

Science Curriculum Knowledge Progression Summary

Year A	Classes 2 and 3					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Animals Including Humans	Seasonal Changes	Everyday Materials	Rocks	Plants	Plants
Key Knowledge	<p>Knows and can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals e.g. cat, robin, adder, frog, salmon.</p> <p>Knows and can identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>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</p>	<p>Knows when each of the four seasons occurs</p> <p>Knows what the features of autumn are and what happens to trees in this season</p> <p>Knows that days are longer in summer (sunshine hours) than in winter</p> <p>Observe changes across the four seasons Knows about and can describe weather in different seasons over a year.</p> <p>Knows and can describe the features of different seasons and how they change through the year.</p>	<p>Distinguish between an object and the material from which it is made</p> <p>Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Knows why and how the properties of materials make them particularly useful for specific purposes (for example, stone is a hard, heavy and durable material so is useful for construction of buildings).</p> <p>Know how the properties of a material can make it useful for a range of different purposes (for example, plastic is waterproof so it can be used to coat fabric for clothing but can also be used for outdoor play equipment)</p> <p>Knows that different materials can share the same properties (for example glass and plastic can both be transparent).</p>	<p>Rock is a naturally occurring material. There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties.</p> <p>Rocks can be hard or soft. They have different sizes of grain or crystal.</p> <p>Rocks can be different shapes and sizes (stones, pebbles, boulders) and some absorb water.</p> <p>Knows, in simple terms, how fossils are formed when things that have lived are trapped within rock.</p> <p>Knows that soils are made from rocks and organic matter</p>	<p>Knows and can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>Knows and can identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>Knows that plants may grow from either seeds or bulbs.</p> <p>Knows that seeds and bulbs can germinate and then grow into seedlings and then continue to grow into mature plants.</p> <p>Knows that mature plants may have flowers which then develop into seeds, berries and fruits etc.</p> <p>Knows that seeds and bulbs need to be planted at particular times of the year and will germinate and grow at different rates.</p> <p>Knows that some plants are better suited to growing in full sun and some grow better in partial and full shade.</p> <p>Knows that plants need water, light and a suitable temperature to grow and stay healthy</p>

Year A	Classes 4 and 5					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Animals Including Humans	Electricity	Earth and Space	Living Things and Their Habitats	Animals Including Humans	Light
Key Knowledge	<p>Knows the basic parts of the digestive system in humans.</p> <p>Knows and can identify the different types of teeth in humans and their simple functions.</p> <p>Knows which organisms are producers, predators and prey and apply to the construction and interpretation of food chains.</p>	<p>Knows that the brightness of a bulb, or the volume of a buzzer, correlates with the voltage of cells used in the circuit.</p> <p>Knows and can give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Knows the effect of adding more components to a circuit with one cell and the effect of adding multiple cells</p> <p>Knows and can use the recognised symbols to represent a simple circuit in a diagram.</p>	<p>The Sun is a star. It is at the centre of our solar system. There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits.</p> <p>Earth takes 365¼ days to complete its orbit around the Sun.</p> <p>The Earth rotates (spins) on its axis every 24 hours.</p> <p>As Earth rotates half faces the Sun (here it is day) and half is facing away from the Sun (night). As the Earth rotates the Sun appears to move across the sky.</p> <p>The Moon orbits the Earth. It takes about 28 days to complete its orbit.</p> <p>The Sun, Earth and Moon are approximately spherical.</p>	<p>Knows that living things can be grouped in a variety of ways.</p> <p>Knows and can name living things in a range of habitats.</p> <p>Knows and can relate the key adaptational features of an organism to the known features of its habitat.</p> <p>Knows and can give examples of how an environment may change both naturally and due to human impact.</p>	<p>Can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way the body functions</p> <p>Knows and can describe the way in which nutrients and water are transported within animals, including humans</p>	<p>Light appears to travel in straight lines</p> <p>Knows and can explain that objects are seen because they give out or reflect light into the eye</p> <p>Knows and 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.</p> <p>Knows and can explain, with reference to how light travels, why shadows have the same shape as the objects that cast them</p>

Year B	Classes 2 and 3					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Animals Including Humans	Animals Including Humans	Everyday Materials	Living Things and Their Habitats	Plants	Forces and Magnets
Key Knowledge	<p>Can describe how animals including humans have offspring which grow into adults, using the appropriate names for the stages</p> <p>Knows that to survive animals need sunlight, water, air, food and a suitable habitat (including shelter for protection from predators and the environment.</p> <p>Knows that exercise is important to humans and can explain why.</p> <p>Knows the different food groups and the benefits of each as part of a healthy, balanced diet</p> <p>Knows which food groups common foods belong to.</p> <p>Knows about general hygiene and its importance and can state examples of hygienic practice.</p>	<p>Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need.</p> <p>Food contains a range of different nutrients that are needed by the body to stay healthy – carbohydrates including sugars, protein, vitamins, minerals, fibre, fat, sugars, water.</p> <p>A piece of food will often provide a range of nutrients.</p> <p>Humans and some other animals have skeletons and muscles which help them move and provide protection and support</p>	<p>Distinguish between an object and the material from which it is made</p> <p>Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Knows why and how the properties of materials make them particularly useful for specific purposes (for example, stone is a hard, heavy and durable material so is useful for construction of buildings).</p> <p>Know how the properties of a material can make it useful for a range of different purposes (for example, plastic is waterproof so it can be used to coat fabric for clothing but can also be used for outdoor play equipment)</p> <p>Knows that different materials can share the same properties (for example glass and plastic can both be transparent).</p>	<p>Knows and can explain the differences between things that are living, dead, and things that have never been alive</p> <p>Knows that most living things live in habitats to which they are suited</p> <p>Knows and can describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Knows and can name a variety of plants and animals in their habitats, including micro-habitats</p> <p>Knows and can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and make the different sources of food.</p>	<p>Knows and can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Knows 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.</p> <p>Knows through investigation, the ways in which water is transported within plants</p> <p>Knows the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Knows that friction affects the way that things move on different surfaces</p> <p>Knows that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Knows that magnets attract or repel each other and attract some materials and not others</p> <p>Knows and can describe magnets as having two poles</p> <p>Knows whether two magnets will attract or repel each other, depending on which poles are facing.</p>

Year B	Classes 4 and 5					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Animals Including Humans	Living Things and Their Habitats	Forces	Evolution and Inheritance	States of Matter	Properties and Changes of Materials
Key Knowledge	<p>Knows the stages of growth and development in humans.</p> <p>Knows the stages in the gestation period of humans and can compare them to other animals.</p> <p>Recognises the stages of development during childhood and understand the needs of children at those stages.</p> <p>Understands the initial changes inside and outside of the body during puberty.</p> <p>Knows the changes that occur during puberty and how they differ for boys and girls.</p> <p>Understands how the body changes during adulthood and old age.</p>	<p>Plants can be divided broadly into two main groups – flowering plants and nonflowering plants.</p> <p>Living things can be formally grouped according to characteristics.</p> <p>Animals can be divided into two main groups – vertebrates and invertebrates.</p> <p>Each group has common characteristics.</p>	<p>Knows that unsupported objects fall to Earth because of the force of gravity acting between the earth and the falling object</p> <p>Knows and can identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Knows that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>All living things have offspring of the same kind. The offspring are not identical to their parents and vary.</p> <p>Plants and animals have characteristics that make them suited (adapted) to their environment.</p> <p>If the environment changes rapidly some variations may not suit the new environment and will die. If it changes slowly, animals and plants with variations that are best suited survive and reproduce.</p> <p>Over a very long period of time these characteristics may be so different that a new species is created. This is evolution.</p> <p>Fossils give us evidence of what lived on the Earth millions of years ago scientists such as Darwin and Wallace observed how living things adapt to different environments</p>	<p>The particles in a solid are tight and compact, with no room to move.</p> <p>The particles in a liquid are still close together but can move around slightly.</p> <p>The particles in a gas can move very quickly as they are spread out over an area.</p> <p>A solid, in some cases, can change to a liquid when heated but can change from a liquid to a solid when cooled.</p>	<p>Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.</p> <p>Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.</p> <p>Mixtures can be separated by filtering, sieving and evaporation.</p> <p>Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.</p>

Year C	Classes 2 and 3					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Animals Including Humans	Light	Uses of Everyday Materials	Living Things and Their Habitats	Plants	Animals Including Humans
Key Knowledge	<p>Knows and can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals e.g. cat, robin, adder, frog, salmon.</p> <p>Knows and can identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>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</p>	<p>Knows that light is needed to see things and that dark is the absence of light</p> <p>Knows that light is reflected from surfaces</p> <p>Knows that light from the sun can be dangerous and that there are ways to protect the eyes</p> <p>Knows that shadow are formed when the light from a light source is blocked by an opaque object.</p> <p>Knows and can explain some of the reasons why the size of shadows changes.</p> <p>Knows how the shadows of transparent, opaque and translucent materials vary.</p>	<p>Knows and can explain why some materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard are particularly suited to specific purposes</p> <p>Knows how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p> <p>Knows the difference between materials that are transparent, translucent and opaque.</p>	<p>Knows and can explain the differences between things that are living, dead, and things that have never been alive</p> <p>Knows that most living things live in habitats to which they are suited</p> <p>Knows and can describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Knows and can name a variety of plants and animals in their habitats, including micro-habitats</p> <p>Knows and can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and make the different sources of food.</p>	<p>Knows and can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Knows 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.</p> <p>Knows through investigation, the ways in which water is transported within plants</p> <p>Knows the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Can describe how animals including humans have offspring which grow into adults, using the appropriate names for the stages</p> <p>Knows that to survive animals need sunlight, water, air, food and a suitable habitat (including shelter for protection from predators and the environment.</p> <p>Knows that exercise is important to humans and can explain why.</p> <p>Knows the different food groups and the benefits of each as part of a healthy, balanced diet</p> <p>Knows which food groups common foods belong to.</p> <p>Knows about general hygiene and its importance and can state examples of hygienic practice.</p>

Year C	Classes 4 and 5					
½ Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Living Things and Their Habitats	Electricity	Properties and Changes of Materials	Sound	Living Things and Their Habitats	States of Matter
Key Knowledge	<p>Recognise the stages of growth and development in humans.</p> <p>Describe the process of asexual reproduction in plants.</p> <p>Describe the process of sexual reproduction in animals.</p> <p>Observe and compare the life cycles of animals in our local environment with other animals around the world.</p> <p>Compare how different animals reproduce and grow.</p> <p>Find out about the work of naturalists.</p>	<p>Can identify and name appliances that require electricity to function</p> <p>Knows the basic parts of a circuit, including cells, wires, bulbs, switches and buzzers</p> <p>Knows that for an appliance to work within a circuit, it has to be part of a complete loop with a battery.</p> <p>Knows that a switch in a circuit is a temporary break in an otherwise 'complete circuit'.</p> <p>All metals conduct electricity but some, such as aluminium and titanium, are relatively poor conductors.</p> <p>Knows the recognised symbols used to represent components of a circuit and uses these to represent a circuit pictorially.</p>	<p>Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.</p> <p>Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.</p> <p>Mixtures can be separated by filtering, sieving and evaporation.</p> <p>Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.</p>	<p>Knows how sounds are made, associating some of them with vibrating.</p> <p>Knows how sound travels from a source to our ears. Knows the correlation between pitch and the object.</p> <p>Knows the correlation between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Know that sounds get fainter as the distance from the sound source increases.</p>	<p>Taxonomist would start by classifying objects or living things into two large groups.</p> <p>Linnean system was created by Carl Linnaeus as a standard system of classifying animals.</p> <p>The Linnean system was made up of three areas: archaea, bacteria, eukarya.</p> <p>Microorganisms are tiny living things which are not visible to the naked eye.</p>	<p>Knows how to distinguish between a solid, liquid and gas.</p> <p>Knows that some materials change state when they are heated or cooled.</p> <p>Knows the temperatures at which ice, water and water vapour change state.</p> <p>Knows the part played by evaporation and condensation in the water cycle.</p>