take my own pulse before and after exercise, recording the differences. • I can design an investigation to explore how exercise affects our heart rate and draw conclusions from my results. • I can label muscle groups on a diagram of the human body. • I can suggest some exercise that would train different muscle groups. • I can create a presentation to answer a particular question about drugs, using my own research to find answers. **Classifying organisms** • I can classify a variety of organisms into groups according to their features. • I can use a classification key to help me identify which group unfamiliar animals belong to. • I can create a presentation with labelled diagrams to show the features of each group of animal. • I can use a variety of criteria to classify animals that belong to

					• I can explain which shadow diagram is correct, using what I know about how shadows are formed. • I can investigate how shadows behave, finding ways to make shadows move and make them longer and shorter. • I can record results from my shadow experiments using diagrams. • I can predict what I think will happen to a shadow throughout the day. • I can carry out an experiment to find out what happens to shadows throughout the day, recording my results in a table. • I can draw conclusions from my shadow investigation to say what I have found out. • I can experiment with using mirrors to see around corners.			the same group, e.g. mammals. • I can create a classification key to help identify a variety of flowering and nonflowering plants. • I can gather plant samples (or photographs of plants) from the local area, then create a classification key to identify them. • I can find a variety of different ways to classify different plants. • I can use the Linnaeus classification system to identify the kingdom, phylum, class, order, family, genus and species of a variety of organisms. • I can use the Linnaeus classification system to answer questions about different organisms. • I can carry out my own research to create a report about a particular family of animals, including pictures, diagrams and information. • I can ask questions about micro-organisms and use my own research to answer them.

								• I can carry out a fair test to explore which foods yeast most likes to eat, recording the results and drawing conclusions. • I can gather samples of organisms in the local area (or take photos) to identify and classify organisms found in the local area. • I can carry out my own research to find out about different groups of organisms in a different part of the world, presenting my findings appropriately.
SPR TERM		EYFS	KS1		KS2			
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
KNOWLEDGE	To know that Earth is the planet we live on. Begin to understand space. Investigate using our 5 senses. Talk about change in the environment comparing the seasons.	<u>Natural environments</u> To be able to identify of flora and fauna in a woodland To investigate and observe flora • I can identify woodland animals and their habitats • I can learn about hibernation and animals who sleep through the winter.	<u>Identifying animals</u> • I can identify and name a variety of common UK pets. • I can identify a variety of UK mammals, birds, reptiles, fish and amphibians. • I know that mammals have backbones, feed their young with milk and have fur. • I can find a similarity or difference between pairs of mammals.	<u>Growth and survival</u> I know that all species of animals have babies, including humans, and that if they didn't the species would become extinct. • I can match a variety of baby animals to their parents. • I know that some baby animals look very similar to their parents and some look very different. • I know that mammals give birth to live young and birds, reptiles and fish lay eggs.	<u>Health and movement</u> • I know that animals, including humans, get the nutrition they need from what they eat. • I know that the two main reasons humans need food is for growth and energy. • I know that we need proteins for growth and to help repair our bodies when we are ill or injured.	<u>Digestion</u> • I can suggest similarities and differences in the diets of a variety of different animals. • I can identify herbivores, carnivores and omnivores in a variety of different habitats. • I can interpret and construct a variety of food chains with both producers and consumers. • I can suggest what might happen if one or more organisms was	<u>Properties and changes in material</u> • I know that some materials will dissolve in water to form a solution. • I know that not all materials react the same way when mixed with water; some will float, sink, dissolve or react. • I know that dissolving is a reversible change. • I know that soluble materials, such as sugar, are able to be	<u>Evolution</u> • I know that living things produce offspring of the same kind, but that normally offspring vary and are not identical to their parents. • I can suggest some common inherited characteristics, e.g. hair colour, eye colour, height, etc. • I know that 'variation' occurs from generation to generation in a species.

		• To be able to identify some animals who are nocturnal e.g., owls. To name parts of an owl's body. • |To comment and ask questions about aspects of our familiar world such as the place where we live or the natural world.	• I know that birds have feathers, wings and a beak. • I know that lizards are cold-blooded vertebrates that lay eggs. • I can identify differences in the features of birds and lizards. • I know that fish and amphibians lay eggs. • I know the steps in the life cycles of amphibians and fish, and spot similarities and differences. • I know what a herbivore, carnivore and omnivore are. • I can identify common animals that are herbivores, carnivores and omnivores. • I can explain some of the ways in which people need to look after pets.	• I know that different animals are pregnant for different lengths of time, and that this is often dependent on the size of the animal. • I know that the eggs animals lay are vulnerable to predators and other dangers, which is why the parent animal often builds a nest to keep them safe and lays several eggs at once. • I know that some eggs have hard shells and some eggs have soft shells. • I can identify a variety of animals that give birth to live young and those that lay eggs. • I can explain the stages a human goes through to grow from a baby to an adult. • I know that all animals need food, water and air to stay alive, and that some animals breathe oxygen with their lungs while fish that live under water take in oxygen through their gills. • I know that animals need to live in different environments to get the food, water and oxygen they need.	• I know that starches, fats and sugars are good foods for energy. • I can explain how to eat a healthy, balanced diet. • I can design healthy, balanced meals for people who have dietary restrictions, e.g. vegetarians or people with wheat/dairy allergies. • I know that we have skeletons to support our bodies, protect our internal organs and to help us move. • I can name and locate some of the major bones in the human body. • I can describe similarities and differences between human and animal skeletons. • I know that all vertebrates have a backbone. • I can explain how invertebrates without an internal skeleton protect themselves.	taken out of a food chain. • I can identify where canines, incisors and molars are in the human mouth. • I can explain the function of canines, incisors and molars. • I know that teeth have roots that hold the teeth in place in the gums. • I can suggest why different animals have different types of teeth. • I know that young children have 20 milk teeth that start growing through when they are around six months old. • I know that milk teeth fall out and are replaced by 32 adult teeth, which are permanent. • I know that tooth decay can cause teeth to rot and fall out. • I can suggest some ways of making sure my teeth stay healthy. • I can name the organs associated with the digestive system. • I can describe the functions of the basic parts of the digestive system.	separated from water through evaporation. • I know that filtering is a good way to separate water from insoluble materials, such as sand. • I can identify a range of mixing processes, dissolving processes or changes of state that are reversible. • I know that an irreversible change occurs when two materials react with each other to form a new substance. • I can explain what would happen to a variety of materials when they were heated and cooled, and explain whether these are reversible or irreversible changes. • I know that some materials change state when they are heated or cooled. • I know that when a material is burned, it produces a new product (e.g. gas or ash), which makes burning an irreversible change. • I can identify the properties of a variety of everyday materials, such as whether it is	• I can identify examples of variation in animals that are cross-bred. • I can identify the features of the environment an animal lives in and can explain some of the ways in which the animal has adapted to suit its environment. • I know that some inherited features are advantageous and some are not. • I know that, over many generations, advantageous features may be spread across a whole species, making them better adapted to their environment. • I understand how the adaptation of plants and animals to suit their environment may lead to evolution. • I can explain Darwin's theory of evolution and the process of natural selection. • I know that Darwin explained each step in the Linnaeus classification system to show where part of a population developed a new variation and

				• I know that it is important to eat a healthy balance of foods because different foods are useful to our bodies for different things. • I can use the food pyramid and balanced plate model to find out how much carbohydrate, fruits and vegetables, protein, dairy, fats and sugars I should eat. • I can plan a healthy, balanced meal. • I know that exercise is important to keep our heart and lungs healthy, and that it keeps our muscles strong and flexible. • I know that exercise is important to keep us from getting overweight. • I can design an exercise to work my whole body using different apparatus. **Growing plants** • I know that different seeds grow into different plants. • I can use information on a seed packet to tell me when a seed should be planted, how to plant it and how to	• I know that we need muscles to help us move. • I can explain the difference between smooth muscles, cardiac muscles and skeletal muscles. • I can explain the role of flexors and extensors in making our bones move. **Forces/Magnets** • To compare how things move on different surfaces. • To sort and name magnetic and nonmagnetic materials. • To investigate the strength of magnets. • To explore the magnetic poles. • I can explain that magnets attract some materials.		magnetic, conductive, soluble, flexible, etc. **Life cycles** I can describe the process of sexual reproduction in flowering plants, using each of these terms: petal, anther, carpel, filament, ovary, stamen, stigma, sepal and style. • I can describe the process of asexual reproduction in plants, giving some examples of plants that reproduce asexually. • I can describe how and why humans clone plants. • I can describe the process of sexual reproduction in animals. • I know that some animals reproduce externally and others reproduce internally, giving examples for each. • I can describe how the environment in which an animal lives affects the way it reproduces. • I know that hermaphrodites are animals that have both male and female	eventually formed a new species. • I know that some variations are caused by mutations, and that some of these are harmless, some are advantageous and some are disadvantageous. • I know that changes to an environment can affect the evolutionary process. • I know that palaeontologists study fossils to explore how species have evolved over time. • I understand how humans have evolved over time, and how human behaviour can affect changes in other species over time. **Changing circuits** • I can define each of these terms: circuit, current, conductor, insulator, volt, component, battery, motor. • I know the difference between a series circuit and a parallel circuit. • I know that if there are too many volts running through a

				care for the seed as it grows into a plant. • I can follow the instructions on a seed packet to plant a seed. • I know that seeds can be eaten by humans and animals. • I know that some plants grow from bulbs. • I can explain the life cycle of a plant grown from a bulb, such as a tulip. • I know that the bulb provides a store of food for the plant while it is in the ground during the winter months. • I know that the fruit of the plant is the part that carries the seeds. • I can explain why most plants grow lots of seeds instead of just one. • I can explain some of the ways in which seeds are dispersed. • I know that not all seeds will grow into a new plant and can explain reasons for this. • I know that the term 'germination' refers to the process when a seed starts to grow and produce shoots.			reproductive organs, such as snails. • I can identify animals that live in a British woodland environment. • I can compare different habitats around the world with a British woodland environment and suggest ways in which the living conditions may be more or less challenging for the organisms living there. • I can suggest ways in which the life cycles of different animals might vary in different environments around the world. • I can describe and compare the life cycles of a variety of mammals, reptiles, fish and other animals. • I can describe what a naturalist does. • I can explain the contribution of some famous naturalists to our understanding of nature and the importance of humans looking after the environment.	circuit, it will blow the component. • I can recognise and use conventional symbols used in circuit diagrams.

SKILLS		•I can investigate and observe flora • I can identify woodland animals and their habitats • I can learn about hibernation and animals who sleep through the winter. • I can identify some animals who are nocturnal e.g. owls. • I can name parts of an owl's body. • I can comment and ask questions about aspects of our familiar world such as the place where we live or the natural world.	• I can use a Venn diagram to sort animals to show which are herbivores, carnivores and omnivores. • I can use a tally chart to gather data about our class's favourite pet. • I can use a tally chart to gather information about minibeasts I spot. • I can use information I have gathered in tally charts to answer simple questions.	**Growth and survival** • I can carry out my own research using simple sources to find out what a particular animal needs in order to survive. **Growing plants** • I can carry out an experiment to observe how the roots of a bulb grow. • I can use close observation to examine different fruits to see how many seeds they have, making predictions beforehand. • I can plan and set up an experiment to find out which conditions are best for seed germination. • I can suggest how to make an experiment a fair test. • I can use the results of my experiment to draw a diagram explaining the best conditions for seed germination. • I can use observation to explain how a seed changes over time.	**Health and movement** • I can classify a variety of foods into different food groups. • I can carry out my own research to find out what foods different animals eat, and record my findings. • I can generate questions to investigate to find out what pets eat. • I can gather data in a tally chart and convert the results into a pictogram. • I can use data to draw conclusions and find the answer to my question. • I can label a diagram of the human skeleton. • I can use a variety of sources of information to find out how invertebrates protect themselves and report my findings.	**Digestion** I can classify a wide variety of animals to show whether they are herbivores, carnivores or omnivores. • I can present information about how to keep teeth healthy. • I can draw a diagram to show what I think the digestive system looks like and how it works. • I can ask a variety of questions about the digestive system and use different sources to find out the answers. • I can label a diagram of the digestive system and describe how it works. • I can plan and carry out an experiment (making sure it is a fair test) to explore how acid affects the food in our stomachs.	**Properties and changes in material** • I can mix a variety of materials with water to see whether they will dissolve, float, sink or react, recording the results in a table. • I can classify materials depending on whether they dissolve, float, sink or react when mixed with water. • I can investigate different irreversible changes by mixing different materials together, observing the results and explaining what has happened. • I can compare and classify a variety of everyday materials based on their properties. • I can carry out a variety of investigations to explore the properties of materials to see if they e.g. conduct electricity, are magnetic, are soluble, etc. • I can give reasons, based on evidence	**Evolution** • I can identify features I have inherited from my parents and note variations. • As a class, we can arrange ourselves in different ways according to our inherited characteristics. • I can carry out my own research to find animals that live in a particular environment around the world, recording the features that make it advantageous for its habitat. • I can compare and contrast the features of two animals living in the same environment, explaining why each of their features are advantageous for that particular species. • I understand that scientists are always refining, changing and developing the ideas of other scientists, and that ideas can be refuted when further evidence is uncovered.

					• I can ask and answer questions about muscles. • I can make different movements with my body and explain which muscles I am using. **Forces/magnets** • I can carry out a fair test to explore whether objects need the same force to move them across different surfaces. • I can make predictions about the results of my investigation. • I can use my results to draw conclusions. • I can explore whether magnets attract or repel when north poles and south poles are put together. • I can draw diagrams to show the results of my findings. • I can predict which materials will be magnetic and which will not, then test my hypothesis.		from comparative and fair tests, for uses of everyday materials. • I can plan, set up and carry out a fair test, drawing conclusions and presenting the results. **Life cycles** • I can label the parts of a flowering plant correctly using their scientific names. • I can dissect a flower to explore the male and female parts of the plant. • I can write scientifically accurate descriptions of asexual reproductions in plants using 100 words or less. • I can follow instructions to grow a new plant from cuttings. • I can classify a variety of animals according to how they reproduce. • I can create a scatter graph to show animal gestation and incubation periods, using the information to generate statements and answer questions.	• I can ask questions about evolution and use my own research to find the answers, presenting my findings. • I can create a fact file about Charles Darwin, using known facts and my own research. • I can read statements and write persuasive arguments to show whether I agree or disagree, drawing on my knowledge of evolution and inheritance. **Changing circuits** • I can work independently to create a series and a parallel circuit. • I can create series and parallel circuits to match a circuit diagram. • I can use what I know about voltage to predict the brightness of a bulb or bulbs in a variety of different circuits. • I can experiment with the best way to make the bulb in a circuit as bright as possible, recording my results on a scale.

					• I can carry out my own research to find out about uses for magnets and report my findings.		• I can research and present data and information about the organisms living in a variety of environments around the world. • I can compare the life cycles of a variety of animals. • I can carry out independent research to find out about the life and achievements of a famous naturalist.	• I can draw a circuit diagram that includes conventional circuit symbols. • I can create series and parallel circuits to match a circuit diagram that uses conventional circuit symbols. • I can plan, set up and carry out a fair test to see how changing the wire in a circuit affects the brightness of a bulb. • I can use the results of my experiment to answer questions. • I can ask questions about circuits I would like to find the answer to, and decide how to find the answers. • I can design and create a circuit for a particular purpose.
SUM TERM		EYFS	KS1		KS2			
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
K N O W L E D G E	Talk about change in the environment comparing the seasons. To know about the lifecycle of a frog and	Growing •To plant and grow a bean plant and observe changes over time. • To identify what is needed	Plants • I know that a plant is a living thing that grows. • I know that plants need sunlight, air and water. • I know that plants have seeds that	Super scientists • I know that Edison invented the first light bulb that could last for more than 12 hours. • I know that a circuit needs a bulb, battery and wire to work.	How plants grow • I can identify and describe the functions of the roots, stem, leaf and flower of flowering plants. • I know that the root is the first part of the plant to	Living in environments • I can give a definition for the term 'habitat'. • I can suggest in which habitat you would find a variety of animals.	Changes and reproduction • I can describe some of the ways our bodies change as we grow. • I know that our rate of growth is dependent on many different factors.	Seeing light • I can name the different parts of the eye and describe their function. • I know that light can only travel in a straight line.

	identify frogspawn and a frog. To know that frogspawn grows into a frog. Begin to know about the lifecycle of a butterfly. To know that a caterpillar changes into a butterfly. Talk about the need to take care of our environment. Watch a seed grow. Begin to identify waterproof materials. Explore circuits and how to light up a lightbulb. Explore forces.	for a plant to grow. •To identify foods which are grown.	grow into new plants. • I can recognise where the seeds are in a variety of plants. • I can plant a seed and describe what I expect it to look like in a few weeks time. • I can identify and describe a variety of garden plants. • I can identify the difference between a flower and a tree. • I can identify a variety of wild plants. • I can identify and describe a variety of trees. • I know the difference between an evergreen and a deciduous tree. • I can identify the roots, stem, leaves, flower and petals of a flower. • I know what roots are and why they are important. • I can describe the changes a seed goes through as it becomes a plant.	• I know that a circuit needs to be complete for it to work. • I know the symbols for wire, bulb and battery. • I can create a simple working circuit.	grow from the seed and that the young root absorbs water and minerals from the soil to help the seed sprout. • I can describe each step in the growth of roots. • I can describe the process of water transportation in plants. • I can explain what the process of photosynthesis is. • I know that the plant uses minerals from the soil to make chlorophyll in its leaves. • I can explain what the process of pollination is. • I can explain some of the ways pollen grains get from the male stamen to the female part of the plant. • I can order the stages in the life cycle of flowering plants. • I can identify the ways in which a variety of different plants disperse their seeds.	• I can explain why it is important to be able to classify organisms. • I can identify animals that are vertebrates, invertebrates, mammals, birds, insects, fish, reptiles, amphibians, insects, annelids, crustaceans, arachnids, echinoderms and molluscs. • I can identify and classify a variety of British plants. • I know that changing just one thing in a habitat can have a big impact on all the organisms living there. • I can describe what deforestation is and why it is causing a big problem around the world. • I can describe some of the ways in which humans can both help sustain environments and ways in which they harm environments. • I can explain the negative impact draining a pond would have on the local environment, stating my case through a letter. Sound	• I can name the different stages in the human life cycle and put them in order. • I can describe the stages in the gestation period of humans and compare this to other animals. • I can describe the growth and development of children from age 0 to 11. • I understand the role of hormones in puberty. • I can describe the changes that occur to both boys and girls during puberty. • I can describe some of the ways teenagers can keep fit and healthy during all the changes that take place during puberty. • I know that a human is fully grown by the time they reach the age of around 20. • I know that the human body starts to deteriorate as it enters old age. • I can describe some of the ways in which humans can make sure they stay fit and healthy as they get older.	• I can explain how mirrors can be used to reflect light. • I can explain how objects such as periscopes and rear-view mirrors work and why they are useful. • I know that the angle the light lands on the mirror will affect which angle the light changes direction to, and I know that this is called the angle of reflection. • I know that some surfaces reflect more light than others. • I can explain the difference between a shadow and a reflection. • I can explain how a mirror could make a shadow and a reflection at the same time.

					• I know that seeds have an outer coat to protect them that starts to absorb water and soften when it lands in soil. • I know that seeds can have one, two or three seed leaves that store food. • I know that seeds are an important source of food for animals.	• I know that sound travels through the air in waves and that sound waves are caused by vibrations in the air. • I know that sound waves pass through some materials more easily than others. • I know that sometimes sound needs to be muffled for safety or convenience. • I can name a variety of musical instruments, describe what they sound like and explain how the sound is made. • I know what the terms 'pitch' and 'volume' mean. • I can identify when the pitch and volume of a sound changes, and explain what has happened. • I can explain how the length, thickness and tightness of a string affects its pitch. • I can explain how the length of the air column in wind instruments changes the pitch.		

S K I L L S	I can observe frogspawn, caterpillars and seeds and am beginning to discuss how these change over time. I am beginning to understand and talk about what a plant needs to grow. I understand that I need to care for plants and animals within the natural world. I can make light up a bulb with a simple circuit.	**Growing** •I can observe my plant growing and comment how it grows. • I can classify some basic food groups which are grown underground. (root vegetables) • I can plant and grow a bean plant and observe changes over time. • I can identify what is needed for a plant to grow.	**Plants** • I can observe plants closely and draw my findings. • I can use a simple classification key to identify wild flowers. • I can use close observation to explain how a seed changes to a plant.	**Super Scientists** • I can answer questions I have generated and suggest how to find answers to questions that I haven't answered yet.	**How plants grow** •I can observe root growth over a period of time and record my observations in a table. • I can generate ideas for an experiment to test water transportation in plants. • I can plan, set up and carry out an experiment to show how water is transported in plants, making a prediction and recording my observations. • I can make a comic strip to explain the process of pollination, using vocabulary such as stamen, stigma, ovary, nectar and petals. • I can classify plants according to their seed dispersal method. • I can taste test a variety of different seeds. • I can gather data about our class's favourite seeds in a chart.	**Living in environments** • I can explore my local area to see how many different habitats there are. • I can use a variety of clues in riddles to help me identify different animals. • I can classify a variety of organisms using my own and given criteria, sorting the results into tables and Carroll diagrams. • I can use a classification key to identify which group an animal belongs to. • I can use a classification key to identify unfamiliar organisms. **Sound** • I can investigate a range of objects that show visible vibrations to help me understand how sound waves work. • I can predict how well sound will travel through a variety of different materials. • I can plan, set up and carry out an experiment to answer the question, 'Do sound waves travel	**Changes and reproduction** • I can describe some of the ways our bodies change as we grow. • I know that our rate of growth is dependent on many different factors. • I can name the different stages in the human life cycle and put them in order. • I can describe the stages in the gestation period of humans and compare this to other animals. • I can describe the growth and development of children from age 0 to 11. • I understand the role of hormones in puberty. • I can describe the changes that occur to both boys and girls during puberty. • I can describe some of the ways teenagers can keep fit and healthy during all the changes that take place during puberty. • I know that a human is fully grown by the time they reach the age of around 20. • I know that the human body starts to	**Seeing light** • I can draw on my previous knowledge of light and shadow to answer a variety of questions. • I can use careful observation to identify the pupil, cornea, iris and sclera of the human eye. • I can use arrows to draw the direction light travels. • I can label a cross-section diagram of the human eye, explaining the function of each part. • I can present information about how the eye works in a variety of different ways. • I can use what I know about the angle of reflection to draw the angle light will reflect off a mirror. • I can use what I know about the angle of reflection to shine a light beam to a goal using mirrors. • I can make predictions about which surfaces will reflect a lot of light and which won't. • I can investigate a variety of surfaces to see which reflect a lot

					• I can ask and answer questions about the seed data I have gathered.	through all materials equally?' • I can generate questions to investigate what happens to a sound as you get further away from it. • I can plan, set up and carry out an experiment to see which materials are best for soundproofing. • I can draw conclusions from my investigations to answer a question. • I can make predictions about the pitch and volume an instrument will produce, using my knowledge of how sound works. • I can draw a diagram to show how and why the pitch changes on a glockenspiel. • I can investigate a variety of stringed instruments to explore how the pitch changes according to the length, thickness and tightness of the string, and record my findings. • I can predict which bottle would produce the highest pitch when different amounts of	deteriorate as it enters old age. • I can describe some of the ways in which humans can make sure they stay fit and healthy as they get older.	of light and which don't, noting similarities and differences between the two groups. • I can suggest a variety of investigations to explore how shadows behave. • I can carry out an investigation to explore what happens to the size and shape of a shadow when an object is moved further away from a light source, recording my results in graphs and tables.

						water are inside, then test my prediction and record my results.		

IMPACT							
EYFS		KS1		KS2			
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Children are learning about the local environment and local woodland habitat. They can identify simple fauna and flora and explain basic processes of how plants grow. They are able to have a basic concept of animals and if they are nocturnal or if they hibernate.	Children should be able to name, label and sort animals, plants and body parts into groups. They should be able to perform simple tests, gather data and discuss what they find out.	Children should be able to experience and observe phenomena, looking more closely at world around them. They should be curious and ask questions about what they notice. They should be developing their scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things and carrying out simple tests.	Children should be able to label the parts of a plant and have a secure knowledge of what a plant needs to survive. Undertake observations over a period of time, make predictions, present data and analyse findings. Explain how water transportation occurs. Children should be able to confidently compare and group together different kinds of rocks & fossils based on their appearance and physical features. To sort, name and identify magnetic and nonmagnetic objects. To understand light & shadows, patterns and reflection.	Children should be able to explain how sound is made up of vibrations. Children have an understanding of different materials and their state of matter. Children have a deeper understanding of animals within their habitat and a food chain. Children should be able to scientific vocabulary to plan, carryout their own investigations.	Children use their knowledge of the solar system to explain regularly experienced natural processes such as day and night and gravity. They can explain similarities and differences between the life cycles of plants, animals and humans using appropriate scientific vocabulary.	Children use their scientific skills and vocabulary to plan, carry out and evaluate appropriate investigations to explore the wider world.