CYCLE A

Year 1&2		
Scientific knowledge and understanding **What do we need to learn?**	**How are we learning this, through real-life, personal experiences?**	**Working scientifically**
Plants: Introduction to plants • To know a variety of common plants and how they differ. • To know that deciduous trees lose their leaves seasonally, but evergreen trees do not. • To know the basic structure (including leaves, flowers (blossom), fruit, roots, bulb, seed, trunk, branches, stem) of a variety of common plants including flowering plants and trees. • To begin to know how plants grow and change over time.	• Explore the school garden and local woodlands. • Compare plants and flowers, identifying the different parts using magnifying glasses. • Hold and touch different plants and flowers to help compare. • Sort a range of seeds. • Go on a local walk to look for deciduous and evergreen trees. • Plant cress seeds and monitor the growth and change.	• Plan an investigation. • Draw and label a diagram of a flower. • Sort flowers into groups to show which are wild and which are garden. • Measure and compare leaves. • Observe to answer questions. Grouping and classifying - Grouping plants based on different features.

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Seasonal changes • To know the name and order of the four seasons; spring, summer, autumn and winter. • To know that it is unsafe to look directly at the sun. • To identify how the weather changes across the four seasons. • To recognise that daylight hours change across the four seasons.	• Learn the months of the year and the linked seasons through song. • Take learning outside during the different seasons and experience the weather. • Link to personal experiences of what the children associate with the different seasons (events and activities). • Observe the changes outside during the different seasons e.g. visit Flimby Woods during each season to observe the changes to the trees.	• Gather and record data in a pictogram to show how the hours of daylight differ according to the season. • Record tally frequency of weather changes. Observing over time - Observe how the weather and day length changes.
Living things: Habitats • To identify some of the characteristics of living things. • To recognise the difference between things that are alive, were once alive or have never been alive. • To identify plants and animals in different habitats (focus on woodland and beach/sea). • To identify how a habitat provides animals and plants with what they need to survive. • To recognise how animals and plants depend on each other.	• Local walk to Flimby woods to locate animals and plants and see them in their natural habitats. • Make a bug hotel for the school garden. • Local walk to Flimby shore to locate animals and plants	• Classify objects into groups (alive, once alive, never been alive) • Carry out research to find answers to the question, 'Why

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• To recall how animals get their food from plants and other animals.	in their natural habitats. • Visit from Pet Encounter to meet animals in person and learn about their habitat and characteristics for survival.	are habitats suitable to some animals and not others?' • Ask questions about habitats and survival characteristics. Research - research different animals and their needs for survival.
Animals including humans: Life cycles and health • To identify different stages of the human life cycle. • To know which offspring comes from which parent animal. • To know the stages in some animal life cycles. • To identify and list the basic needs for survival for animals and humans. • To recognise the importance of personal hygiene and exercise. • To identify how to have a balanced diet.	• Experience parent animals/offspring through observing the transition of caterpillars into butterflies. • Observe the importance of hygiene through a handwashing experiment.	• Compare the basic needs for animals to humans. • Sort food products into the correct food groups. Observing over time - observe animal growth and changes over time.

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Plants: Plant growth • To know that seeds and bulbs grow into seedlings by producing roots and shoots. • To know that seedlings grow into plants by developing roots, stems, leaves and flowers. • To know seeds needs water and warmth to germinate. • To know plants, need water, light and a suitable temperature for growth and health.	• Plant seeds in the school garden and observe their growth. Look at the importance of water, light and the correct temperature.	• Conduct an experiment, make predictions and record results. • Measure plant growth with a ruler. • Record growth data in a table. • Observe using a magnifying glass. • Draw and label diagrams. Comparative and fair testing - What do plants need to grow well?
Making connections: Ocean protectors. • Describe how some living things in a rock pool have their needs met and how the conditions change. • Order the stages of different animal life cycles. • Identify similarities and differences between different animal life cycles. • Recall different types of litter that affect ocean habitats and describe some of the problems linked with ocean litter.	• Complete a tally chart to record the living things in rock pools and summarise observations. • Make careful observations and pose questions about ocean animals and their life cycles. • Begin to plan an experiment and predict changes to materials in ocean water over time.	

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• Suggest ways to reduce how human litter affects the ocean. • Recall how to write a food chain and produce an example of an ocean food chain. • Describe how litter affects a food chain.	• Observe and make comparisons to materials soaked in water and summarise the results from the ocean litter investigation. • Use the results to explain which litter is worst for the oceans and advise people about their material choices. • Describe the role of a marine biologist. • Record the number of living things found in the ocean as a tally chart and as a pictogram. • Compare two sets of data and summarise findings	
Year 3&4		
Energy: Light and shadows • To know that light travels from a source. • To know that light is needed to see things and dark is the absence of light. • To know that shadows are formed when the light from a light source is blocked by an opaque object. • To know that light from the sun can be dangerous and how to protect our eyes. • To know which materials, reflect light. • To know that shadows change because of different factors.	• Handle a range of objects and identify the light sources. • Games to show that darkness is the absence of light. • Visit from a local optician. • Talk from PCSO to explain reflective materials and how they keep us safe. • Experiments to show how shadows can change, and which materials are the most reflective.	• Plan and draw a results table. • Ask testable questions and plan how to answer them. • Consider variables when planning an enquiry. • Find patterns in data and form conclusions. Pattern seeking - Look for patterns in what happens to shadows when the light source moves.

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Animals including humans: Movement and nutrition. • To explain the role of a skeleton. • To recognise the main bones in the body. • To explain how muscles are used for movement. • To explain how food is an essential energy source. • To explain what makes a balanced diet.	• Use a skeleton model to identify different parts of the skeleton. • Create a skeleton model. • Handle foods in the different food groups to create a balanced plate.	• Group animals based on their physical properties. • To measure and sort data. • Gather and compare data to answer questions. • Record information using secondary sources. Grouping and classifying - Identify and group animals with or without skeletons.
Material: Rocks and soil • To know that rocks can be grouped based on their appearance or properties. • To understand the relationship between rocks and their uses. • To know that rocks may contain grains, crystals or fossils. • To know that soils are made from rocks and dead matter. • To compare soils and how they are formed. • To know that fossils can form from the remains of living things. • To know that rocks can change over time.	• Visit Flimby shore to search for rocks and identify the differences in appearance and properties. • Go on a fossil hunt • Analyse soil in the school garden. • Trip to Honister slate mine	• Observe the appearance of rocks closely using a magnifying glass. • Make predictions for grouping rocks. • Record the drainage rate for different

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		soils in a bar chart. • Draw and label a diagram. Research - research how fossils are formed.
Animals including humans: Digestion and food • To describe the function of the human digestive system. • To know the main organs of the human digestive system (mouth, teeth, oesophagus, stomach, small and large intestine, rectum, anus). • To name and recognise the different types of human teeth and their functions. • To explain how to care for our teeth. • To describe the teeth of carnivores and herbivores and know why they are different. • To recognise producers, predators and prey in food chains and know their roles.	• Children become part of creating and modelling the digestive system. • Visit from a local dental nurse.	• Evaluate a model. • Observations of different teeth. • Group animals based on their diet. • Analyse patterns and form conclusions. Research - research different teeth
Energy: Electricity and circuits • To recognise how electrical appliances are powered. • To construct an electrical circuit. • To explain the use of switches in a circuit. • To explain the use of materials as electrical conductors and insulators. • To investigate what affects bulb brightness. • To explain how to be safe around electricity.	• Links with a local secondary school to build and test a range of circuits.	• Record and classify qualitative data. • Draw a scientific diagram. • Write a method.

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		• Pose questions and plan ways to test them. Comparative and fair test - Investigate which materials are conductors and which are insulators.

Year 5&6		
Materials: Mixtures and separation • To describe mixtures. • To explain the process of sieving. • To explain the process of filtering. • To describe solutions and how they can be identified. • To identify what factors, affect the time taken to dissolve. • To describe the process of evaporation.	• Create a water filter to be used on Flimby shore to separate the different materials in the sea. • Use a sieve to separate materials and mixtures on the shore.	• Research using a range of secondary resources. • Draw and annotate a diagram to explain sieving. • Make observations about solutions. • Plan a fair test with consideration of

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		variables and measurements. Pattern seeking - Patterns in time taken to dissolve sugar with different temperatures/different sizes of sugar/stirring, not stirring.
Materials: Properties and changes • To describe a broad range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets. • To demonstrate reversible changes. • To demonstrate irreversible changes.	• Investigate the best material to keep Flimby Teachers cup of tea warm.	• Plan and draw a table of results. • Write a prediction using prior knowledge of states of matter. • Analyse observations and use this to write a conclusion.
Forces and space: Earth and space • To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar System. • To describe the movement and shapes of the celestial bodies in our Solar System. • To describe the movement of the Moon relative to Earth. • To explain the causes of day and night and the seasons.	• Name and order the planets using an acrostic poem about Cumbria. • Observe the different seasons in the school yard and discuss what is	• Pose testable questions about the Solar System. • Develop a model to represent the Solar System.

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	causing this in terms of the tilt of Earth.	• Design and draw a table. • Draw a diagram to explain day and night. • Research planets in the Solar System. Research - research the distance between the planets and create a replica using models.
Animals including humans: Circulation and health • To identify factors that affect our health and how to reduce the negative impact. • To summarise the key structures and purpose of the circulatory system. • To identify the key roles of blood. • To investigate the relationship between exercise and heart rate.	• Dissect a heart with Netherhall science teacher.	• Evaluate sources of information. • Gather data and collate in a chart/line graph. Observing over time - How does your pulse alter after exercise?
Energy: Light and reflection • To describe the pathway of light. • To describe how we see. • To explain how shadows change. • Investigate what affects the angle of the reflected ray. • To explain how a periscope works. • To explain the purpose of mirrors.	• Teach EYFS children at Flimby about shadows.	• Use evidence to form conclusions. • Draw scientific diagrams. • Pose questions. • Record results as a line graph.

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		• Explore different jobs that depend on reflection Pattern seeking - investigating shadows of objects being the same shape as the objects.