Skills Progression Map **Subject – Science**

Purpose of Science:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims of Science:

- The national curriculum for science aims to ensure that all pupils:
- 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

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

EYFS Knowledge: The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. This document demonstrates which early years outcomes are prerequisite skills for history within the national curriculum. The table within the EYFS section of this progression map outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for history. The most relevant early years outcomes for history are taken from the following areas of learning: Understanding the World

KS1 Knowledge

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.

Working scientifically

'Working scientifically' must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

-asking simple questions and recognising that they can be answered in different ways
-observing closely, using simple equipment
-performing simple tests
-identifying and classifying
-using their observations and ideas to suggest answers to questions
-gathering and recording data to help in answering questions

Lower KS2 knowledge
The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Working scientifically
'Working scientifically' must always be taught through and clearly related to the teaching of substantive science content in the programme of study.
During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills:
- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Upper KS2 knowledge
The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry,

including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Pupils should read, spell and pronounce scientific vocabulary correctly.

Working scientifically
'Working scientifically' must always be taught through and clearly related to the teaching of substantive science content in the programme of study.
During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills:
- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

EYFS		
Three and Four-Year-Olds	**Communication and Language**	• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Personal, Social and Emotional Development	• Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	• 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. • Begin to make sense of their own life-story and family's history. • 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.
	Communication and Language	• Learn new vocabulary.

Reception			• Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Use new vocabulary in different contexts.
	Personal, Social and Emotional Development		• Know and talk about the different factors that support their overall health and wellbeing: -regular physical activity -healthy eating -toothbrushing -sensible amounts of 'screen time' -having a good sleep routine -being a safe pedestrian
	Understanding the World		• Explore the natural world around them. • 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.
ELG	Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

	Plants		
Prior Learning	Recap: - Plant seeds and care for growing plants. -Understand key features of the life cycle of a plant -Begin to understand the need to respect and care for the natural environment and all living things. -Explore the natural world around them. - Recognise some environments that are different to the one in which they live.	Recap: -Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)	Recap: - Observe and describe how seeds and bulbs grow into mature plants. (Y2- Plants) -Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Plants)
	Year 1	**Year 2**	**Year 3**
Objectives	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees.	I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Assessment Outcome: Children should know	Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant.	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.	Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. The roots absorb water and nutrients from the soil and anchor the plant in place. The stem transports water and nutrients/minerals

	Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.	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.	around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal. Leaves use sunlight and water to produce food. 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 dispersed in different ways. Different plants require different conditions for germination and growth.
		<u>Key Progression Targets</u>	
Scientific Enquiry	-Observing closely, using simple equipment -Identifying and classifying - Gathering and recording data to help in answering questions	-Observe closely using simple equipment. -Observe changes over time. -With help, begin to notice patterns and relationships. -Use their observations and ideas to suggest answers to questions.	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions -Identifying differences, similarities or changes related to simple scientific ideas and processes -Setting up simple practical enquiries, comparative and fair tests -Using straightforward scientific evidence to answer questions or to support their findings. -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

TAPS assessment	TAPS – Structure leaf look shades of colour (Observe & Measure)	TAPS – compare growth (observe and measure)	TAPS – measuring plants (observe and measure) TAPS – function of a stem (evaluate)
Key New Vocabulary	Leaf, flower,blossom, petal, fruit, berry, root,seed, trunk, branch, stem, bark, stalk, bud, deciduous evergreen	**As year 1 plus…** light, shade, warm, growth, healthy, explore seeds, bulbs, water, temperature, identify living dead	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)

	Living things and their habitats			
Prior Learning	-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) -Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) -Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) - Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) -Describe and compare the structure of a variety of common animals (fish ,amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals ,including humans) -Observe changes across the four seasons. (Y1 - Seasonal changes)	-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) -Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) -Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) -Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) -Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)	-Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) -Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	-Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) -Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) -Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) - Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
	Year 2	**Year 4**	**Year 5**	**Year 6**

Objectives	I can explore and compare the differences between things that are living, dead, and things that have never been alive. I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. I can identify and name a variety of plants and animals in their habitats, including microhabitats. I can 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.	I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment I can recognise that environments can change and that this can sometimes pose dangers to living things	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.	I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals I can give reasons for classifying plants and animals based on specific characteristics
Assessment Outcome: Children should know	All objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers (This is a simplification, but appropriate for Year 2 children.) An object made of wood is classed as dead. Objects made of	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	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	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

	rock, metal and plastic have never been alive (again ignoring that plastics are made of fossil fuels). 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. The habitat provides the basic needs of the animals and plants – shelter, food and water. 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. These micro-habitats have different conditions e.g. light or dark, damp or dry. These conditions affect which plants and animals live there. The 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.	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.	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.	(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 of groups, including insects, spiders, snails and worms. Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.
<u>Key Progression Targets</u>				
Scientific Enquiry	- Identifying and classifying -Using their observations and ideas to suggest answers to questions	-Asking relevant questions and using different types of scientific enquiries to answer them	-Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	-Identifying scientific evidence that has been used to support or refute ideas or arguments.

	-Gathering and recording data to help in answering questions. -Observing closely, using simple equipment	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Setting up simple practical enquiries, comparative and fair tests -Using straightforward scientific evidence to answer questions or to support their findings.	-Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Using test results to make predictions to set up further comparative and fair tests -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Identifying scientific evidence that has been used to support or refute ideas or arguments.	-Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Using test results to make predictions to set up further comparative and fair tests
TAPS Assessment	TAPS – woodlice habitats (record) TAPS – nature spotters (interpret and report)	TAPS – local survey (record)	TAPS – life cycle research (interpret and report)	TAPS – outside keys (record) TAPS – invertebrate research (interpret and report)
Key New Vocabulary	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed • Names of local habitats e.g. pond, woodland etc. • Names of micro-habitats e.g. under logs, in bushes etc	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering

	Animals, including humans					
Prior Learning	Use all their senses in hands-on exploration of natural materials. (Nursery-Humans) -Name and describe people who are familiar to them. (Reception - Humans)	Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) -Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals, including humans) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) Find out about and describe the basic needs of animals,	Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) Identify that animals, including humans, need the right types and amount of	Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) 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. (Y3 - Animals, including humans) Describe the simple functions of the basic parts of the digestive system in

			including humans, for survival (water, food and air). (Y2 - Animals, including humans) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)	nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans)		humans. (Y4 - Animals, including humans) Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Objectives	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). I can identify, name, draw and label the basic parts of the human body and say	I notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air). I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.	I can describe the simple functions of the basic parts of the digestive system in humans I can identify the different types of teeth in humans and their simple functions I can construct and interpret a variety of food chains, identifying producers, predators and prey	I can describe the changes as humans develop to old age	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe the ways in which nutrients and water are transported within animals, including humans.

	which part of the body is associated with each sense.					
Assessment Outcome: Children should know	Animals vary in many ways having different structures e.g. wings, tails, ears etc. They also have different skin coverings e.g. scales, feathers, hair. These key features can be used to identify them. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. Humans have key parts in common, but these vary from person to person. 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.	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 do not look like their parents e.g. tadpoles. 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.	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 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.	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 for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the	When babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce	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. Diet, exercise, drugs and lifestyle have an

				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).		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. ***This content is also included in PSHE.***
			<u>Key Progression Targets</u>			
Scientific Enquiry	-Observing closely, using simple equipment -Performing simple tests -Identifying and classifying	-Identifying and classifying -Using their observations and ideas to suggest answers to questions -Gathering and recording data to help in answering questions. -Observing closely, using simple equipment -Gathering and recording data to help in answering questions.	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Asking relevant questions and using different types of scientific enquiries to answer them -Setting up simple practical enquiries, comparative and fair tests -Making systematic and careful observations and, where appropriate,	-Asking relevant questions and using different types of scientific enquiries to answer them -Setting up simple practical enquiries, comparative and fair tests -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Using test results to make predictions to set	-Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

			taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions -Using straightforward scientific evidence to answer questions or to support their findings.	-Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	up further comparative and fair tests -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Identifying scientific evidence that has been used to support or refute ideas or arguments.	-Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
TAPS Assessment	TAPS – body parts – (evaluate) TAPS – animal classification (interpret & report)	TAPS – handspans (evaluate)	TAPS – investigating skeletons (ask questions & plan)	TAPS – teeth in liquid (evaluate)	TAP – growth survey (observe and measure)	TAPS – heart rate (set up enquiry)

Key New 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 • Parts of the body including those linked to PSHE teaching • Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, aby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Puberty – the vocabulary to describe sexual characteristics	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle

	Evolution and Inheritance- Year 6
Prior Learning	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. (Y2 - Living things and their habitats) • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)
	Year 6
Objectives	-Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. -Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. -Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Assessment Outcome: Children should know	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 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 millions of year 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.
Key Progression Targets	
Scientific Enquiry	- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. - Identifying scientific evidence that has been used to support or refute ideas or arguments. -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
TAPS Assessment	TAPS – fossil habitats (evaluate) TAPS – egg strength (evaluate)
Key New Vocabulary	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

Materials				
Prior Learning	Use all their senses in hands-on exploration of natural materials. (Nursery - Materials, including changing materials) -Explore collections of materials with similar and/or different properties. (Nursery - Materials, including changing materials) -Talk about the differences between materials and changes they notice.	Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) -Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)	Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) -Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) -Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials) -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 Uses of everyday materials)

	(Nursery - Materials, including changing materials)	-Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)	-Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) -Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials) -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	-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. (Y3 - Forces and magnets) -Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter) -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). (Y4 - States of matter) -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Y4 - States of matter)
	Year 1	**Year 2**	**Year 4**	**Year 5**
Objectives	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can	I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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).	I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. I know that some materials will dissolve in liquid to form a solution

	I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.	be changed by squashing, bending, twisting and stretching.	I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I can 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
Assessment Outcome: Children should know	All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties.	All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. When choosing what to make an object from, the properties needed are compared with the properties of the	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	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.

		possible materials, identified through simple tests and classifying activities. 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. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness	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 0oC. Boiling is a change of state from liquid to gas that happens when a liquid is heated 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.	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

Key Progression Targets				
Scientific Enquiry	-Observing closely, using simple equipment - Identifying and classifying -Asking simple questions and recognising that they can be answered in different ways -Using their observations and ideas to suggest answers to questions -Gathering and recording data to help in answering questions. -Performing simple tests	- Identifying and classifying -Asking simple questions and recognising that they can be answered in different ways -Observing closely, using simple equipment -Performing simple tests -Using their observations and ideas to suggest answers to questions -Gathering and recording data to help in answering questions.	-Identifying differences, similarities or changes related to simple scientific ideas and processes -Setting up simple practical enquiries, comparative and fair tests -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	-Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Identifying scientific evidence that has been used to support or refute ideas or arguments. -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Using test results to make predictions to set up further comparative and fair tests
TAPS Assessment	TAPS – bridge testers (record) TAPS – floating and sinking (set up enquiry)	TAPS – waterproof or separating colours (ask questions & plan) TAPS – rocket mice (set up enquiry)	TAPS – drying materials (set up enquiry) TAPS – measuring temperature (observe and measure)	TAPS – dissolving or nappy absorbency ((ask questions & plan) TAPS – insulation layers (set up enquiry) TAPS – sugar cubes (record)

Key New Vocabulary	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material

	Rocks
Prior Learning	-Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) -Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) - Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) -Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) -Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

	Year 3
Objectives	-I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. -I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. -I recognise that soils are made from rocks and organic matter.
Assessment Outcome: Children should know	Rock is a naturally occurring material. There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. 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 millions of years 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 is replaced by minerals from the water.
Key Progression Targets	
Scientific Enquiry	-Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Setting up simple practical enquiries, comparative and fair tests
TAPS Assessment	TAPS – rock reports (interpret and report
Key New Vocabulary	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil

	Light	
Prior Learning	-Explore how things work. (Nursery – Light) -Talk about the differences in materials and changes they notice. (Nursery – Light) -Describe what they see, hear and feel whilst outside. (Reception – Light) -Identify, name, draw and label the basic parts of the human body and say	-Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) -Notice that light is reflected from surfaces. (Y3 - Light) -Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)

	which part of the body is associated with each sense. (Y1 - Animals, including humans) - Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)	-Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light) -Find patterns in the way that the size of shadows change. (Y3 - Light) -Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)
	Year 3	**Year 6**
Objectives	I can recognise that they need light in order to see things, and that dark is the absence of light I notice that light is reflected from surfaces. I recognise that light from the sun can be dangerous and that there are ways to protect their eyes. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object. I can find patterns in the way that the size of shadows change	I can recognise that light appears to travel in straight lines. I can 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. I can 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. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Assessment Outcome: Children should know	We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective. The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats 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	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.

Key Progression Targets		
Scientific Enquiry	-Setting up simple practical enquiries, comparative and fair tests -Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	-Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
TAPS Assessment	TAPS – making shadows (record)	TAPS – light questions (ask questions & plan)
Key New Vocabulary	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	As for Year 3 - Light, plus straight lines, light rays

	Forces (and magnets)	
Prior Learning	-Explore how things work. (Nursery – Forces) -Explore and talk about different forces they can feel. (Nursery – Forces) -Talk about the differences between materials and changes they notice.	-Compare how things move on different surfaces. (Y3 - Forces and magnets) -Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)

	(Nursery – Forces) -Explore the natural world around them. (Reception – Forces) - Describe what they see, hear and feel whilst outside. (Reception –Forces) -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	-Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets) -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. (Y3 - Forces and magnets) -Describe magnets as having two poles. (Y3 - Forces and magnets) -Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets)
	Year 3	**Year 5**
Objectives	I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having two poles. I can predict whether two magnets will attract or repel each other, depending on which poles are facing	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
Assessment Outcome: Children should know	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 compared to walking on ice in normal shoes. A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic. The strongest parts of a	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.

	magnet are the poles. Magnets have two poles – a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – 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.	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 moves a small distance, e.g. a crowbar or bottle top remover. Pulleys, levers and gears are all mechanisms, also known as simple machines
Key Progression Targets		
Scientific Enquiry	-Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - Setting up simple practical enquiries, comparative and fair tests - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions -Using straightforward scientific evidence to answer questions or to support their findings. - Identifying differences, similarities or changes related to simple scientific ideas and processes -Asking relevant questions and using different types of scientific enquiries to answer them	-Identifying scientific evidence that has been used to support or refute ideas or arguments. -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Using test results to make predictions to set up further comparative and fair tests -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
TAPS Assessment	TAPS – shoe grip or magnet tests (set up enquiry) TAPS – cars down ramps (record)	TAPS – paper planes ((ask questions & plan) TAPS – spinners (observe & measure) TAPS – bottle flip (record) TAPS – marble run (evaluate)
Key New Vocabulary	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears

	Sound
Prior Learning	-Explore how things work. (Nursery – Sound) -Describe what they see, hear and feel whilst outside. (Reception – Sound) -Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)
	Year 4
Objectives	I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.
Assessment Outcome: Children should know	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 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
Key Progression Targets	
Scientific Enquiry	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Setting up simple practical enquiries, comparative and fair tests -Identifying differences, similarities or changes related to simple scientific ideas and processes
TAPS Assessment	TAPS – investigating pitch (ask questions & plan)

	TAPS – string telephones – interpret and report
Key New Vocabulary	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation

	Electricity	
Prior Learning	Explore how things work. (Nursery - Electricity)	Identify common appliances that run on electricity. (Y4 - Electricity) -Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) -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. (Y4 - Electricity) -Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity) - Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)
	Year 4	**Year 6**
Objectives	I can identify common appliances that run on electricity. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can 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. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I can recognise some common conductors and insulators, and associate metals with being good conductors.	I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can 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. I can use recognised symbols when representing a simple circuit in a diagram
Assessment Outcome:	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	Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher

Children should know	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 wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity	voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be 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. You can use recognised circuit symbols to draw simple circuit diagrams
Key Progression Targets		
Scientific Enquiry	-Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables -Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions -Using straightforward scientific evidence to answer questions or to support their findings. -Asking relevant questions and using different types of scientific enquiries to answer them -Identifying differences, similarities or changes related to simple scientific ideas and processes	
TAPS Assessment	TAPS – circuit products (observe and measure) TAPS – conductors (review)	TAPS – bulb brightness (ask questions & plan) TAPS – conductive dough (observe & measure)
Key New Vocabulary	Electricity, electrical appliance/device, mains, plug, 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	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage

	Earth and Space
Prior Learning	-Explore the natural world around them. (Reception – Earth and space) -Describe what they see, hear and feel whilst outside. (Reception – Earth and space) -Observe changes across the four seasons. (Y1 - Seasonal changes) - Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)
	Year 5
Objectives	I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth and Moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky
Assessment Outcome: Children should know	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.
Key Progression Targets	
Scientific Enquiry	-Identifying scientific evidence that has been used to support or refute ideas or arguments. -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Using test results to make predictions to set up further comparative and fair tests

TAPS Assessment	TAPS – craters (record) TAPS – solar system research (interpret and report)
Key New Vocabulary	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets