Ridgmont Lower School
Science Curriculum

Intent:

Children have lots of questions about the world around us and we aim to provide them with the necessary core scientific knowledge and investigative skills to answer their questions about those processes. Our curriculum provides a rich variety of learning enquiries that enable the learning of all the core scientific disciplines.

Implementation:

Science is carefully planned to allow links with other areas of the curriculum, allowing children to see how science affects everything in their world. All areas of science should be covered allowing children to acquire knowledge and make vital links which will allow them to be excellent scientists. Children will be encouraged to form their own questions where possible, which will be explored using a variety of investigative skills. They will become more familiar with each of the elements of the scientific method as they progress through the school. These include skills such as generating their own lines of inquiry, making predictions, fair testing, observing changes, overtime collecting results in a variety of ways, analysing results, drawing conclusions from their observations and evaluating their own method and the reliability of their results. Underpinning this is an emphasis on children actively participating in their own practical investigations and experiments, using the classroom and the wider school environment.

Impact:

Ridgmont Lower School will have scientists who:

- see themselves as scientists or engineers rather than passively observing
- recognise that their daily lives are shaped by science managing our health or understanding the need to recycle et cetera
- who ask challenging questions as they explore the world and form their own opinions
- ask questions, collect information, organise and test ideas, solve problems
- apply what they learn and make greater sense of their world increasingly shaped by science and technology
- develop the ability to communicate scientifically

National Curriculum Coverage

Early Years	Key Stage 1	Lower Key Stage 2
Understanding the world	**Working Scientifically** • Covered in all sub-topics **Plants** • Identifying Plants • Growing Seeds **Animals, including Humans`** • People & Pets • Wild & Wonderful Creatures **Everyday Materials** • Exploring Changes • Brilliant Builders **Seasonal Changes** • Wild Weather • Weather Art **Living Things and their Habitats** • Food Chains • Homes & Habitats **Uses of Everyday Materials** • Exploring Changes • Brilliant Builders	**Working Scientifically** • Covered in all sub-topics **Plants** • How Plants Grow **Animals, including Humans** • Health & Movement • Eating & Digestion **Rocks** • Rocks, Fossils & Soils **Light** • Light & Shadow **Forces and Magnets** **Living Things and their Habitats** • Living in Environments **States of Matter** **Sound** **Electricity** • Circuits & Conductors

Skills Progression (Bold, black subheadings apply to the National Curriculum from KS1)	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	Begin to ask simple questions. Begin to observe and comment on what has been noticed.	I can ask simple questions and recognise that they can be answered in different ways. I can observe closely. I can perform simple tests. I can identify and classify. I can use observation to suggest answers for questions.	I can ask simple questions and recognise that they can be answered in different ways. I can observe closely. I can perform simple tests. I can identify and classify. I can use observation to suggest answers for questions. I can gather and record data and use this to answer questions.	I can ask relevant questions and using different types of scientific enquiries to answer them. I can set up simple practical enquiries, comparative and fair tests. I can gather, record, classify and present data in a variety of ways to help in answering questions. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and	I can ask relevant questions and using different types of scientific enquiries to answer them. I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. I can gather, record, classify and present data in a variety of ways to help in answering questions. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts,	I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can report and present findings from enquiries, including	I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other

				conclusions. I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	and tables. I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. I can identify differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.	conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations identifying scientific evidence that has been used to support or Refute ideas or arguments	presentations identifying scientific evidence that has been used to support or refute ideas or arguments.
Plants **Y1, Y2 & Y3**	Begin to identify and name common plants. Begin to identify basic structure of plants.	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees.	I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I can investigate the way in which water is transported within plants I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Animals Including Humans **KS1 & 2**	Begin to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. To name basic body parts.	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	I can notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air). I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.	I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey.	I can describe the changes as humans develop to old age.	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe the ways in which nutrients and water are transported within animals, including humans. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
Everyday Materials **Y1** **Use of Everyday Materials** **Y2** **Properties and Changes of Materials** **Y5**	Begin to describe materials. Begin to identify what is similar and different between materials. Begin to choose materials for different purposes. Begin to look at the properties of materials.	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			I can 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. I can know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I can demonstrate that dissolving, mixing and changes of state are reversible changes I can 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.	
Seasonal Changes **Y1**	Begin to learn the four seasons and their order. Begin to understand the changes across the 4 seasons.	I can observe changes across the 4 seasons. I can observe and describe weather associated with the seasons and how day length varies.					
Living Things and their Habitats **Y2, Y4, Y5 & Y6**	Begin to look at the habitats of some indigenous animals.		I can explore and compare the differences between things that are living, dead, and things that have never been alive. I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic		I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	I can describe the differences in the life cycle of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.	I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organism, plants and animals. I can give reasons for classifying plants and animals based on specific characteristics.

			needs of different kinds of animals and plants, and how they depend on each other. I can identify and name a variety of plants and animals in their habitats, including microhabitats. I can 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.		I can recognise that environment can change and this can sometimes pose dangers to living things.		
Rocks **Y3**	To begin to understand what rocks are.			I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. I can recognise that soils are made from rocks and organic matter.			
Light **Y3 & Y6**	To begin to understand that light comes from the sun and other sources. Begin to understand what a shadow is and how it is formed.			I can recognise that we need light in order to see things and that dark is the absence of light. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object. I can find patterns in the way that the size of shadows changes.			I can recognise that light appears to travel in straight lines. I can 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. I can 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. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Forces & Magnets **Y3** **Forces** **Y5**	To explore magnets and their properties.			I can compare how things move on different surfaces. I can notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having 2 poles. I can predict whether 2 magnets will attract or repel each other, depending on which poles are facing.		I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	
States of Matter **Y4**	To understand when water freezes it becomes ice and when it melts it returns to its former state.				I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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). I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		
Sound **Y4**	To explore making sound using untuned percussion				I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.		
Electricity **Y4 & Y6**	To understand that for some things to work they require an external power source.				I can identify common appliances that run on electricity. I can construct a simple		I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.

					series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can 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. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I can recognise some common conductors and insulators, and associate metals with being good conductors.		I can 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. I can use recognised symbols when representing a simple circuit in a diagram.
Earth & Space Y5 Evolution and Inheritance Y6	To know that our solar system houses the Sun, Moon and stars. To understand that Earth is our home.					I can describe the movement of the earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth and Moon a approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	I can recognise that living things have changed over time and tat fossils provide information about living things that inhabited the earth millions of years ago. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

KS1

FIRST YEAR

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	**Animals Including Humans**	**Everyday Materials**	**Plants**		**Living Things & Their Habitats**	
Stimulus	**People & Pets**	**Exploring Changes**	**Identifying Plants**	**Growing Things**	**Food Chains**	**Habitats & Homes**
Working Scientifically Years 1 & 2	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Performing simple tests. Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.		Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Performing simple tests. Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.		
YEAR 1	To plan and carry out an observation in the school grounds. To ask questions about their findings and patterns. To make a visual record of their observations and annotate to show understanding and learning. To consider what a pet might need to be healthy and happy. To know and explain the terms 'carnivore', 'herbivore' and 'omnivore'.	To observe a block of ice and record the changes. To observe a block of ice and consider how to change its state. To understand water is a material.	To identify and name a variety of common wild and garden plants, including deciduous and evergreen. To identify and describe the basic structure of a variety of common flowering plants, including trees	To identify a range of edible plants To look at different types of potato and talk about similarities and differences. To know what is required for beans to grow. To discuss what might happen if cress is not allowed to grow in the ideal environment. Consider the differences between plants left in the optimum growing place and those not. To discuss their observations about cress plants and use scientific vocabulary.	To understand what a food chain is. Through observation, explore the differences between things that are living, dead and things that have never been alive. To understand that habitats can be small and local but also very extensive. To understand that food chains exist in watery habitats. To be able to describe how some animals obtain their food from plants and other animals.	To understand that growing conditions need to be right for plants to grow. To understand that different habitats provide for the basic needs of different kinds mini-beasts and plants. To understand the role farms play in the food chain. To understand that creating different micro-habitats will encourage a variety of creatures. To predict then observe what each micro-habitat will attract.
YEAR 2	To plan and carry out an observation in the school grounds. To ask questions and discuss their findings and patterns. To annotate drawing of their observations with scientific questions in order to develop lines of enquiry. To make comparisons between different pets' needs and requirements for health and happiness. To identify and name a variety of common animals that are carnivore, herbivore or omnivore.	To understand that water is a material land ice is water in a different state. To consider the questions: how does the appearance of ice change as it melts? How long will the block of ice last? What will happen if we put salt on it? To devise an investigation to melt the ice quickly or slowly. To talk and write about the best ways of observing and measuring how puddles change over time. Consider what makes a difference to how puddles dry up and the rate at which they do.	To be able to describe the features of different plants. To be able to identify similarities and differences between plants.	To identify a range of edible plants and predict what they will turn into when they are fully grown. To consider what actions need to be taken to ensure a healthy and bountiful crop of potatoes. To know what is required for beans to grow, record their growth and predict the outcome. To know that cress seeds need water and the right temperature. To record cress growth and predict how long it will take for the cress to grow long enough to eat. Consider and explain the differences between plants left in the optimum growing place and those not. To be able to talk about what the seed has produced	To understand and explain what a food chain is. Find and classify specimens into categories under these headings: living, dead and never been alive. To consider what makes each creature perfectly adapted to their habitat. To consider that creatures found in water are perfectly suited to their environment. To be able to describe and explain how some animals obtain their food from plants and other animals.	To understand that growing conditions need to be right for plants to grow and what those conditions are. To understand that different habitats provide for the basic needs of different kinds mini-beasts and plants and that they depend on each other. To understand the role farms play in the food chain and why they are important. To research which different micro-habitats will encourage which creatures. To predict then observe what each micro-habitat will attract and evaluate its effectiveness.
Vocabulary Technical	Notice Patterns Behaviour Prediction Habitat Living things	Observe Materials Properties Water Ice Melts	Similarities Differences Features Seed Plant Trunk	Grow Change Living Plant Leaf Weed	Dead Alive Features Food chain Predator Habitats	Wash Cook Growth Germination Planting

Topic Specific	Observation Happy Healthy Explore Investigate Observe Group Similarities difference	Damp Shady Dry Birds Fish Amphibians Reptiles Mammals Invertebrates		Frozen Absorbency Waterproof Strong Resist	Functions	Compost Leaf stem Magnifying glass Wild Deciduous Tree Flower Garden Soil Evergreen Root	Water Healthy Similar to Different from Warm Light Dry Warmth Wet	Chitting Seeds Garden Centre Moist Growth Germination Seed coat Bean Nutrients Stem Roots	Water	Dependence Savannah Rainforest Tundra Micro-habitat Ocean		Edible Mini-beasts Habitats Harvest Allotment Soil
Cross Curricular Links	❖ RE ❖ Computing ❖ DT		❖ RE ❖ Science		❖ RE ❖ Art		❖ RE ❖ Art		❖ Art		❖ Music ❖ DT	
Building on from…	✓ Recognise some environments are different to where they live ✓ Explore the natural world around them ✓ Describe what they see, hear and feel outside ✓ Know and talk about factors that support overall health and wellbeing ✓ Understand the effect of changing seasons on the natural world around them ✓ Explore the natural world around them											

KS1

SECOND YEAR

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	**Seasonal Changes**		**Everyday Materials**		**Animals Including Humans**	
Stimulus	**Wild Weather**	**Weather Art**	**Brilliant Builders #1**	**Brilliant Builders #2**	**Wild & Wonderful Creatures**	**Amazing Me!**
Working Scientifically Years 1 & 2	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Performing simple tests. Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.					
YEAR 1	To show their understanding by suggesting how to dress a teddy or doll appropriately for different weather conditions · To look at weather forecasts and the symbols used by forecasters. To learn about the weather for the season and consider if the weather they are expecting is typical. To understand more about the different seasons of the year, including the current season. To observe the weather outside and record in the classroom using symbols. To make and set up rainfall gauges up in the playground. To make predictions about how much rain will fall in the week and begin to look at how to record it. To make a wind sock to measure wind direction. To begin to record the direction of the wind and consider if it will change.	To learn about the weather for the season and consider if the weather they are expecting is typical or not. To understand more about the different seasons of the year, including the current season and name them in order. To make a wind sock to measure wind direction and reflect on how it can be improved upon from last time. To record the direction of the wind and consider if it will change. To talk about what wind is like and what happens when the wind is very strong. To make a bottle wind spiral and spinner to explore the strength of the wind in the playground. To understand that the spinner is best for measuring wind strength and explore the idea of recording the results. To explain what a light source is and the importance of the sun. To make a group sundial in and observe what happens. To talk about shadows being formed by something blocking a light source. To explore shadows further through the making of a shadow theatre performance.	To identify some of the materials in the classroom. To appreciate the usefulness of some materials (tables made of wood and metal, not jelly). To understand the difference between an object and the material from which it is made To understand that objects are made of different materials and they have simple properties. To know that there is a difference between an object and the material from which it is made. To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. To explore a variety of different magnets and objects. To consider questions such as: does everything made of metal stick to a magnet? To understand materials and their properties by sorting and classifying objects. To understand the properties of materials using terms such as: hard, soft, stretchy, stiff, bendy/floppy. To imagine and wonder at a world where a material property was missing, such as rigidity. To explore, and understand the properties of the different materials the Little Pigs used. To understand why some pigs may not choose to use bricks (more expensive, heavier, harder work to build with etc) and suggest successful alternatives based on previous learning. To explore and use materials to recreate the alternative story of the Three Little Pigs.	To consider the most suitable materials for fixing a torn umbrella, according to their properties. To understand, through exploration and investigation, that some materials are more suitable than others for mending an umbrella because of their physical properties. To understand and articulate their scientific reasoning for selecting and investigating certain materials. To consider and investigate the hypothesis "Hard materials cannot absorb water" and make predictions about different materials before testing them. To make decisions about how to record the results of the investigation in a clear way for others to follow. To create hypotheses and make predictions about the absorbency of different kitchen paper and disposable cloths. To investigate which papers are the most absorbent by choosing a method and working in a group. To understand that if a material does not absorb water, it is said to be waterproof. To investigate the absorbency of fabrics and the effect of adding a layer of wax crayon. To discuss the findings and consider the reasons for fabrics being waterproof. To discuss the difference between natural and man-made objects Explore the textures and appearance of the different items.	To identify a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates). To identify and discuss the characteristics of different animals. To categorise them according to those features and characteristics. To understand what they need to survive and what else they might need to be comfortable and happy. To discuss why they need certain things for survival, including food and water. To understand the basic needs and habitats of some wild animals. To discuss and plan together a mini-habitat for a plastic animal. To create a mini scene inside a plastic bottle, focusing on including predators, prey, places to hide and basic foods for the creatures included. To understand that animals, including humans, have offspring which grow into adults. To work together in teams to make a lift the flap information booklet to accompany the bottles. To collate and discuss knowledge and information about a range of African animals. To create a collective safari scene in a tray using craft and found materials. To share their work with their peers and use their imaginations to wonder. To understand the dangers and warnings associated with wild animal safaris.	To compare similarities and differences between present and past photos. To understand that we change over time. To play games to encourage understanding of the passing of time. To name parts of their bodies. To collect information about their bodies by observing, measuring and noticing patterns between hand and food size. Understand that we hear sounds with our ears and that hearing is one of our senses. Begin to understand that some factors affect the hearing of the whistle. To understand that we use our senses to classify things into groups. To sort produce by using their senses. To explore what is it like when the sense of sight is taken away. To design a balanced lunch box as a reminder of how much food from each food group is required. To make healthy sandwiches to pack in a picnic.
YEAR 2	To show their understanding by suggesting how to dress a teddy or doll appropriately for different weather conditions and explain their choices. To write phrases, using typical words used by weather forecasters. To learn about the weather for the season and consider if the weather they are expecting is typical or not. To understand more about the different seasons of the year, including the current	To learn about the weather for the season and consider if the weather they are expecting is typical or not and offer possible explanations. To understand more about the different seasons of the year, including the current season and name them in order and learn how to spell them. To make a wind sock to measure wind direction and reflect on how it can be improved upon from last time	To identify some of the materials in the classroom. To appreciate the usefulness of some materials (tables made of wood and metal, not jelly). To sort objects according to their properties, usefulness and other criteria. To understand that objects are made of different materials and they have simple properties; to	To consider the most suitable materials for fixing a torn umbrella, according to their properties. To understand that some properties make a material more suitable than others. To understand and explain, through exploration and investigation, that some materials are more suitable than others for	To identify a wider variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates). To identify and discuss the broader characteristics of different animals. To categorise them according to those features and characteristics and explain them. To understand and explain what they need to survive and what else they might need to	To compare similarities and differences between present and past photos. To understand that we change over time. To play games to encourage understanding of the passing of time. To observe changes over time between the baby photos and

	season and name them in order. To report on the weather they have observed and learn how to measure the temperature. To make and set up rainfall gauges up in the playground and determine where best to place the gauges. To make predictions about how much rain will fall in the week and record it. To make a wind sock to measure wind direction. To observe wind direction over time and notice any patterns between rainfall and wind.	and apply the improvements. To observe wind direction using a weather vane and compare the effectiveness of weather vane and wind sock. To talk about what wind is like and what happens when the wind is very strong. To make a bottle wind spiral and spinner to explore the strength of the wind in the playground. To identify whether the spinner or the bottle spiral is best for measuring wind strength and record the results. To explain what a light source is and the importance of the sun, giving examples. To make small sundials outside and explore to see if the right time can be achieved. Talk about why they work and why they are sometimes not effective. To present a demonstration to the class, using their shadow theatre characters and explaining how the shadows are formed.	be able to name some of those properties. To know that there is a difference between an object and the material from which it is made and explain those differences. To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. To begin to name a wider range of materials e.g. marble, sand, gold, clay. To explore a wider variety of different magnets and objects. To discuss the properties of metal objects and usefulness of magnets. To understand materials and their properties by sorting and classifying objects. To understand the properties of materials using terms such as: hard, soft, stretchy, stiff, bendy/floppy and match them to objects. To imagine and wonder at a world where a material property was missing, such as rigidity as explain its pitfalls. To predict which material will be the most successful for the Little Pigs and why. To understand why some pigs may not choose to use bricks (more expensive, heavier, harder work to build with etc) and suggest successful alternatives based on previous learning. To predict which material will be the most successful and why.	mending an umbrella because of their physical properties. To understand and articulate their scientific reasoning for selecting and investigating certain materials, rating them in order of preference. To consider and investigate the hypothesis "Hard materials cannot absorb water" and make predictions about different materials before testing them. To record the results of the investigation in a clear way for others to follow. To create hypotheses and make predictions about the absorbency of different kitchen paper and disposable cloth; to explain what a *hypothesis* is. To investigate which papers are the most absorbent by choosing a method and discussing this as part of a group, putting forward an argument if necessary. To understand that if a material does not absorb water, it is said to be waterproof. To investigate the absorbency of fabrics and the effect of adding a layer of wax crayon. To discuss the findings and explain the reasons for fabrics being waterproof. To understand and sort the objects into natural and man-made and observe any similarities and differences between the two groups. Explore the textures and appearance of the different items and share their observations.	be comfortable and happy. To discuss why they need certain things for survival, including food, water, shelter and clothing. To understand the basic needs and habitats of a wider range of wild animals. To plan a mini-habitat for a plastic animal. To create a mini scene inside a plastic bottle, focusing on including predators, prey, places to hide and basic foods for the creatures included. To understand that animals, including humans, have offspring which grow into adults. To work together in teams to make a lift the flap information booklet to accompany the bottles making sure grammar and spelling choices are appropriate. To collate and discuss knowledge and information about a wide range of African animals. To create a collective safari scene in a tray using craft and found materials. To share their work with their peers and use their imaginations to wonder and ask questions. To understand and explain the dangers and warnings associated with wild animal safaris.	current ones. To name parts of their bodies. To collect information about their bodies by observing, measuring and noticing patterns between hand and food size. To consider a number of ways to present the data and their conclusions. Understand that we hear sounds with our ears and that hearing is one of our senses. Begin to understand that some factors affect the hearing of the whistle. To explore the extension question: do hoods make a difference to hearing? To understand that we use our senses to classify things into groups. To sort produce by using their senses. To classify foods using a Venn diagram. To explore what is it like when the sense of sight is taken away. To understand that often our senses work together to help us explore the world. To design a balanced lunch box as a reminder of how much food from each food group is required. To make healthy sandwiches to pack in a picnic and explain why the fillings are considered 'healthy'.
Vocabulary Technical **Topic Specific**	Warm Cold Clothing Summer Autumn Winter Spring Seasons Day Night Length Change Light Dark Weather Wind Direction Pattern Rain Snow Storm Thunder Lightning Cloudy Forecast Shadow Rainfall Precipitation Data Gauge	Warm Cold Summer Autumn Winter Spring Seasons Direction Sun Change Light Dark Rain Snow Storm Thunder Lightning Wind strength Light source Shadow length	Useful Rough Smooth Flat Bumpy Sharp Blunt Wood Metal Plastic Glass Rock Materials Properties Magnetic Non-magnetic Metal	Breaks Tears Strong Weak Hypothesis Waterproof Absorbent Materials Properties Absorbency	Group Water Food Air Breathing Babies Adults Birds Fish Reptiles Mammals Invertebrates Classify Carnivore Herbivore Omnivore Basic needs Survival Habitats Offspring	Centimetre Millimetre Ear Hearing Touch Sight Smell Hear Taste Sense Fuit Vegetables Bread Rice Potatoes Pasta Milk Dairy Meat Fish Eggs Beans Compare Describe Similar Different Notice patterns Measure Record Predict Gather Senses Spotting patterns Foods high in fat Foods high in sugar
Cross Curricular Links	❖ DT ❖ History ❖ Geography	❖ Music ❖ Geography ❖ History	❖ History ❖ DT	❖ History ❖ DT	❖ Computing	❖ PSHE ❖ Art ❖ DT ❖ Maths
What comes next..?	Pupils will be enabled and supported to broaden their scientific view of the world around them. This will be done through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. Children will ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.					

LKS2

FIRST YEAR

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	**Rocks**	**States of Matter**	**Plants**	**Living Things and their Habitats**		
Stimulus	**Rocks**	**States of Matter**	**How Plants Grow**	**Living in Environments**	**Scientists & Inventors**	**Reduce, Reuse, Recycle**
Working Scientifically Years 3 & 4	Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Reporting on findings from enquiries, including oral and	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Reporting on findings from enquiries, including oral and written	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Identifying differences, similarities or changes related to simple scientific ideas and processes.	Asking relevant questions and using different types of scientific enquiries to answer them. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Identifying differences, similarities or changes related to simple scientific ideas and processes. Identifying differences, similarities or changes related to simple scientific ideas and processes.	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

	Using straightforward scientific evidence to answer questions or to support their findings.	written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes.	explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward scientific evidence to answer questions or to support their findings.			Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward scientific evidence to answer questions or to support their findings.
YEAR 3	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rocks and organic matter.	With support, begin to compare and group materials together, according to whether they are solids, liquids or gases. With support, begin 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). With support, begin to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. To 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. To investigate the way in which water is transported within plants. To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	With support, recognise that living things can be grouped in a variety of ways. With support, begin to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. With support, begin to recognise that environments can change and that this can sometimes pose dangers to living things.	To further 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. To identify that humans have skeletons for support, protection and movement. To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties and explain the groups' properties. To describe how fossils are formed when things that have lived are trapped within rock.	With support, recognise that environments can change and that this can sometimes pose dangers to living things. To further 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.
YEAR 4	To compare and group together different kinds of rocks on the basis of their appearance and physical properties. To describe how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rocks and organic matter. To suggest how soil samples could be ordered.	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 identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	To identify and describe in increasing detail, the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. To explore and explain 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. To investigate and record the way in which water is transported within plants. To explore and explain the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	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. To recognise that environments can change and that this can sometimes pose dangers to living things.	To further explore and explain 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. To understand that humans have skeletons for support, protection and movement. To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties and explain the groups' properties. To describe and explain how fossils are formed when things that have lived are trapped within rock.	To recognise that environments can change and that this can sometimes pose dangers to living things. To explore, explain and describe 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.
Vocabulary Technical **Topic Specific**	Characteristics Criteria Justify Identify Compare Evaluate Observe Fossils Permeable Categories Manmade Erosion Samples Rode Soil Naturally occurring Fossilised remains Continuous cycle Decaying organis matter	Mercury Particles Freezing point Temperature Gas Expand Compressed Resistance Liquid Evaporate Pour Boiling point Solid Water cycle Anders Celsius 1701-1744 Thermometer Volcano Precipitation Lava Available space Degrees Fahrenheit Degrees Celsius Daniel Gabriel Fahrenheit 1686-1736 Properties condensation	Identify Absorbed Transported Functions Diagram Features Distributed Appearance Light Investigations Observe Describe Explain Sunlight Roots Ovaries Pollination Capillary action Leaves Stages Food source Life cycle Experiment Air Record finding Seed formation Draw conclusions Reproduce Dissecting	Identify Positive Criteria Conditions Characteristics Protect Environments Explore Negative Carroll diagram Observations Vertebrates Fish Reptiles Venn diagram Organisms Sources Mammals Invertebrates Plants Birds Classify Habitats Human behaviour Amphibians Insects Classification keys Human impact Sustain	Plant Grow Crops Water Requirements Air Movement Support Heat Explore Light Protection Soil Liquid Reflect Image Circuit Force Power Battery Discovery Expedition Radiation Agriculture Geology Botanist Element Chemistry X-ray Strata Fossil Sedimentary Bones Physics Nutrients Crop rotation Solid Concave Convex Magnet Core Seismology Electromagnet Field Inventor Rays Magma Molten Earthquake Circuit Continent	Waste Reduce Reuse Recycle Pollution Renewable Non-renewable Biodegradable Sustainable Landfill Decompose Biodiversity Greenhouse gas Greenhouse effect Climate change Carbon footprint
Cross Curricular Links	❖ Maths ❖ Computing ❖ Art ❖ DT	❖ Maths ❖ History	❖ Geography ❖ Art ❖ DT ❖ RE	❖ Maths ❖ PSHE	❖ History	❖ History ❖ RE ❖ PSHE
Building on from…	✓ Developing scientific skills including observation, prediction and experimentation ✓ Life processes and living things ✓ Materials and their properties ✓ Physical processes					

LKS2

SECOND YEAR

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	**Light**	**Sound**	**Forces & Magnets**	**Electricity**	**Animals Including Humans**	
Stimulus	**Light & Shadow**	**Sound**	**Forces & Magnets**	**Circuits & Conductors**	**Health & Movement**	**Eating & Digestion**
Working Scientifically Years 3 & 4	Using straightforward scientific evidence to answer questions or to support their findings.	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests.	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful	Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers	Asking relevant questions and using different types of scientific enquiries to answer them. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Recording findings using simple

		Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Using straightforward scientific evidence to answer questions or to support their findings.	observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Using straightforward scientific evidence to answer questions or to support their findings.	and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes.	scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward scientific evidence to answer questions or to support their findings.
YEAR 3	To recognise that they need light in order to see things and that dark is the absence of light. To notice that light is reflected from surfaces. To recognise that light from the sun can be dangerous and that there are ways to protect their eyes. To recognise that shadows are formed when the light from a light source is blocked by a solid object. To find patterns in the way that the size of shadows change.	To begin to identify how sounds are made, associating some of them with something vibrating. With support, recognise that vibrations from sounds travel through a medium to the ear. With support, find patterns between the pitch of a sound and features of the object that produced it. With support, find patterns between the volume of a sound and the strength of the vibrations that produced it. To begin to recognise that sounds get fainter as the distance from the sound source increases.	To begin to identify how sounds are made, associating some of them with something vibrating. With support, recognise that vibrations from sounds travel through a medium to the ear. With support, find patterns between the volume of a sound and the strength of e vibrations that produced it. To begin to recognise that sounds get fainter as the distance from the sound increases.	With support, identify common appliances that run on electricity. In a group, construct a simple series electrical circuit, identifying and naming some of its basic parts, including cells, wires, bulbs, switches and buzzers. With support, 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. With support, recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. With support, recognise some common conductors and insulators, and associate metals with being good conductors.	To identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food, they get nutrition from what they eat. To identify that humans and come other animals have skeletons and muscles for support, protection and movement.	With support, describe the simple functions of the basic parts of the digestive system in humans. With support, begin to identify the different types of teeth in humans and their simple functions To construct a variety of food chains, identifying producers, predators and prey.
YEAR 4	To understand that they need light in order to see things and that dark is the absence of light. To notice and explain that light is reflected from surfaces. To recognise that light from the sun can be dangerous and describe in what ways eyes can be protected. To recognise and demonstrate that shadows are formed when the light from a light source is blocked by a solid object. To find and describe patterns in the way that the size of shadows change.	To identify how sounds are made, associating some of them with something vibrating. To recognise that vibrations from sounds travel through a medium to the ear. To find patterns between the pitch of a sound and features of the object that produced it. To find patterns between the volume of a sound and the strength of the vibrations that produced it. To recognise that sounds get fainter as the distance from the sound source increases.	To identify how sounds are made, associating some of them with something vibrating. To recognise that vibrations from sounds travel through a medium to the ear. To find patterns between the volume of a sound and the strength of e vibrations that produced it. To recognise that sounds get fainter as the distance from the sound increases.	To identify common appliances that run on electricity. To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. To 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. To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. To recognise some common conductors and insulators, and associate metals with being good conductors.	To identify, understand and explain that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food, they get nutrition from what they eat. To identify that humans and some other animals have skeletons and muscles for support, protection and movement, and give examples.	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.
Vocabulary Technical **Topic Specific**	Recognise Identify Describe Sort Dangerous Protect Benefits Dangers Skin Eyes Suncream Test Investigate Formed Explore Record investigations Darkness Absence of light Light sources Sun UV light SPF Relevant observations Shadows Transparent Translucent Opaque Position Predict Findings Bar graph Reflected Surfaces Mirrors Reflective materials Decorations	Low High Solid Liquid Distance Gas Pitch Sound-proofing Vibrating Sources Vibrate Resonant Vibrations Fainter Muffle Sound Air column Transmit Volume	Predict Conclusions Observations Forces Push Pull Force meter Newton Same poles Strength of magnets Contact Magnet Opposite poles Compass Magnetic Same poles	Discuss Danger Construct Predict Appliances Electricity Batteries Plugs Energy Potential hazards Mains Circuit Components Single Multiple Conductor Insulator Device	Healthy Investigation Pictogram Growth Energy Protected Support Nutrition Herbivore Carnivore Varied diet Balanced diet Omnivore Invertebrates Muscles Skeleton Food groups Bar graphs Vertebrates	Identify Classify Similarities Differences Construct Interpret Functions sources Carnivores Herbivores Omnivores Diets Organisms Food chains Producer Consumer Digestive system Organs
Cross Curricular Links	❖ DT ❖ Music ❖ History	❖ Music ❖ Computing	❖ Computing	❖ Computing ❖ DT ❖ PE ❖ PSHE	❖ Computing ❖ Maths ❖ DT	❖ DT ❖ French ❖ Art ❖ Geography ❖ PSHE
What comes next..?	Please refer to your child's chosen middle school for a detailed breakdown of how the statutory aspects of UKS2 Science will be covered.					