

Science Curriculum Knowledge Progression Overview

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <ul style="list-style-type: none"> draw and label parts of their body; describe activities that use each of the five senses; sort animals into simple groups, including groups based on animal diets; describe animal bodies using relevant vocabulary; understand the difference between carnivores, herbivores and omnivore; identify and classify animals by suggesting groups that they belong to 	<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <ul style="list-style-type: none"> Say how an animal will change as it grows. Say the three things that humans need, to stay alive Give examples of healthy and less healthy food. Draw an animal as a baby and then as an adult. Name the different stages in the human timeline. Set up a simple test. Collect and interpret results. Say the three things that humans need, to stay alive Say how an animal gets air, food and water. Research the answer to a question. Say what is healthy about their diet. Say how they could improve their diet. Give a reason why humans need to exercise. Name one effect that exercise has on the human body. Record information about exercise. Use information to answer questions. Give reasons why humans should keep themselves clean 	<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 identify that humans and some other animals have skeletons and muscles for support, protection and movement. <ul style="list-style-type: none"> Explain the different ways that plants and animals including humans obtain food. Explain the difference between food groups and nutrient groups. Explain what the right type and amounts of nutrition are for human beings as well as some of the consequences related to eating the wrong type of diet. Use the scientific names for the main bones in the human body and explain how the skeleton protects, supports and helps the body to move. Set up a simple practical enquiry and write an explanation for their findings. 	<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Generate relevant scientific questions. Identify differences related to scientific ideas. Make predictions and suggest equipment. Make careful observations, record findings using labelled diagrams and use results to make predictions for new values. Identify parts of the digestive system. Match the parts of the digestive system with their functions. Match the types and functions of teeth. Construct and interpret a food chain. 	<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age. <ul style="list-style-type: none"> Compare and present data using bar and line graphs. Report findings in oral form. Order the stages of human development. Demonstrate understanding of how babies grow in height. Describe the main changes that occur during puberty. Explain the main changes that take place in old age. Compare graph types and select which is most appropriate for my data. Analyse and report findings in written explanations. Name the 6 stages of human development. Give reasons why changes occur during puberty. Explain the changes that occur during stages of human development. Analyse the similarities and differences between how boys and girls experience puberty. 	<p style="text-align: center;">Animals Including Humans</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Demonstrate prior knowledge of systems within the human body. Explain the specific functions of the lungs in the circulatory system. Understand the processes of how water and nutrients are transported in the body. State the beneficial impact of a healthy diet and exercise on the human body. Describe how smoking cigarettes impacts negatively on the body. Decide on the most appropriate type of investigation for their question. Take repeat readings if necessary. Report the degree of trust they have in their results.
<p style="text-align: center;">Plants</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees identify and describe the basic structure of a variety of common 	<p style="text-align: center;">Plants</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p style="text-align: center;">Plants</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, 			

<p>flowering plants, including trees.</p> <ul style="list-style-type: none"> • Write instructions to describe how to plant a bean. • Identify some garden plants that they see in photographs. • Name some garden plants from memory. • Identify some common plants in the wild. • Label the parts of a plant. • Sort leaves into groups of deciduous and evergreen. • Collect information on a Wild Plant Hunt. • Generate questions about plants. • Measure the growth of a bean plant with a ruler. • Use their observations to give reasons for their answers to questions. <p>Introduction</p>	<p>and stay healthy.</p> <ul style="list-style-type: none"> • Label the main parts of plants and trees • Describe the stages in the life cycle of a plant. • Explain that plants need water, light and a suitable temperature to grow well. • Make observational drawings of plants. • Measure the growth of plants with a ruler. • Record the growth of my plants in a bar chart. • Use observations to explain how we can tell that plants are living things. • Set up a simple comparative test. • Make a simple prediction. 	<p>light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <ul style="list-style-type: none"> • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. • Explain the functions of the different parts of plants. • Set up an investigation and make predictions. • Make observations and conclusions. • Identify different parts of a flower. • Identify and describe the stages of the life cycle of flowering plants. • Be able to answer questions based on their learning. 			
	<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • 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. • Explain some of the life processes. • Ask questions to decide if a thing is living, dead or has never been alive. • Identify some plants and animals in global habitats. • Draw a map of a local habitat. • Sort objects into categories and give reasons for their choices. • Identify and name minibeasts in 		<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. • Generate criteria to use to sort living things. • Sort living things into a Venn diagram. • Sort living things into a Carroll diagram. • Use questions to sort animals using a key. • Use a key to identify invertebrates by looking at their characteristics. • Use the characteristics of living things to sort them using a classification key. • Show the characteristics of living things in a table. • Create a classification key. • Identify dangers to wildlife in the local and wider environment. • Record observations in a table. • Write a report. 	<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. • Explain the function of the parts of a flower. • Give two differences between sexual and asexual reproduction. • Identify the features of plants pollinated by insects or the wind. • Describe the stages of sexual reproduction. • Describe the differences between the three types of mammals. • Give four facts about Jane Goodall. • Describe the stages of the life cycles of mammals, birds, insects and amphibians. • Identify similarities and differences between the life cycles of different plants and animals. 	<p>Living things and their habitats Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics. • Identify inherited traits and adaptive traits. • Understand that adaptations are random mutations. • Examine fossil evidence supporting the idea of evolution. • Identify the difference between selective and cross-breeding. • Identify inherited traits and adaptive traits. • Understand that adaptations are random mutations. • Examine fossil evidence supporting the idea of evolution. • Identify the difference between selective and cross-breeding.

	<p>microhabitats.</p> <ul style="list-style-type: none"> • Gather and record information. • Suggest how an animal is able to survive in their habitat. • Answer questions about habitats they have researched. • Explain why the animals in a habitat need the plants. • Draw a simple food chain. 		<ul style="list-style-type: none"> • Present findings to the class. 		
					<p>Evolution and Inheritance</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • Identify inherited traits and adaptive traits. • Understand that adaptations are random mutations. • Examine fossil evidence supporting the idea of evolution. • Identify the difference between selective and cross-breeding. • Develop an understanding of the development of evolutionary ideas and theories over time. • Explain how human evolution has occurred and compare modern humans with those of the same genus and family. • Understand that adaptation and evolution is not a uniform process for all living things. • Give examples of selective and crossbreeding.
<p>Everyday Materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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, 	<p>Uses of Everyday Materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses 	<p>Rocks</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things 	<p>States of Matter</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 	<p>Properties and changes of materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity 	

<p>water, and rock</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Distinguish between an object and the material it is made from. Make a prediction. Perform simple tests. Use their observations to answer simple questions. Sort objects 3 ways. 	<ul style="list-style-type: none"> find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <ul style="list-style-type: none"> Compare the uses of different everyday materials. Compare the suitability of different everyday materials. Explain the basic progress of recycling. Explain the advantages of recycling. 	<p>that have lived are trapped within rock</p> <ul style="list-style-type: none"> recognise that soils are made from rocks and organic matter. <ul style="list-style-type: none"> Children will be able to give examples of natural and human-made rocks. They will be able to group rocks by their properties and identify simple similarities and differences. Children will be able to explain the difference between a bone and a fossil. They will be able to explain, using simple scientific language, how soil is formed. They will make and record observations accurately. 	<p>or research the temperature at which this happens in degrees Celsius (°C)</p> <ul style="list-style-type: none"> identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <ul style="list-style-type: none"> Describe the properties of solids, liquids and gases. Explain that melting and freezing are opposite processes that change the state of a material. Identify the melting and freezing point of several different materials. Explain that heating causes evaporation and cooling causes condensation. Explain that evaporation and condensation are opposite processes that change the state of a material. Explain that the higher the temperature, the quicker water evaporates. Explain what happens to water at the different stages of the water cycle. Make observations and conclusions. Be able to answer questions based on their learning. 	<p>(electrical and thermal), and response to magnets</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> Follow instructions to test a material's properties. Explain the uses of thermal and electrical conductors and insulators. Order materials according to their electrical conductivity. Explain and investigate dissolving. Explain the processes used to separate mixtures. Explain irreversible changes. Identify the variables in an investigation. Make observations and conclusions. Be able to answer questions based on their learning. 	
<p>Seasonal Changes Autumn/Winter Pupils should be taught to:</p> <ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. <ul style="list-style-type: none"> name the four seasons name different types of weather make observations about the weather describe the weather associated with each season 		<p>Light Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Sound Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Earth and Space Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the movement of the Earth, and other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night 	<p>Light Pupils should be taught to:</p> <ul style="list-style-type: none"> 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

<ul style="list-style-type: none"> • collect and record simple data • make simple observations about changes across the seasons 		<p>light source is blocked by an opaque object</p> <ul style="list-style-type: none"> • find patterns in the way that the size of shadows change. • Understand that dark is the absence of light. • Set up an investigation and make predictions. • Understand how surfaces reflect light. • Recognise that a mirror appears to reverse an image. • Identify some parts of the eye. • Understand how the Sun can damage parts of the eye. • Identify opaque, translucent and transparent objects. • Know how shadows change size. 	<p>strength of the vibrations that produced it</p> <ul style="list-style-type: none"> • recognise that sounds get fainter as the distance from the sound source increases. • Explain how sound sources vibrate to make sounds. • Explain how vibrations change when the loudness of a sound changes. • Explain how sounds travel to reach our ears. • Describe the pitch of a sound. • Describe patterns between the pitch of a sound and the features of the object that made the sound. • Explain how sound travels through a string telephone. • Identify the best material for absorbing sound. • Create a musical instrument that can play high, low, loud and quiet sounds. • Make observations and conclusions. • Be able to answer questions based on their learning 	<p>and the apparent movement of the sun across the sky.</p> <ul style="list-style-type: none"> • Describe the Sun, Earth and Moon as spherical. • Name the planets in the solar system independently. • Distinguish between heliocentric and geocentric ideas of planetary movement. • Explain that day and night is due to rotation of the Earth. • Support the idea that different places on Earth experience night and day at different times with evidence. • Report and present findings from enquiries. • Explain how the Moon moves relative to the Earth. 	<p>our eyes</p> <ul style="list-style-type: none"> • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. • Explain how light travels to enable us to see. • Understand that all objects reflect light. • Identify the angles of incidence and reflection. • Understand refraction as light bending or changing direction. • Explain how a prism allows us to see the visible spectrum. • Understand that colours are a result of light reflecting off an object. • Explain Isaac Newton's experiments about light and colour. • Understand how shadows change size. • Understand that shadows are the same shape as the object that casts them. • Make observations and conclusions. • Be able to answer questions based on their learning.
<p>Seasonal Changes Spring/Summer Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies. • Interpret simple data. • Name an event or occasion which happens in each season. • Describe how day length varies between two seasons. • Make a more detailed comparison between two seasons. 		<p>Forces and Magnets Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing. • Identify the type of force required to carry out an action. • Investigate the force of friction 	<p>Electricity Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors. • They will learn to identify electrical and nonelectrical appliances. • They will be able to explain, with 	<p>Forces Pupils should be taught to:</p> <ul style="list-style-type: none"> • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. • identify and explain the different forces acting on objects; • explain Newton's role in discovering gravity; • accurately measure an object's weight and mass; • explain how to increase the effects of air resistance; • explain Galileo's 'Tower of Pisa' experiment into gravity and air 	<p>Electricity Pupils should be taught to:</p> <ul style="list-style-type: none"> • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram. • know the main circuit symbols and use these to draw circuit diagrams • explain how our understanding of electricity has changed over time • draw circuit diagrams using the correct symbols and label the voltage correctly • decide which variables to control while planning an investigation • decide how to report their findings • make new predictions based on

		<p>produced by different surfaces.</p> <ul style="list-style-type: none"> • Explain that magnets produce an invisible pulling force. • Identify magnetic materials. • Identify different types of magnet. • Investigate the strength of different magnets. • Identify when magnets will repel or attract based on their poles. • Construct a bar chart of their results. • Explain their predictions and conclusions using key words or prompts. 	<p>support, how a circuit works.</p> <ul style="list-style-type: none"> • Children will be able to name at least two electrical conductors and insulators. • They will be able to create a simple series circuit both with and without a switch. • They will be able to accurately record their findings in a table. • Sort appliances based on whether they use mains or batteries. • They will be able to explain how a switch turns the electric current on and off. • Children will be able to report their findings and conclusions orally. 	<p>resistance;</p> <ul style="list-style-type: none"> • identify streamlined shapes; • explain how friction is used in brake pads; • investigate the effects of friction; • explain how different mechanisms work; • design their own mechanism to achieve a given purpose; • identify the variables in an investigation; • make observations and conclusions; • be able to answer questions based on their learning 	<p>the previous results</p> <ul style="list-style-type: none"> • select an appropriate scientific enquiry
<p>Working Scientifically</p> <ul style="list-style-type: none"> • use their senses to perform simple tests • gather and record information and use it to answer a puzzle • Collect information on a Wild Plant Hunt. • Measure the growth of a bean plant with a ruler • Use their observations to give reasons for their answers to questions. • make observations about the weather • collect and record simple data • make simple observations about changes across the seasons 	<p>Working Scientifically</p> <ul style="list-style-type: none"> • Set up a simple test. • Collect and interpret results. • Research the answer to a question. • Record information about exercise 	<p>Working Scientifically</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • 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 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 	<p>Working Scientifically</p>	<p>Working Scientifically</p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and 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. 	<p>Working Scientifically</p>

		<p>processes</p> <ul style="list-style-type: none">• using straightforward scientific evidence to answer questions or to support their findings.			
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