Science Curriculum Cycle A

AUTUMN	KS1			LKS2			UKS2		
1	**Seasonal changes (Autumn)**	**National Curriculum Objectives** • observe changes across the four seasons • observe and describe weather associated with Autumn and how day length varies. **Key Learning** In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. The change in weather causes many other changes; some examples are numbers of minibeasts found outside, seed and plant growth, leaves on trees and type of clothes worn by people. **Key vocabulary** Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Applying (including enquiries)** Collect information about the weather regularly throughout the year Present this information in table and charts to compare the weather across the seasons Collect information, regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans Present this information in different ways to compare the seasons Gather data about day length regularly throughout the year and present this to compare the seasons Children will observe the frequency of animals/minibeasts in our outdoor areas (pond, moorland, forest, river) at different points in the season. This data can be shared within COGL. Through our Garden School curriculum, children will learn that different vegetables are planted at different times of the year.	Can name the four seasons and identify when in the year they occur. Can describe weather in different seasons over a year. Can describe days as being longer (in time) in the summer and shorter in the winter. Can describe other features that change through the year Use their evidence gathered to describe the general types of weather and changes in day length over the seasons. Use their evidence to describe some other features of their surroundings, themselves, animals, plants that change over the seasons Demonstrate their knowledge in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork	**Light**	**National Curriculum objectives:** • 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 a solid object. • Find patterns in the way that the size of shadows change. **Key Learning** 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. **Key vocabulary:** Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous **Applying (including enquiries)** Explore how different objects are more or less visible in different levels of lighting Explore how objects with different surfaces e.g. shiny vs matt are more or less visible Explore how shadows vary as the distance between a light source, an object or surface is changed Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground Choose suitable materials to make shadow puppets Create artwork using shadows	Can describe how we see objects in light and can describe dark as the absence of light Can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses Can define transparent, translucent and opaque Can describe how shadows are formed by objects blocking light. Can describe patterns in visibility of different objects in different lighting conditions and predict which will be more or less visible as conditions change Can clearly explain, giving examples, that objects are not visible in complete darkness Can describe and demonstrate how shadows are formed by blocking light Can describe, demonstrate and make predictions about patterns in how shadows vary	**Light**	**National Curriculum Objectives** • 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 **Key Learning** 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 vocabulary:** As for year 3 plus straight lines, light rays. **Applying (including enquiries)** Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card Explore the uses of the behaviour of light, reflection and shadows such as in periscope design, rear view mirrors and shadow puppets.	Can describe with diagrams or models as appropriate how light travels in straight lines either from sources or reflected from other objects into our eyes. Can describe with diagrams or models as appropriate how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape. Can explain how evidence from enquiries shows that light travels in straight lines Can predict and explain with diagrams or models as appropriate how the path of light rays can be directed by reflection to be seen, for example reflection in car rear view mirrors or in a periscope. Can predict and explain with diagrams or models as appropriate how the shape of shadows can be varied.
	KS1			**LKS2**			**UKS2**		

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2	**Everyday materials**	**National Curriculum Objectives** • 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 on the basis of their simple physical properties. **Key Learning** 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. **Key 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 **Applying (including enquiries)** Classify objects made of one material in different ways e.g. a group of objects made of metal Classify in different ways one type of object made from a range of materials e.g. a collection of spoons made of different materials Classify materials based on their properties Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters	Can label a picture or diagram of an object made from different materials Can describe the properties of different materials Can sort objects and materials using a range of properties Can choose an appropriate method for testing an object for a particular property Can use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent?	**States of Matter**	**National Curriculum Objectives** • 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 **Key Learning** 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 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 0°C. 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 100°C. 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. **Key vocabulary** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle **Applying (including enquiries)** Observe closely and classify a range of solids Observe closely and classify a range of liquids Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind Classify materials according to whether they are solids, liquids and gases Observe a range of materials melting e.g. ice, chocolate, butter Investigate how to melt ice more quickly Observe the changes when making rocky road cakes or ice-cream Investigating melting point of different materials e.g. ice, margarine, butter and chocolate Explore freezing different liquids e.g. tomato ketchup, oil, shampoo Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration)	Can create a concept map, including arrows linking the key vocabulary Can name properties of solids, liquids and gases Can give everyday examples of melting and freezing Can give everyday examples of evaporation and condensation Can describe the water cycle Can give reasons to justify why something is a solid liquid or gas Can give examples of things that melt/freeze and how their melting points vary From their observations, can give the melting points of some materials Using their data, can explain what affects how quickly a solid melts Can measure temperatures using a thermometer Can explain why there is condensation on the inside the hot water cup but on the outside of the icy water cup From their data, can explain how to speed up or slow down evaporation Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet	**Properties and Changes of Materials**	**National Curriculum Objectives** • 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 **Key Learning** 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. 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 vocabulary** Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material **Applying (including enquiries)** Investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate Investigate rates of dissolving by carrying out comparative and fair test	Can use understanding of properties to explain everyday uses of materials. For example, how bricks, wood, glass and metals are used in buildings Can explain what dissolving means, giving examples Can name equipment used for filtering and sieving Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving Can describe some simple reversible and non-reversible changes to materials, giving examples Can create a chart or table grouping/comparing everyday materials by different properties Can use test evidence gathered about different properties to suggest an appropriate material for a particular purpose Can group solids based on their observations when mixing them with water Can give reasons for choice of equipment and methods to separate a given solution or mixture such as salt or sand in water Can explain the results from their investigations involving dissolving and non-reversible change

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					Observe water evaporating and condensing e.g. on cups of icy water and hot water Set up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers Use secondary sources to find out about the water cycle			Separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton)	

Spring	KS1			LKS2			UKS2		
1	**Seasonal changes (Winter into Spring))**	**National Curriculum Objectives** • observe changes across the four seasons • observe and describe weather associated with spring and how day length varies. **Key Learning** In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. The change in weather causes many other changes; some examples are numbers of minibeasts found outside, seed and plant growth, leaves on trees and type of clothes worn by people. **Key vocabulary** Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Applying (including enquiries)** Collect information about the weather regularly throughout the year Present this information in table and charts to compare the weather across the seasons Collect information, regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans Present this information in different ways to compare the seasons Gather data about day length regularly throughout the year and present this to compare the seasons	Can name the four seasons and identify when in the year they occur. Can describe weather in different seasons over a year. Can describe days as being longer (in time) in the summer and shorter in the winter. Can describe other features that change through the year Use their evidence gathered to describe the general types of weather and changes in day length over the seasons. Use their evidence to describe some other features of their surroundings, themselves, animals, plants that change over the seasons Demonstrate their knowledge in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork	**Sound**	**National Curriculum Objectives** • 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. **Key Learning** A sound source 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 Vocabulary** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation **Applying (including enquiries)**	Can name sound sources and state that sounds are produced by the vibration of the object. Can state that sounds travel through different mediums such as air, water, metal Can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it Can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases Can explain what happens when you strike a drum or pluck a string and use a diagram to show how sounds travel from an object to the ear Can demonstrate how to increase or decrease pitch and volume using musical instruments or other objects Can use data to identify patterns in pitch and volume	**Evolution and inheritance**	**National Curriculum 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. **Key Learning** 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 vocabulary** Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Can explain the process of evolution Can give examples of how plants and animals are suited to an environment Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth Give examples of living things that lived millions of years ago and the fossil evidence we have to support this Can give examples of fossil evidence that can be used to support the theory of evolution (Fossil hunting at Runswick bay) Can identify characteristics that will make a plant or animal suited or not suited to a particular habitat Can link the patterns seen in the model to the real examples Can explain why the dominant colour of the peppered moth changed over a very short period of time

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		Children will observe the frequency of animals/minibeasts in our outdoor areas (pond, moorland, forest, river) at different points in the season. This data can be shared within COGL. Through our Garden School curriculum, children will learn that different vegetables are planted at different times of the year.			Classify sound sources Explore making sounds with a range of objects such as musical instruments and other household objects Explore how string telephones or ear gongs work Explore using objects that change in feature to change pitch and volume such as length of guitar string, bottles of water or tuning forks Measure sounds over different distances Measure sounds through different insulation materials	Can explain how loudness can be reduced by moving further from the sound source or by using a sound insulating medium		**Applying (including enquiries)** Design a new plant or animal to live in a particular habitat Use models to demonstrate evolution e.g. Darwin's finches bird beak activity Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution Make observations of fossils to identify living things that lived on Earth millions of years ago Identify features in animals and plants that are passed on to offspring Explore this process by considering the artificial breeding of animals or plants e.g. dogs Compare the ideas of Charles Darwin and Alfred Wallace on evolution Research the work of Mary Anning and how this provided evidence of evolution	
	KS1			**LKS2**			**UKS2**		
2	**Plants (year 2 Objectives)**	**National Curriculum Objectives:** • 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. **Key Learning** 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. Seeds and bulbs need to be planted outside at particular times of the 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. **Key vocabulary** As for year 1 plus - light, shade, sun, warm, cool, water, grow, healthy **Applying (including enquiries)** Make close observations of seeds and bulbs Classify seeds and bulbs Research and plan when and how to plant a range of seeds and bulbs Look after the plants as they grow – weeding, thinning, watering etc.	Can describe how plants that they have grown from seeds and bulbs have developed over time Can identify plants that grew well in different conditions Can spot similarities and difference between bulbs and seeds Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants	**Animals including humans (Y4 National Curriculum Objectives)**	**National Curriculum Objectives:** • 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 • construct and interpret a variety of food chains, identifying producers, predators and prey. **Key Learning** 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 anus when you go to the toilet. Humans have four types of teeth - incisors for cutting, canines for tearing, molars and premolars for grinding (chewing). Living things can be classified as producers, predators and prey according to their place in the food chain.	Can sequence the main parts of the digestive system Can draw the main parts of the digestive system onto a human outline Can describe what happens in each part of the digestive system Can point to the three different types of teeth in their mouth and talk about their shape and what they are used for Can name producers, predators and prey within a habitat Can construct food chains Can use diagrams or a model to describe the journey of food through the body explaining what happens in each part. Can record the teeth in their mouth (make a dental record) Can explain the role of the different types of teeth	**Animals including humans (Y6 National Curriculum Objectives)**	**National Curriculum Objectives** • 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 • describe the ways in which nutrients and water are transported within animals, including humans **Key Learning** 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 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.	Can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do Produces a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart Use the role play model to explain the main parts of the circulatory system and their role Can use subject knowledge about the heart whilst writing conclusions for investigations Can explain both the positive and negative effects of diet, exercise, drugs and lifestyle on the body Present information e.g. in a health leaflet describing impact of drugs and lifestyle on the body

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		Make close observations and measurements of their plants growing from seeds and bulbs Make comparisons between plants as they grow. See Garden School Curriculum.			**Key vocabulary** 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 **Applying (including enquiries)** Research the function of the parts of the digestive system Create a model of the digestive system using household objects Explore eating different types of food, to identify which teeth are being used for cutting, tearing and grinding (chewing) Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls Use food chains to identify producers, predators and prey within a habitat (pond/river/moor/forest) Use secondary sources to identify animals in a habitat and find out what they eat	Can explain how the teeth in animal skulls show they are carnivores, herbivores or omnivores. Can create food chains based on research		**Key vocabulary** Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle **Applying (including enquiries)** Create a role play model for the circulatory system Carry out a range of pulse rate investigations • Fair test – effect of different activities on my pulse rate • Pattern seeking – exploring which groups of people may have higher or lower resting pulse rates • Observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) • Pattern seeking – exploring recovery rate for different groups of people Learn about the impact of exercise, diet, drugs and lifestyle on the body. This is likely to be taught through direct instruction due to its sensitive nature	

SUMMER	KS1			LKS2			UKS2		
1	**Seasonal Changes**	**National Curriculum Objectives:** • observe changes across the four seasons – focus on returning migratory birds **Key Learning** In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. The change in weather causes many other changes; some examples are numbers of minibeasts found outside, seed and plant growth, leaves on trees and type of clothes worn by people. **Key vocabulary**	Can name the four seasons and identify when in the year they occur. Can describe weather in different seasons over a year. Can describe days as being longer (in time) in the summer and shorter in the winter. Can describe other features that change through the year Use their evidence gathered to describe the general types of weather and changes in day length over the seasons. Use their evidence to describe some other features of their surroundings, themselves, animals, plants that change over the seasons Demonstrate their knowledge in different ways e.g. making a	**Living things and their habitats**	**National Curriculum Objectives** • 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. **Key Learning** 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	Can name living things living in a range of habitats, giving the key features that helped them to identify them Can give examples of how an environment may change both naturally and due to human impact Can keep a careful record of living things found in different habitats throughout the year (diagrams, tally charts etc.) Can use classification keys to identify unknown plants and animals Can present their learning about changes to the environment in	**Living things and their habitats (Y5 National Curriculum Objectives)**	**National Curriculum Objectives** • 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. **Key Learning** 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 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	Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways Can present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game Can identify patterns in life cycles

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		Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length **Applying (including enquiries)** Collect information about the weather regularly throughout the year Present this information in table and charts to compare the weather across the seasons Collect information, regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans Present this information in different ways to compare the seasons Gather data about day length regularly throughout the year and present this to compare the seasons Children will observe the frequency of animals/minibeasts in our outdoor areas (pond, moorland, forest, river) at different points in the season. This data can be shared within COGL. Through our Garden School curriculum, children will learn that different vegetables are planted at different times of the year.	weather forecast video, writing seasonal poetry, creating seasonal artwork		human impact, such as setting up 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 **Key vocabulary** Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate **Applying (including enquiries)** Observe plants and animals in different habitats throughout the year (pond/river/moor/forest) Compare and contrast the living things observed Use classification keys to name unknown living things (pond/river/moor/forest) Classify living things found in different habitats based on their features Create a simple identification key based on observable features Use fieldwork to explore human impact on the local environment e.g. litter, tree planting (link to garden school curriculum) Use secondary sources to find out about how environments may naturally change Use secondary sources to find out about human impact, both positive and negative, on environments	different ways e.g. campaign video, persuasive letter		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. **Key vocabulary** Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings **Applying (including enquiries)** Use secondary sources and, where possible, first hand observations to find out about the life cycle of a range of animals Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth Look for patterns between the size of an animal and its expected life span Grow and observe plants that reproduce asexually e.g. strawberries, spider plant, potatoes Take cuttings from a range of plants e.g. African violet, mint (Garden School curriculum) Plant bulbs and then harvest to see how they multiply Use secondary sources to find out about pollination	Can compare two or more animal life cycles studied Can explain how a range of plants reproduce asexually (pond plants)
	KS1			**LKS2**			**UKS2**		
2	**Humans (year 1 National Curriculum Objectives)**	**National Curriculum Objectives** • 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 **Key Learning** Humans have keys 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. **Key vocabulary** Parts of the body including those linked to PSHE teaching (see joint document produced by the ASE and PSHE association)	Can play and lead 'Simon says'. During PE lessons, can follow instructions involving parts of the body Can label parts of the body on pictures and diagrams Can explore objects using different senses Can use first-hand close observations to make detailed drawings Can name body parts correctly when talking about measurements and comparisons 'My arm is x straws long.'		Spare half term to catch up. Check progress against Applying (including enquiries) National Curriculum Objectives and plan investigations to meet gaps.			Spare half term to catch up. Check progress against Applying (including enquiries) National Curriculum Objectives and plan investigations to meet gaps.	

Science Curriculum Cycle A

		Senses, touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue NB. Although we often use our fingers and hands to feel objects the children should understand that we can feel with many parts of our body **Applying (including enquiries)** Make first hand close observations of parts of the body e.g. hands, eyes Compare two people Take measurements of parts of their body Compare parts of their own body Look for patterns between people e.g. Do people with big hands have big feet? Classify people according to their features Investigate human senses e.g. Which part of my body is good for feeling, which is not? Which food/flavours (including foods grown in Garden School) can I identify by taste? Which smells can I match?	'My arm is x straws long and my leg is y straws long. My leg is longer than my arm.' 'We both have hands, but his are bigger than mine.' 'These people have brown eyes and these have blue.' Can talk about their findings from investigations using appropriate vocabulary 'My fingers are much better at feeling than my toes' 'We found that the crisps all taste the same.'						