Science Curriculum Overview

Intent:

At Falmouth Primary Academy, our vision for science education is to inspire and empower our students to set sail with a lifelong curiosity about the natural world. Through hands-on, inquiry-based learning, we provide opportunities for children to explore, question, and understand the scientific principles that shape our world. We believe in nurturing critical thinking and fostering independence by encouraging learners to take the lead in asking questions, conducting investigations, and drawing their own conclusions. Our goal is to create a learning environment where science is accessible, relevant, and exciting, equipping students with both the knowledge and the confidence to engage thoughtfully with scientific ideas and discoveries. We aim for students to confidently apply scientific methods, articulate their ideas using scientific vocabulary, and demonstrate an understanding of how science impacts everyday life. By the end of their journey with us, our students will think, speak, and act like scientists, envisioning a future where they can lead and innovate within the STEAM community.

Implementation:

Early Years

Children at Falmouth Primary begin their journey as scientists in our EYFS classroom, exploring the world around them and being encouraged to express what they observe in words, drawings and through the questions that they ask. In line with the Educational Programme set out in the EYFS framework, this aspect of Understanding the World involves "guiding children to make sense of their physical world". Whether that be through hands-on exploration of the natural world or different textures and materials, or exploring ideas about forces through simple investigations, children are given opportunities to share their ideas and ask questions to pursue the awe and wonder of finding out about our world. At Falmouth, our EYFS planning and provision includes a weekly "investigation table/area" where children are invited to use their scientist skills to explore materials and provocations linked to our topics, such as magnets, torches, comparing and sorting items and natural materials. This provides a framework for ensuring that the foundations of inquiry and investigation are embedded through practical experiences and activities. Central to all of this is our key focus on building vocabulary and communication skills which will enable the children to develop their scientific knowledge and skills through our KS1 and KS2 Science curriculum.

Futures Are Limitless

Falmouth Primary Academy

Curriculum Overview

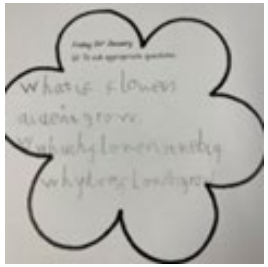
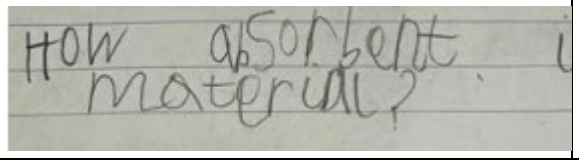
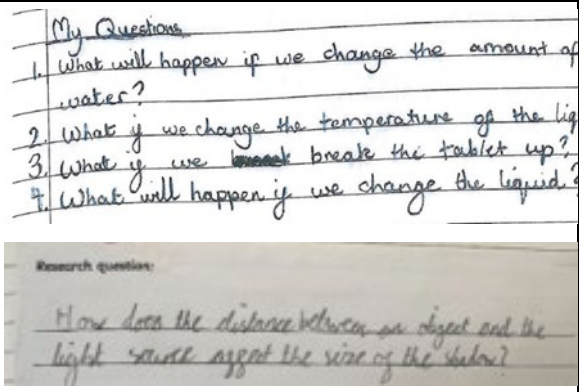
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	What are my senses?	What are toys made of?	What are the properties of everyday materials?	How do we classify animals?	How can I tell which season it is?	What plants and trees are in my local environment?
Year 2	How are our bodies brilliant?	How are materials part of our everyday lives?	How are other animals' bodies brilliant?	What do plants need to grow and stay healthy?	How are living things suited to their habitats (Global focus)?	How are living things suited to their habitats (Local focus)?
Year 3	How does light travel?	How can forces affect the speed of an object?	How can we find out which magnets are the strongest?	What different materials make up the ground beneath our feet?	What types of foods do different animals eat, and how does this help them survive?	What are the different parts of a flowering plant, and how does each part help the plant grow and survive?
Year 4	How does electricity travel?	How do we hear?	How do temperature changes affect the states of different materials?	How are the teeth and digestive systems of different animals adapted to their diets?	How can we use characteristics to classify and identify animals and plants?	How do humans impact animal habitats?
Year 5	How does the reproduction of plants and animals differ?	What is beyond our world (and how do we know)?	What factors affect the rate at which solids dissolve in liquids, and how can different separation techniques be used to separate mixtures effectively?		How is the human lifecycle different to other animals?	Can I slow down a force?
Year 6	What is the relationship between light sources and shadows?	What is the circulatory system's role in the human body and how does it function?	How can we group living things based on their characteristics	How does voltage affect the components in a circuit?	How do living things adapt and evolve to their environments?	Can I make the bulb shine brighter?

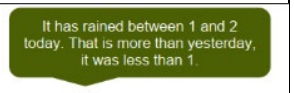
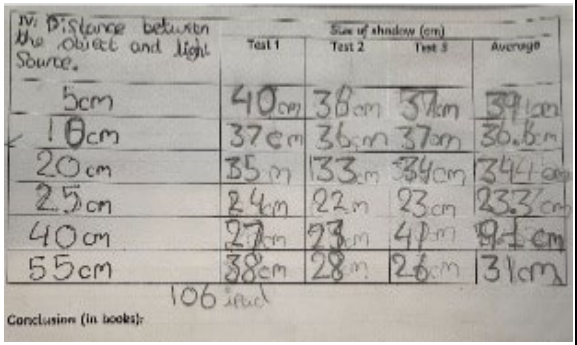
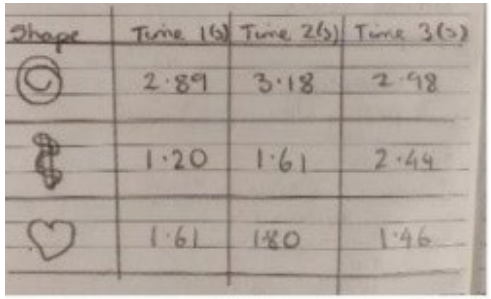
Set sail together!

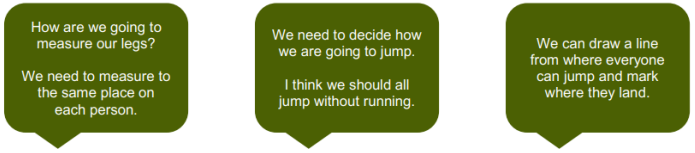
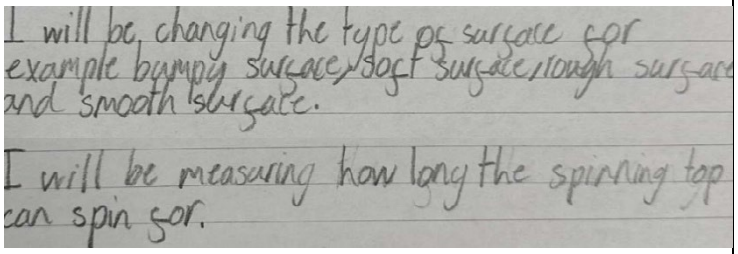
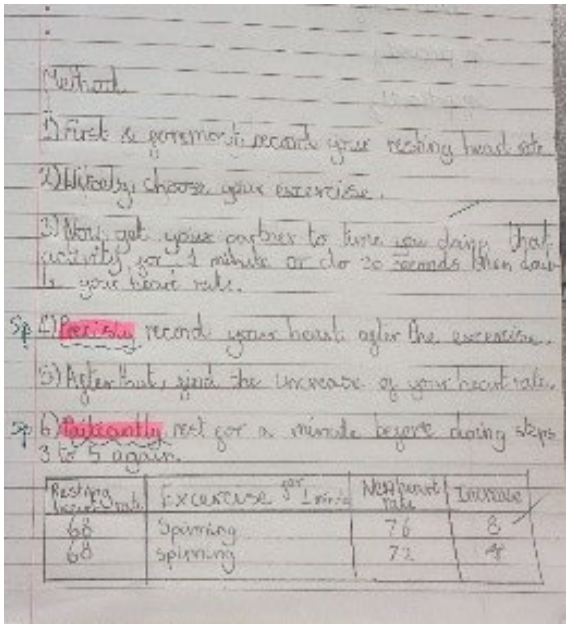
Futures Are Limitless

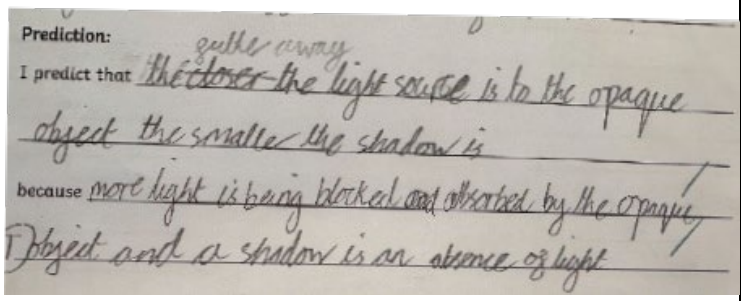
Falmouth Primary Academy

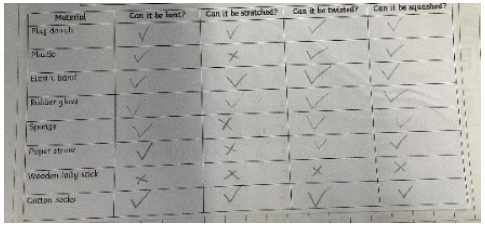
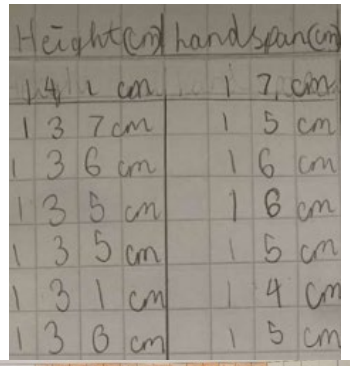
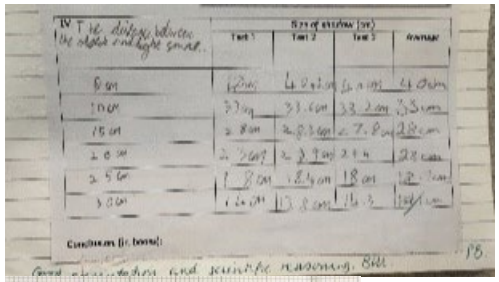
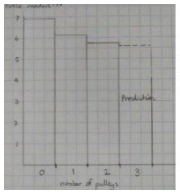
Working Scientifically Progression Map

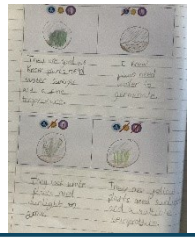
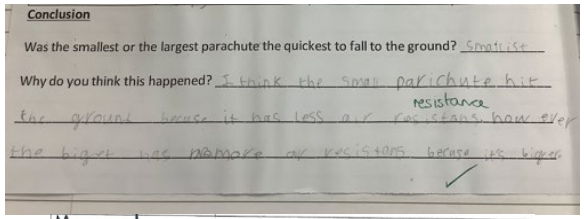
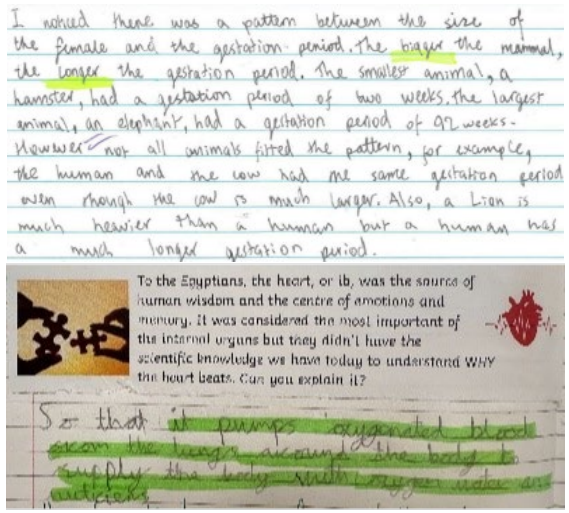
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking questions	Ask questions to find out more and to check they understand what has been said to them. Ask how and why questions Beginning to use a range of given question stems. Use all their senses in hands-on exploration of natural materials. Explore how things work. Explore and talk about the differences between materials and changes they notice.	Use a range of given question stems, such as: what; what if; why; when; who; and how; to ask questions about the objects, living things and processes they are exploring Construct a question based on a scenario or story the teacher has presented.	Ask simple questions about a scientific concept	Ask scientific enquiry questions with support Following a scientific enquiry, ask questions stimulated by what they have just found out.	Ask scientific questions and consider how these maybe answered	Independently ask scientific enquiry questions.	Suggest a range of questions using a range of different variables.
How does this look?		 					

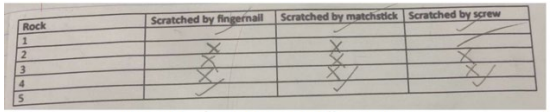
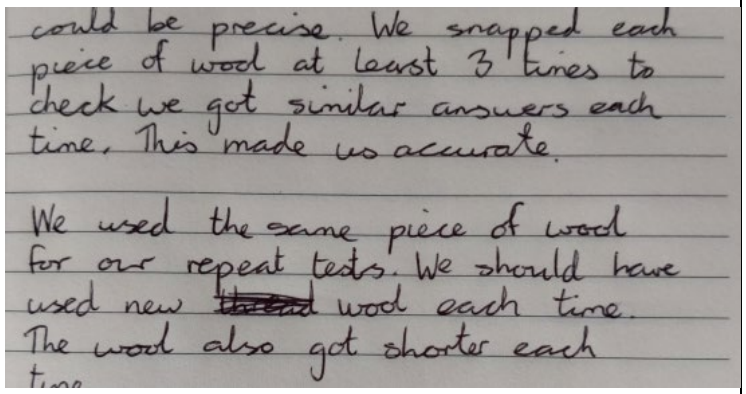
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Gathering Data	Describe what they see, hear and feel whilst outside Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.	Talk about their observations of objects, materials and living things When using a magnifying glass, adjust the position of the magnifying glass to see the enlarged image clearly When using a digital microscope, relate features on the enlarged view to the object Make direct comparisons of length and height Use bricks, lolly sticks etc. or paper strips to take non-standard measurements of length Use simple measuring equipment, such as teaspoons, pipettes, rulers, metre sticks etc.	Talk about their observations when comparing objects, materials and living things Talk about their observations when describing changes Take measurements to the nearest cm Begin to use a range of measuring equipment (stop watches, rulers) Use data loggers to measure heart rate	Make systematic and careful observations Measure time in standard units using stopwatches or timers Measure length in standard units using rulers, meter sticks. Measure capacity in standard units using syringes, beakers or measuring cylinders Use sensors to take measurements (e.g. light). Measure forces to the nearest half a Newton using a Newton metre.	Measure temperature in standard units using thermometers Use sensors to take measurements (e.g. sound). Measure length in standard units using rulers, meter sticks, tape measures or trundle wheels	Make relevant detailed observations Use a range of equipment to take measurements (e.g. distance, time, temperature, capacity, force) using standard units Select measuring equipment to give appropriately precise results Identify when a sensor can be used to gather evidence Take repeat readings as appropriate.	Make relevant systematic and detailed observations Use a range of equipment to take accurate measurements (e.g. distance, time, temperature, capacity, force) using standard units Take repeat readings as appropriate and select the relevant data using the mean.
How does this look?				 		 	

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning an enquiry	NA	NA		Identify the data required to answer the scientific enquiry question Select appropriate practical equipment to gather the data Suggest how to gather the data required to answer the scientific enquiry question	Identify how to gather the data required to answer the scientific enquiry question Suggest the type of scientific enquiry they are using.	Describe the method they would use to gather data to answer a scientific enquiry question. Identify the type of enquiry they are using.	Create detailed methods to describe the steps they would take to gather data in an enquiry.
How does this look?	NA	NA		 		

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Making predictions	NA	NA		Use the data they have already gathered to suggest values for the next reading		Use the data they have already gathered to suggest further values Use the scientific understanding gained from scientific enquiry to make predictions they can investigate using further comparative and fair tests	
How does this look?	NA	NA		The table is smoother than the wood, so I think it can be further away and still make the paper clip move, maybe like 4cm?			

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recoding data	Record their observations using marks and drawings during investigations in Continuous Provision.	Use a camera to take photographs or videos to record their observations Record their observations using drawing Record their observations using labelled drawings Physically group objects, materials and living things or their images by a criterion Use data they gather to physically rank objects or materials (comparative testing) Add their data to a prepared table or simple Venn diagram Add tally marks to a tally chart and count up the total number	Physically group objects or materials according to the data they gather (classifying) Record their observations or comparisons in writing Add pictures to a pictogram Make a physical block graph or bar chart by using bricks, lolly sticks etc. or paper strips with which they measured lengths or heights	Record data in a simple table they construct themselves Record their measurements directly onto a bar chart with a prepared axes and scales provided (colour boxes) Record observations and information using a drawing, a labelled diagram and, in Year 4 only, a key.	Record observations and information using a drawing, a labelled diagram and, in Year 4 only, a key. Record data onto a complex table provided for them Record their measurements directly onto a bar chart with a prepared axes and scales provided (Draw bars)	Choose an appropriate method to record the data they will gather using experience of recording methods learnt in Key Stage 1 and Lower Key Stage 2(e.g. photographs, videos, drawings, labelled diagrams, writing, tables, keys) Record data in, a complex table Construct, and record data in, a bar chart Construct, and record data in, line graph (prepared axis)	Construct, and record data in, line graph Construct and record data in, a complex table
How does this look?	Observing hatching ducklings	 		 		  	

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Drawing conclusions	NA	Use their observations and simple secondary sources (e.g. identification sheets) to name living things they find in the local area Recognise 'biggest and smallest', 'best and worst' etc. from their data	Give an answer to their scientific enquiry question that is consistent with the data they have gathered either through observations, measurements or from research Recognise that they can answer scientific enquiry questions in different ways	Communicate their findings from practical activities Answer the scientific enquiry question using the data gathered		Answer the scientific enquiry question using the data gathered Discuss whether other evidence (e.g. from other groups or their scientific understanding) supports or refutes their answer	Talk about how their scientific ideas change due to new data that they have gathered Talk about how scientific discoveries have changed scientific understanding in the past and continue to do so today
How does this look?		 In our school grounds I saw grass I know this because it was long and g					

	EYFS	Year 1 Year 2	Year 3 Year 4	Year 5 Year 6
Evaluating	NA	NA	Identify ways in which they adapted their method as they progressed or how they could change it to improve the data gathered Compare two methods for a test.	Evaluate the precision of their measurements Evaluate whether the results are trustworthy enough to answer the scientific enquiry question.
How does this look?	NA	NA	 Rock / Scratched by fingernail / Scratched by matchstick / Scratched by screw 1 2 3 4 5 **Method 1 – Scratching with different objects**  **Method 2 – Rubbing two different rocks together** Using the scratching method, Rock 1 and 5 were the same. But, when we rubbed them together, bits of Rock 5 broke off, so Rock 5 was softer. We didn't know this from the scratching test.	 could be precise. We snapped each piece of wood at least 3 times to check we got similar answers each time. This made us accurate. We used the same piece of wood for our repeat tests. We should have used new ~~the end~~ wod each time. The wood also got shorter each time.

Futures Are Limitless

Falmouth Primary Academy

Knowledge Progression: Biology

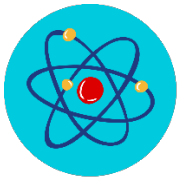
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The EYFS children help plant bulbs around the school grounds. These bulbs are then monitored and their growth discussed during playtimes, small group times or whole class 'welly walk' times. Observe plants and trees using a range of items (binoculars and magnifying glasses) During construction play the children have the opportunity to use a variety of toy animals for example, farm, safari, sea life and artic animals. As the children play, EYFS staff play alongside the children to question and further develop the children's knowledge of animals. Key focus activities and continuous provision planned activities provide children with the opportunity to sort animals into groups and habitats. Through singing head, shoulders, knees and toes this provides opportunity for the children to verbally label parts of their body. This song is in a collection of keys songs and nursery rhymes which are sung in class. Key text, Funny Bones provides children with the opportunity to draw their body and add bones to it through collage. Construction play also provides children with the opportunity to create a body through wooden brick or loose parts. Children will often use large wall paper to draw around first. This again provides opportunity to label parts of the body. The senses are referenced to throughout the class	**Plants**					
	Identify and name a variety of common wild and garden plants **Identify and describe the basic structure of a variety of common flowering plants** identify different types of trees, including whether they are deciduous or evergreen trees	Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	**Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers** Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal **Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant** investigate the way in which water is transported within plants			
	Living things and their habitats					
		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 micro-habitats **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.**		**Recognise that living things can be grouped in a variety of ways** Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things. construct and interpret a variety of food chains, identifying producers, predators and prey.	**Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird** Describe the life process of reproduction in some plants and animals. Describe complete and incomplete metamorphosis.	**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** give reasons for classifying plants and animals based on specific characteristics
	Animals including humans					
	Classify themselves as a mammal **Identify, name, draw and label the basic parts of the human body** Identify the five senses and say which part of the body is associated with each sense Identify and name a variety of common animals (including fish,	**Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)** describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	**Recognise that animals cannot make their own food and they get nutrition from what they eat and that this comes in different types (protein, fat, carbohydrates, vitamins and minerals)** Identify that animals, including humans, need the right types and amount of nutrition	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	Describe the changes as humans develop to old age	**Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood** Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

	amphibians, reptiles, birds and mammals) Describe what common animals eat and classify them as carnivores, herbivores and omnivores Describe the body covering (fur, skin, feathers) and significant body parts (fins, scales) of different animal groups (fish, amphibians, reptiles, birds and mammals, including pets) Identify which animals are hot or cold-blooded	Notice that animals, including humans, have offspring which grow into adults	Identify that humans and some other animals have skeletons and muscles for support, protection and movement			describe the ways in which nutrients and water are transported within animals, including humans
	Evolution and inheritance					
						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.

Knowledge Progression: Chemistry

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Materials and states of matter					
Children discuss the clothes and materials we wear in different seasons. Explain why these clothes are suitable.	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Distinguish between an object and the material from which it is made Describe the simple physical properties of a variety of everyday materials (hard/soft, stretchy/stiff, shiny/dull, waterproof/non-waterproof, opaque/see-through) compare and group together a variety of everyday materials on the basis of 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.	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	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 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.	
	Rocks and Fossils					
			Compare and group together different kinds of rocks on the basis of 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			



Knowledge Progression: Physics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children observe the school grounds on 'welly walks' and comment on what they see in their natural world. Completing the daily weather chart during registration. Understand how the weather changes.	Light and Dark					
			recognise that they need light in order to see things and that dark is the absence of light recognise that light from the sun can be dangerous and that there are ways to protect their eyes notice that light is reflected from surfaces recognise that shadows are formed when the light from a light source is blocked by an opaque object find patterns in the way that the size of shadows change			Recognise 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.
	Sound					

Children observe and talk about what they have observed for example *giant puddles.				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.		
	Forces, Magnets and Electricity					
			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 on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing. compare how things move on different surfaces	identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.	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.	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 use recognised symbols when representing a simple circuit in a diagram.
	Earth and Space					
	Discuss how day length varies (using vocabulary like longer and shorter, mid-summer and mid-winter)	Recognise the placement of the sun in the sky.			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.	
	Weather and Seasons					
	Name all four seasons Name different types of weather Observe and describe weather associated with the seasons observe changes across the four seasons		Year 3 – Extreme Earth (Geography topic) Observe and describe weather associated with the seasons observe changes across the four seasons Use a range of equipment to record weather			

Futures Are Limitless

Falmouth Primary Academy

Impact:

At Falmouth Primary Academy, each science topic is structured around a composite endpoint that reflects the key knowledge and skills students are expected to master. These endpoints are supported by carefully designed components, with regular assessment checkpoints to monitor and ensure student progress. To support all learners, we employ adaptive teaching methods, enabling students to develop a secure understanding of each topic and confidently demonstrate their knowledge through composite assessment tasks.

Formative assessment is integrated throughout our lessons, including the use of KAHOOT pre- and post-topic quizzes to track learning gains, disciplinary literacy, drama, art and mathematical tasks to immediately recognise and address misconceptions. Each term, we also assess students' working scientifically skills through a whole-school science experiment, fostering collaboration, inquiry, and practical application of scientific principles. Consequently, children leave Falmouth Primary Academy with a solid foundation in Chemistry, Biology, and Physics, confidently articulating their understanding using scientific language. They depart not only with the skills to think and communicate like scientists but also with the inspiration and aspirations to pursue future roles in the scientific community.