Hillstone Primary Progression Map

Subject: Science

Intent: At Hillstone Primary School, we believe the most important aspect of science education is developing a healthy curiosity about the world around us. We aim to instill a sense of awe at the workings of our universe and encourage children to ask "How?" and "Why?" Our curriculum has been planned to ensure progression from EYFS to Year 6, reflecting the expectations set out in the National Curriculum. Science teaching is never standalone. Science lessons are always part of broader units. This approach provides a sense of purpose and improves children's science capital. There is far more to science that remembering information. We provide a wide variety of opportunities for children to develop their Working Scientifically skills. As a school, we are developing our use of STEM projects to drive science. It is our belief that pupil-led investigations are a superb way to motivate and inspire the scientist of tomorrow.

Drivers: Oracy is key to learning in science, especially when conducting enquiries and working collaboratively. Children are encouraged to ask questions, share ideas, challenge one another and communicate information effectively. Problem solving is another essential skill for scientists. Finding the best solution to practical issues requires creativity and perseverance. Children develop these virtues by setting up and managing their own investigations. We promote well-being in science lessons through developing children's understanding of their own bodies and the world in which they live. Emphasis is placed on the holistic nature of health.

Autumn	EYFS		Key Stage 1		Key Stage 2			
	Nursery	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	**Why are leaves crispy?** **U**nderstand the effect of changing seasons on the natural world around them. **Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel	**Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel Talk about the differences between materials	**Fins, Feathers and Feet** Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores, and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and	**Amazing Animals** Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats Describe how animals obtain their food from plants and other	**Healthy Heroes** Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions	**Geology Matters** Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Compare and group together different kinds	**The Human Body** Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Describe the ways in which nutrients and water are transported within animals, including humans. Recognise the impact of diet, exercise, drugs and lifestyle on the way their body's function Describe the changes as humans develop to old age **Space**	

	Talk about the differences between materials and changes they notice	and changes they notice	mammals, including pets)	animals, using the idea of a simple food chain, and identify and name different sources of food Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)		of rocks based on their appearance and simple physical properties Recognise that soils are made from rocks and organic matter Describe in simple terms how fossils are formed when things that have lived are trapped within rock	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye	

							Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	
Skills	**Ongoing** Repeat actions that have an effect 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	**Ongoing** Observe and interact with natural processes Describe what they see, hear and feel whilst outside Repeat actions that have an effect 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	**Fins, Feathers and Feet** Comparing and classifying animals into groups such as carnivore, herbivore, omnivore Gathering and recording data to help answer questions about animal groups and structure	**Amazing Animals** Asking simple questions about animals and recognising that they can be answered in different ways Use observations and ideas to suggest answers to questions about what is alive or dead, habitats and basic needs of animals Use simple food chains	**Healthy Heroes** Making systematic and carefully observations Present data from enquiries about the human body in a variety of ways (written, oral and displays)	**Geology Matters** Asking relevant questions about states and using different types of scientific enquiries (pattern seeking and comparative/fair testing) to answer them Setting up simple practical enquiries Making systematic and careful observations and taking accurate measurements using thermometers and cameras Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Classifying rocks according to their appearance and properties	**The Human Body** Planning enquiries focused on the effect of exercise on the body and the structure of the heart (including risk assessment) Measuring BPM and taking repeat readings where appropriate Photography for the purpose of creating labelled diagrams Using Excel to record and present data in the form of 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	

						Presenting information about rocks and fossils using scientific language and labelled diagrams Identify some of the similarities and differences between rocks and fossils and their formation	results, in oral and written forms **Space** Planning and performing enquires to explore gravity and air resistance, focusing on controlling variables Taking measurements using stopwatches and recognising when to take repeat readings Using excel to create bar and line graphs Evaluating test results and setting up further enquires Identifying scientific evidence that has been used to support or refute ideas or arguments (How can we convince a flat earther that the world is spherical? How do we know the sun is at the center of the universe?)	

Spring	EYFS		Key Stage 1		Key Stage 2			
	Nursery	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	**Are eggs alive?** Understand the key features of the life cycle of an animal **Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice	**Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice						**We are Detectives** Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Recognise some common conductors and insulators, and associate metals with being good conductors Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday

								materials, including metals, wood and plastic Demonstrate that dissolving, mixing and changes of state are reversible changes Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda
Skills	**Ongoing** Repeat actions that have an effect 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	**Ongoing** Observe and interact with natural processes Describe what they see, hear and feel whilst outside Repeat actions that have an effect 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						**We are Detectives** Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary Take measurements (using Lux and Decibel X) with accuracy and precision, taking repeat readings when appropriate Record data using scatter graphs Use test results to make predictions and set up further enquiries Report and present findings from enquires including casual relationships and degrees of trust

Summer	EYFS		Key Stage 1		Key Stage 2			
	Nursery	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	**Big Wide World** Begin to understand the need to respect and care for the natural environment and all living things Recognise some environments that are different from the one in which they live. **Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice	**Sunshine and Sunflowers** Understand the key features of the life cycle of a plant **Ongoing** Explore materials with different properties Explore natural materials, indoors and outside Explore and respond to different natural phenomena in their setting and on trips Explore how things work Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice	**Green Fingers** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	**Weather** Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials based on their simple physical properties. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	**Forces** Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials based on whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing **Creating a Buzz** Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Explore the requirements of plants for life and growth (air,	**Light and Sound** Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in the way that the size of shadows change Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Use recognised symbols when representing a simple circuit in a diagram Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a	**Evolution and Adaptation** Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals Recognise that living things have changed over time and that fossils provide information about living things that inhabited the	

				Good to be me Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear Find patterns between the pitch of a sound and features of the object that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases **Endangered Animals** Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can	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.	

						change and that this can sometimes pose dangers to living things Construct and interpret a variety of food chains, identifying producers, predators and prey		
Skills	**Ongoing** Repeat actions that have an effect 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	**Sunshine and Sunflowers** Plant seeds and care for growing plants **Ongoing** Observe and interact with natural processes Describe what they see, hear and feel whilst outside Repeat actions that have an effect 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	**Green Fingers** Performing simple tests to learn about what plants need to grow Formulate and answer questions about plants Observe how the seasons change over time Using their observations and ideas to suggest answers to questions	**Weather** Ask questions about which materials are suited to specific tasks and discuss ways to test suitability Perform and observe tests that examine the properties of physical materials Gathering and recording data and using it to answer questions **Good to be me** Ask simple questions about exercise, nutrition and hygiene and recognise they can be answered in different ways I can collect data about exercise using stopwatches I can use observations and data to help answer questions	**Forces** Asking questions and setting up tests to explore the properties of magnets Asking questions and setting up tests to classify everyday materials based on whether they are magnetic Gathering, recording, classifying and presenting data in a variety of ways to help answer questions about forces Identifying some similarities and differences between magnetism and other forces Using straightforward scientific evidence to answer questions about magnetism and friction **Creating a Buzz** Classifying plants according to their needs Dissecting a plant and presenting the findings in the form of a labelled diagram	**Light and Sound** Setting up tests to explore the properties of light and sound. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units (measuring shadows) Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **Endangered Animals** Understanding and using classification keys Constructing and interpreting food chains Using evidence from classification keys and food chains to answer questions Using scientific evidence to refute ideas or arguments	**Evolution and Adaptation** Plan and carry out enquiries to explore the evolution of beaks Identifying the best way to present data Identifying and exploring scientific evidence that has been used to support or refute the theory of evolution	

Impact (End Points)						
EYFS	**Key Stage 1**		**Key Stage 2**			
Nursey and Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Children will identify similarities and differences between places, objects, materials and living things They will discuss the features of their own environment and how environments might vary from one another They will make observations about animals and plants They will explain why some things occur and talk about changes	Children will be able to name, label and sort a variety of animals and plants Children will be able to describe what plants need to grow and stay healthy Children will be able to collect basic data, perform simple tests, observe changes over time and use their observations and ideas to answer questions	Children will know the difference between things that are alive, dead or have never lived. They will know animals, including humans, can produce offspring Children will know which body part is associated with each sense Children will know a wider variety of animals and their habitats. They will be able to explain that an animal's habitat must meet its basic needs and recognise simple ways animals are suited to their habitats Children will understand that everyday materials are diverse in their properties. The properties of a material determine its suitability for specific tasks Children will be able to perform and observe tests closely, record simple data and use it to answer questions	Children will understand the importance of nutrition and exercise Children will know humans and some other animals have skeletal and muscular systems Children will know the simple function and basic parts of the human digestive system Children will understand the basics of friction and magnetism Children will understand the function of basic plant parts and know that different plants have different requirements Children will start to set up and evaluate their own tests, record data in a variety of ways, and have improved their ability to use data to answer questions	Children will know the basic properties of light and sound. Children will be able to identify appliances that require electricity and understand basic circuits and their components Children will be able to classify rocks according to their properties and understand that soil is made from rock and organic mater. They will understand how fossils are formed Children will be able to group materials according to their state and understand the processes of evaporation and condensation in the context of the water cycle Children will be able to use classification keys and create and interpret food chains Children will be able to	Children will know the structure and function of the human circulatory system and link this knowledge to the transport of nutrients and water Children will understand that a wide variety of factors affect how the body functions and know some of the changes that occur as humans age Children will have developed an understanding of our solar system and our place in the universe Children will recognise the effects of gravity, air resistance and water resistance. They will know mechanisms can be used to amplify some forces Children will have developed their understanding of light and be able to explain how it enables us to	Children will have developed their understanding of electricity and circuits and be able to use their knowledge to make predictions about how a circuit will perform Children will understand a wider range of properties including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. They be able to link this knowledge to the uses of everyday materials Children will understand the concept of reversible and irreversible changes and know how mixtures can be separated With some support, children will be able to plan, do, record and review their own scientific enquires

			different plants have different requirements Children will start to set up and evaluate their own tests, record data in a variety of ways, and have improved their ability to use data to answer questions	set up and perform simple practical enquires	see Children will understand the purpose of and use a greater range of classification systems Children will know how some animals and plants reproduce. They will understand that slight changes observed in offspring can lead to adaptation, which, over time, may lead to evolution Children will consider the best way to conduct an enquiry and use technology to present their findings in a variety of ways Children will understand how evidence can be used to support or refute scientific theories	