

Ramshaw Primary School

KS1/KS2 Science Long Term Plan

Year Group / Cycle/	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KS1						
Year R/1/2 Cycle A	<p>Animals Including Humans (Y1) Animal Focus – Identifying Animals Know and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Know and name a variety of common animals that are carnivore, herbivore and omnivore. Know and name the structure of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What are the different types of animals? • How can we organise zoo animals? • What do animals eat? • Do amphibians have more in common with reptiles or fish? • Why do different types of animals look different? 	<p>Seasons Autumn and Winter (Y1) To know there are 4 seasons. To know the types of weather associated with seasons. To know how day length varies.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What happens in the different seasons? • How long is an Autumn day? • Chester Greenwood – Why do we wrap up warm in the winter? What is the best material for a pair of earmuffs? • Can you identify the signs of Autumn? (Autumn Walk) • How would you group these things based on which season you are most likely to see them in? • How do trees change over time? • Do trees with bigger leaves lose their leaves first in Autumn? • Where have the animals gone? 	<p>Every day materials (Y1) To know the difference between an object and the material it is made from. To know the names of a variety of everyday materials, including wood, plastic, metal, water and rock. Know the simple properties of everyday materials. Know how some materials can be grouped on the basis of their simple physical properties.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What are these materials? • What is it made from? • What are the physical properties of the materials? • Is it waterproof or absorbent? (Umbrella Investigation) • Which materials are the most flexible? • How would you sort these materials? 	<p>Seasonal Changes Spring and Summer (Y1) Know there are 4 seasons. Know the types of weather associated with seasons. Know how day length varies.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What is happening to the trees? • How does the weather change each season? • How much does it rain at Ramshaw? (Rain Gauge) • What are the signs of spring? (Spring Walk) • What is the weather like in spring? • How do I stay safe in the sun? 	<p>Plants (Y1) To know and name common wild and garden plants (including deciduous and evergreen trees). To know the basic structure of common flowering plants and trees.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • How does a bean grow? • What are these plants? (Wild Plant Walk) • How can we sort the leaves that we collected on our walk? • Do all plants look the same? • What plants can you find in our school? • Which tree has the biggest leaves? 	<p>Animals Including Humans (Y1) Human Focus – Senses To name the five senses and to perform simple tests to find out more about them.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What can you hear/taste/smell/see/touch? • How do we smell? (Linda Buck) ? • Is our sense of smell better when we can't see? • What are the names for all the parts of our body? <p>Scientists and Inventors (Y1) This unit focuses on famous scientists and inventors linked to the Year 1&2 curriculum.</p> <p>Who is Mae Jemison?</p> <p>What does a vet do?</p> <p>Who invented Lego?</p>
Year R/1/2 Cycle B	<p>Every day materials and their uses (Y2) Know the suitability of a variety of everyday materials (wood, metal, plastic, glass, brick, rock, paper and cardboard) for a particular use. Know that the shapes of solid objects can be changed by squashing, bending, twisting and stretching.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What are the uses of these materials? • What materials have been used in our area? (Outdoor Walk) • Which materials are the most suitable for..? (tents etc) • Which materials can change their shape? 	<p>Living Things and Their Habitat (Y2) Know the difference between things that are living, dead and things that have never been alive. Know that most living things live in a habitat to which they are suited. Know that different habitats provide the basic needs of different animals and plants. Know how plants and animals depend on each other. Know the names of plants and animals and their habitat (including micro-habitats)</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> • Can you group the things that are living, dead and have never been alive? • What are the inhabitants of this habitat? 	<p>Animals Including Humans (Y2) Human Focus – Growth and Survival Know that animals including humans have offspring that grow into adults. Know the basic needs of humans (water, food, air) Know that exercise, eating the right amounts of different foods and hygiene are important to humans.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What are the basic needs of animals/humans? • How do we get rid of germs? / What is the best way to clean our hands? 	<p>Animals Including Humans (Y2) Animal Focus Notice that animals, including humans, have offspring which grow into adults. Gathering and recording data to help in answering questions. Find out about and describe the basic needs of animals, for survival (water, food and air).</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • Can you match the offspring to the animal? • How does a tadpole change over time? • How do animals change as they grow into adults? (Life Cycles) • What do animals need to survive? 	<p>Plants (Y2) To know how seeds and bulbs grow into mature plants. Know that seeds need water, light, and warmth to grow and stay healthy.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What is the difference between a seed and a bulb? • What do plants need to grow? • What do crops need to grow • Which will grow faster a bulb or a seed? • Do cress seeds grow quicker inside or outside? 	<p>Environment (Y2) This Environment Unit introduces children to the ecological challenges that face the modern world. Children undertake a range of activities that challenge them to engage with environmental issues and to understand the simple changes we can make to live more sustainable lives.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> • What will happen to ice in the classroom? • Can you sort the materials to show what can be recycled? • How much energy is used in school?

	<ul style="list-style-type: none"> Which nappy soaks up the most water? Which shapes make the strongest paper bridges? Which material would be best for the roof of the little pig's house? 	<ul style="list-style-type: none"> Can you identify animals in their habitat? (Minibeast hunt) Would you find a lion in the arctic? (Global Habitats) Would we find the same minibeasts in a flowerbed and under a rock? What food chains are in our school grounds? 	<ul style="list-style-type: none"> How do we change as we grow up? (Human Life Cycles) What happens to my body when I exercise? What are the requirements of a healthy meal? Are the oldest children the fastest? 		<ul style="list-style-type: none"> How many different ways can you group these plants? (Outside Walk) 	<ul style="list-style-type: none"> Can we persuade people to use less? How much water can be saved by turning off the tap when brushing my teeth/washing my hands?
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LKS2

<p>Year 3/4 Cycle A</p>	<p>Forces and Magnets (Y3) To know that things move differently on different surfaces. To notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. To know some materials which are attracted to a magnet. To know that magnets have 2 poles. To know which poles will attract or repel</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> Which surface is the best to stop you slipping? Is the biggest magnet the strongest? Which materials are magnetic? How does a compass work? Can you sort materials into magnetic/non-magnetic? Are all metals magnetic? (Making a magnetic game) 	<p>Sound (Y4) Know that some sounds are made by something vibrating. Know that vibrations from sounds travel through a medium to the ear. Know that the pitch of a sound is affected by the features of the object that produced it.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> How are sounds made? How does sound travel? Can you group these sounds based on pitch? Can different sounds be made by different objects? How? What is the best material for ear defenders (soundproofing)? How does the volume of a drum change as you move further away from it? Is there a link between how loud it is school and the time of day? What are the parts of the ear? When is our classroom the quietest? 	<p>States of Matter(Y4) To compare and group materials together, according to whether they are solids, liquids or gases. To 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). To associate the rate of evaporation with temperature. To make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> Can you sort and describe the materials into solids, liquids and gases? What are the properties of gas? What is the water cycle? How does the mass of a block of ice/piece of chocolate affect how long it takes to melt? How does the surface area of a container of water affect how long it takes to evaporate? Does the temperature effect the time it takes for washing to dry? 	<p>Animals including humans (Y3) To know that animals, including humans: need the right type and amount of nutrition, cannot make their own food, get nutrition from what they eat. To know that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How can we group the food that we eat? How do the skeleton of different animals compare? Are foods that are high in energy always high in sugar? What parts of our body help us move? (Skeleton/Muscles) How does bending your elbow affect the circumference of your upper arm? Are bigger hands more effective in catching a ball? How does the skull circumference of a girl compare with a boy? 	<p>Light and Shadows To know that they need light in order to see things. To know that the dark is the absence of light. Know that light can be reflected from surfaces. To understand that light from the sun can be dangerous and that there are ways to protect their eyes. To know that shadows are formed when the light from a light source is blocked by a solid object. Know that there are patterns in the way that the size of shadows changes.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> Can we see without light? How do our shadows change over time? What happens when light is shone in the mirror? What are shadows? Which materials are opaque? (shadow puppets) How does the distance between the shadow puppet and the screen affect the size of the shadow? Which colours are the hardest to see in the dark? Which pair of sunglasses will be best at protecting our eyes? 	<p>Scientists and Inventors This unit focuses on famous scientists and inventors linked to the Year 3&4 curriculum.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> How do new plants arrive in the country? Who was Marie Curie? Who was George Washington Carver? What did Inge Lehman discover?
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<p>Year 3/4 Cycle B</p>	<p>Rocks, Fossils and Soils(Y3) To know how different rocks can be compared and grouped according to appearance and simple properties. To know that fossils are formed when things that have lived are trapped within rock. To know that soils are made from rocks and organic matter.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> How can I tell apart different types of rocks? Which type of rock is this? Which soil absorbs the most water? What happens to a dead animal over time? (fossil method- dog biscuit ASE) How are fossils made? Who was Mary Anning? How is soil formed? 	<p>Electricity (Y4) 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 some common conductors and insulators, and associate metals with being good conductors</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> How is electricity generated? Can you group these appliances based on the on the type of electricity they use? Which materials are conductors and which are insulators? Can you build a circuit? How do switches affect circuits? Which metal is the best conductor of electricity? How does the thickness of a conducting material affect how bright the lamp is? 	<p>Living things and their habitats To recognise that living things can be grouped in a variety of ways To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> Can you group these living things? Can you identify a vertebrate? Can you identify an invertebrate? How can we classify animals? What are the similarities between vertebrates and invertebrates? 	<p>Plants To know the functions of different parts of flowering plants: Roots, stem/trunk, leaves, flowers. To know the requirements of plants for life and growth: Air, Light, Water, Nutrients from soil, Room to grow. To know how water is transported in plants. To know the part played by flowers in the life cycle of a flowering plant (including pollinations, seed formation and seed dispersal).</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> What happens to celery when it is left in a glass of coloured water? How do flowers in a vase change over time? What colour plants do pollenating insects prefer? How many different ways can you group our seed collection? Which conditions help seeds germinate faster? Does the length of a carnation stem affect how long it takes for the food colouring to dye the petals? What is the life cycle of a flowering plant? 	<p>Animals including humans To describe the simple functions of the basic parts of the digestive system in humans To identify the different types of teeth in humans and their simple functions To construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> What are the names for all the organs involved in the digestive system? What are the similarities and differences with human and animal teeth? What can an animals teeth tell us about their digestion? How does an egg shell change when it is left in cola? - Tooth Decay Enquiry Who invented toothpaste? 	<p>Living Things and Their Habitats Environment Focus To recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>What are adaptations? Who was Gerald Durrell? (Madagascar in Danger)</p> <p>Which living things are affected by change in habitat?</p> <p>What lives in our local environment? (Local Habitat Survey)</p> <p>Can you name some positive and negative changes to the environment?</p>
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UKS2

<p>Year 5/6 Cycle A</p>	<p>Light (Y6) (Recovery Curriculum Autumn Cycle A – 2021) Recognise that light appears to travel in straight lines.</p> <p>Use the idea that light travels in straight lines to explain how objects are seen (because they give out or reflect light into the eye).</p> <p>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.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How does light help us see? 	<p>Properties and changes of materials (Y5) Compare and group together everyday materials based on 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.</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including</p>	<p>Earth and Space (Y5) Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> What is the Solar system? How does the Earth move? Do shadows change throughout the day? How does my shadow change over the day? Does the moon change shape? Why? 	<p>Living things and their habitats (Y5) Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> Do plants all reproduce in the same way? Describe the life process of reproduction in some plants and animals. What is the difference between the life cycles of a mammal, an amphibian, and insect and a bird? Compare this collection of animals based on similarities and differences in their life cycle. 	<p>Animals including humans (Y5) Describe the changes as humans develop to old age.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> What are the changes as humans develop from birth to old age? Can you identify all the stages in the human life cycle? How does age affect a human's reaction time? Are the oldest children always the tallest? Life process of reproduction in animals and plants (children research and create life cycle 	<p>Scientists and Inventors This unit focuses on famous scientists and inventors linked to the Year 5 curriculum.</p> <p>Key Questions – Suggestions</p> <ul style="list-style-type: none"> Who is David Attenborough? What is CSI? (School Visit) Who was Eva Crane?
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	<ul style="list-style-type: none"> Can you identify all the colours of light that make white light? Which materials are opaque? (shadow puppets) How would you organise these light sources into natural and artificial sources? <p>How does the angle that a light ray hits a plane mirror affect the angle at which it reflects the surface? Which pair of sunglasses will be best at protecting our eyes? How does a shadow change when the light source moves?</p> <ul style="list-style-type: none"> Is there a pattern to how bright it is in school over the day? Is it the same in every classroom? Why do shadows have the same shape as objects which cast them? 	<p>changes associated with burning and the action of acid on bicarbonate of soda</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> Can you group these materials based on whether they are transparent or not? What are reversible and irreversible change? How does the temperature of tea affect how long it takes for a sugar cube to dissolve? What material is the best electrical conductor? How does a nail in salt water change over time? 	<ul style="list-style-type: none"> Can you observe and identify all the phases in the cycle of the Moon? Is there a pattern between the size of a planet and the time it takes to travel around the sun? How are the Earth, Sun and Moon the same or different? How does the length of daylight hours change in each season? Would we still have seasons if the sun was switched off? 	<ul style="list-style-type: none"> Is there a relationship between a mammal's size and its gestation period? How does a bean change as it germinates? Which seed takes the longest time to fall? 	<p>presentation) -Puberty features for boys and girls</p>	
<p>Year 5/6 Cycle B</p>	<p>Forces (Y5) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> Can you label and name all the forces acting on objects in each of these situations? What affect does gravity have on objects? How does the surface area of a parachute affect the time it takes to fall to the ground? Which shoe is the most slippy? Do all objects fall through water in the same way? What are gears levers and pulleys? 	<p>Evolution and inheritance (Y6) 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.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How do fossils help us understand evolution? What is inheritance? (Mr Men) Who is Charles Darwin? Is there a pattern between the size and shape of a birds beak and the food they will eat? What is the most common eye colour in our class? How do animals adapt to their surroundings? (Peppered Moth) How are the skeletons of apes, humans and Neanderthals different? 	<p>Electricity (Y6) Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>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.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How would you group electrical components and appliances based on what electricity makes them do? How does the voltage of the batteries in a circuit affect the brightness of the lamp? Which type of fruit makes the best fruit battery? How has our understanding of electricity changed over time? 	<p>Living things and their habitats (Y6) 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.</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How would you make a classification key for vertebrates/ invertebrates or microorganisms? Which is the most common invertebrate on our school field? What happens to a piece of bread if you leave it on the windowsill for 2 weeks? What do different micro-organisms do? Are they always harmful? Do all flowers have the same number of petals? What are the reasons for classifying plants and animals? Who was Carl Linnaeus? (formal classification) 	<p>Animals including humans (Y6) Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Key Questions - Suggestions</p> <ul style="list-style-type: none"> How does the length of time we exercise affect our heart rate? Which type of exercise has the greatest effect on our heart rate? Are all drugs bad for you? What are the functions of the heart, blood vessels and blood? What ways are nutrients and water transported within animals, including humans? Which organs of the body make up the circulation system and where are they found? How can you help to keep your heart healthy? 	<p>Scientists and Inventors This unit focuses on famous scientists and inventors linked to the Year 5 curriculum.</p> <ul style="list-style-type: none"> Who is Steven Hawking? What did Libbie Lyman classify? How does diet affect the way the body functions? (Marie Maynard Daly) What is penicillin?

		<ul style="list-style-type: none"> • How do different animal embryos change? • How do living things change over time? • What information does a fossil provide? 			<ul style="list-style-type: none"> • What is the impact of diet, exercise, drugs and lifestyle on the way the body functions? • How does my heart rate change over the day? • How does the length of time we exercise for affect our heart rate? • Is there a pattern between what we eat for breakfast and how fast we can run? • Are the recovery rates for boys and girls the same? 	
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Scientific Enquiry

Comparative / fair testing

Changing one variable to see its effect on another, whilst keeping all others the same.



Research

Using secondary sources of information to answer scientific questions.



Observation over time

Observing changes that occur over a period of time ranging from minutes to months.



Pattern-seeking

Identifying patterns and looking for relationships in enquiries where variables are difficult to control.



Identifying, grouping and classifying

Making observations to name, sort and organise items.



Problem-solving

Applying prior scientific knowledge to find answers to problems.

