

Science Progression of Knowledge by Year

	EYFS
Seasons	<p>Know and name the four seasons. Know it is hot in summer and cold in winter. Know we celebrate Christmas in Winter. Know we go on summer holidays in Summer. And, from Development Matters/Understanding the World Talk about what they see, using a wide vocabulary (3-4) Know that some trees lose their leaves in Autumn. Know that some plants grow in spring. Explore the natural world around them (4-5) Describe what they see, hear and feel when outside (4-5) Recognise some environments are different from the one in which they live (4-5) Understand the effect of the changing seasons on the natural world around them (4-5)</p>
Plants	<p>Know what a plant is, Know some common garden plants. Know what happens to leaves in winter. And, from Development matters/Understanding the World Plant seeds and care for growing plants (3-4) Understand the key features of the life cycle of a plant and an animal (3-4) Begin to understand the need to respect and care for the natural environment and all living things (3-4) Explore the natural world around them (4-5) Understand the effect of the changing seasons on the natural world around them (4-5) Explore the world around them, making observations and drawing pictures of animals and plants (ELG)</p>
Animals inc Humans	<p>Know there are five senses and can name them. Know they use their eyes to see and their ears to hear. Know they can feel objects and describe by touch. Know how to describe an object using all five senses. Know that we keep some animals as pets. Know the names of some pets. Know some ways of looking after pets. Know that some animals live in the wild Know what a fish is. Know what mammal is. Know what a bird is. And, from Development Matters/Understanding the World Understand the key features of the life cycle of a plant and an animal (3-4) Explore the natural world around them (4-5)</p>
materials	<p>Children should: Know what some common items are made from. Know how to describe some materials. Know what makes things float and sink. And, from Development matters/Understanding the World Explore collections of materials with similar and/or different properties (3-4) Talk about what they see, using a wide vocabulary (3-4) Explore and talk about different forces they can feel (3-4) Talk about different materials and the changes they notice (3-4) Explore the natural world around them (4-5)</p>

	Year 1
Seasonal changes	<p>Know how to observe changes across the four seasons. Know how to name the four seasons in order. Know how to observe and describe weather associated with the seasons. Know how to observe and describe how day length varies. Know how to observe features in the environment and explain that these are related to a specific season. Know how to observe and talk about changes in the weather. Know how to talk about weather variation in different parts of the world. Know how to talk about what they: see, touch, smell, hear or taste. Know how to use simple equipment to help them make observations.</p>
Plants	<p>Know how to describe and name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant. Know how to identify and name a range of common plants and trees. Know how to name the trunk, branches and root of a tree. Know how to discuss what they can see, touch, smell, hear or taste. Know how to begin to describe what each part of a plant does. (e.g. roots, stem, leaves, petals, pollen) on a range of plants.</p>
Animals inc humans	<p>Know how to identify some of the differences between different animals. Know how to identify living and non-living things. Know how to identify and name a variety of common animals. Know how to describe how an animal is suited to its environment. Know how to explain what they have found out. Know how to identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p>

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	<p>Know how to identify and classify things they observe.</p> <p>Know how to give a simple reason for their answers.</p> <p>Know how to discuss what they can see, touch, smell, hear or taste.</p> <p>Know how to begin to classify animals according to number of given criteria.</p> <p>Know how to point out differences between living and non-living things.</p> <p>Know how to name the parts of the human body and link them to their senses.</p> <p>Know how to name the parts of an animal's body.</p> <p>Know how to name a range of domestic animals.</p> <p>Know how to compare the bodies of different animals.</p> <p>Know how to name some parts of the human body that cannot be seen.</p> <p>Know how to say why certain animals have certain characteristics.</p> <p>Know how to name a range of wild animals.</p> <p>Know how to give a simple reason for their answers.</p> <p>Know how to identify and classify things they observe.</p>
materials	<p>Know how to distinguish between an object and the material from which it is made.</p> <p>Know how to describe materials using their senses, using specific scientific words.</p> <p>Know how to explain what material objects are made from.</p> <p>Know how to explain why a material might be useful for a specific job.</p> <p>Know how to name some different everyday materials. e.g. wood, plastic, metal, water and rock</p> <p>Know how to sort materials into groups by a given criterion.</p> <p>Know how to explain how solid shapes can be changed by squashing, bending, twisting and stretching.</p> <p>Know how to perform a simple test.</p> <p>Know how to tell other people about what they have done.</p> <p>Know how to talk about what they <see, touch, smell, hear or taste>.</p> <p>Know how to describe things that are similar and different between materials.</p> <p>Know how to explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate.</p> <p>Know how to explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate.</p> <p>Know how to use simple equipment to help them make observations.</p> <p>Know how to identify and classify things they observe.</p>

	Year 2
Seasons	<p>Know how plants change according to the season on why this happens.</p> <p>Know how the weather changes from season to season.</p> <p>Know how daylight changes across the seasons</p>
Plants	<p>Know what plants need to survive.</p> <p>Know how to observe and describe how seeds and bulbs grow into mature plants.</p> <p>Know how to investigate and describe the impact of removing light, soil or water from a growing or germinating plant.</p> <p>Know some deciduous and non-deciduous trees!</p> <p>Know the difference between trees and plants.</p> <p>Know changes over time.</p> <p>Know how to suggest how to find things out.</p> <p>Know how to use prompts to find things out.</p>
Animals inc, humans	<p>Know how to describe what animals need to survive.</p> <p>Know how to explain that animals grow and reproduce.</p> <p>Know how to explain why animals have offspring which grow into adults.</p> <p>Know how to describe the life cycle of some living things. (e.g. egg, chick, chicken)</p> <p>Know how to explain the basic needs of animals, including humans for survival. (water, food, air)</p> <p>Know how to describe why exercise, balanced diet and hygiene are important for humans.</p>
Living things and habitats	<p>Know how to match certain living things to the habitats they are found in.</p> <p>Know how to explain the differences between living and non-living things.</p> <p>Know how to describe some of the life processes common to plants and animals, including humans.</p> <p>Know how to describe how a habitat provides for the basic needs of things living there.</p> <p>Know how to describe how some animals get their food using basic food chains.</p> <p>Know how to describe how plants and animals are suited to their habitat.</p> <p>Know how habitats might change over the seasons.</p> <p>Know how to name some characteristics of an animal that help it to live in a particular habitat.</p> <p>Know how to describe what animals need to survive and link this to their habitats.</p>
materials	<p>Know how to describe the simple physical properties of a variety of everyday materials.</p> <p>Know how to compare and group together a variety of materials based on their simple physical properties.</p> <p>Know how to explore how the shapes of solid objects can be changed ((squashing, bending, twisting, stretching)</p> <p>Know how to identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses.</p> <p>Know how to explain how materials are changed by heating and cooling.</p> <p>Know how to describe the properties of different materials using words like, transparent or opaque, flexible, etc..</p> <p>Know how to sort materials into groups and say why they have sorted them in that way.</p> <p>Know how to say which materials are natural and which are manmade.</p> <p>Know how to explain how materials are changed by bending, twisting and stretching.</p> <p>Know how to tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted.</p> <p>Know how to use - see, touch, smell, hear or taste - to help them answer questions.</p>

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	Year 3
Plants	<p>Know how to identify and describe the functions of different parts of flowering plants. (roots, stem/trunk, leaves and flowers)</p> <p>Know how to explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow).</p> <p>Know how to investigate the way in which water is transported within plants.</p> <p>Know how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Know how to classify a range of common plants according to many criteria (environment found, size, climate required, etc.).</p>
Animals inc, humans	<p>Know how to explain the importance of a nutritionally balanced diet.</p> <p>Know how to describe how nutrients, water and oxygen are transported within animals and humans.</p> <p>Know how to identify that animals, including humans, cannot make their own food: they get nutrition from what they eat.</p> <p>Know how to describe and explain the skeletal system of a human.</p> <p>Know how to explain how the muscular and skeletal systems work together to create movement.</p> <p>Know how to classify living things and non-living things by a number of characteristics that they have thought of.</p> <p>Know how to explain how people, weather and the environment can affect living things.</p> <p>Know how to explain how certain living things depend on one another to survive</p>
Light	<p>Know that they need light in order to see things.</p> <p>Know how to recognise that dark is the absence of light.</p> <p>Know how to notice that light is reflected from surfaces.</p> <p>Know how to recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Know how to recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Know how to find patterns in the way that the size of shadows changes.</p> <p>Know how to explain the difference between transparent, translucent and opaque.</p> <p>Know how to set up a simple fair test to make comparisons.</p> <p>Know how to describe what they have found using scientific language.</p> <p>Know how to record their observations in different ways. - labelled diagrams, charts etc.</p> <p>Know how to say what happens to the electricity when more batteries are added.</p> <p>Know how to explain why their shadow changes when the light source is moved closer or further from the object.</p>
Rocks and soils	<p>Know how to compare and group together different rocks on the basis of their appearance and simple physical properties.</p> <p>Know how to describe and explain how different rocks can be useful to us.</p> <p>Know how to describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Know how to describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed.</p> <p>Know how to recognise that soils are made from rocks and organic matter.</p> <p>Know how to classify igneous and sedimentary rocks.</p> <p>Know how to begin to relate the properties of rocks with their uses.</p>

	Year 4
Animals inc humans	<p>Know how to identify, name and describe the functions of the basic parts of the digestive system in humans.</p> <p>Know how to identify the simple function of different types of teeth in humans.</p> <p>Know how to compare the teeth of herbivores and carnivores.</p> <p>Know how to identify, construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Know how to identify differences, similarities or changes related to simple scientific ideas or processes.</p> <p>Know how to classify living things and non-living things by a number of characteristics that they have thought of.</p> <p>Know how to explain how people, weather and the environment can affect living things.</p> <p>Know how to explain how certain living things depend on one another to survive.</p>
Living things and habitats	<p>Know how to recognise that living things can be grouped in a variety of ways.</p> <p>Know how to classify and identify into broad groups.</p> <p>Know how to explore and use a classification key to group, identify and name a variety of living things. (plants, vertebrates, invertebrates)</p> <p>Know that environments can change and this can sometimes pose a danger to living things.</p> <p>Know how to explain how environmental changes an impact has on living things.</p> <p>Know how to give reasons for how they have classified animals and plants, using their characteristics and how they are suited toto the environment.</p> <p>Know how to explore the work of pioneers in classification. (e.g. Carl Linnaeus)</p> <p>Know how to name and group a variety of living things based on feeding patterns. (producer, consumer, predator r, prey, herbivore, carnivore, omnivore).</p>
States of matter	<p>Know how to compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Know how to explain what happens to materials when they are heated or cooled.</p> <p>Know how to measure or research the temperature at which different materials change state in degrees Celsius.</p> <p>Know how to describe how materials change state at different temperatures.</p> <p>Know how to use measurements to explain changes to the state of water.</p> <p>Know how to explain everyday phenomena including the water cycle.</p> <p>Know how to group and classify a variety of materials according to the impact of temperature on them.</p> <p>Know how to explain what happens over time to materials such as puddles on the playground or washing hanging on a line.</p>
Sound	<p>Know how to describe a range of sounds and explain how they are made.</p> <p>Know how to associate some sounds with something vibrating.</p> <p>Know how to compare sources of sound and explain how the sounds differ.</p> <p>Know how to explain how to change a sound (louder/softer).</p> <p>Know how to recognise how vibrations from sound travel through a medium to an ear.</p>

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	<p>Know how to describe the relationship between the pitch of the sound and the features of its source/object that produces it.</p> <p>Know how to find patterns between the volume of the sound and the strength of the vibrations that produced it, and the distance of the source.</p> <p>Know how to investigate how different materials can affect the pitch and volume of sounds.</p> <p>Know how to explain why sound gets fainter or louder according to the distance.</p> <p>Know how to explain how pitch and volume can be changed in a variety of ways.</p> <p>Know how to work out which materials give the best insulation for sound.</p>
Electricity	<p>Know how to identify common appliances that run on electricity.</p> <p>Know how to construct a simple series electric circuit.</p> <p>Know how to identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers.</p> <p>Know how to recognise symbols to represent simple series circuit diagrams.</p> <p>Know how 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.</p> <p>Know how to recognise that a switch opens and closes a circuit.</p> <p>Know how to associate a switch opening with whether or not a lamp lights in a simple series circuit.</p> <p>Know how to recognise some common conductors and insulators.</p> <p>Know how to associate metals with being good conductors.</p> <p>Know how to explain how a bulb might get lighter.</p> <p>Know how to recognise if all metals are conductors of electricity.</p> <p>Know how to work out which metals can be used to connect across a gap in a circuit.</p> <p>Know how to explain why cautions are necessary for working safely with electricity.</p>

	Year 5
Animals inc, humans	<p>Know how to describe the changes as humans develop to old age.</p> <p>Know how to use basic ideas of inheritance, variation and adaptation to describe how living things have changed over time.</p> <p>Know how to create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies.</p> <p>Know how to describe the changes experienced in puberty.</p> <p>Know how to draw a timeline to indicate stages in the growth and development of humans.</p>
Living things and habitats	<p>Know how to describe the differences in the life cycles of a mammal, amphibians, an insect and a bird.</p> <p>Know how to identify the reproductive processes of some animals.</p> <p>Know how to describe the life cycles of common plants.</p> <p>Know how to observe their local environment and draw conclusions about life cycles, e.g. plants in the vegetable garden or flower border.</p> <p>Know how to compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests.</p>
Materials	<p>Know how to compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Know how to explain how some materials dissolve in liquid to form a solution.</p> <p>Know how to explain what happens when dissolving occurs.</p> <p>Know how to use their knowledge of solids, liquids and gases to decide and describe how mixtures might be separated, including through filtering, sieving, evaporating.</p> <p>Know how to give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Know how to demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Know how to 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.</p> <p>Know how to use the terms 'reversible' and 'irreversible'.</p> <p>Know how to explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda.</p> <p>Know how to explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton).</p> <p>Know how to describe methods for separating mixtures. (filtration, distillation)</p> <p>Know how to work out which materials are most effective for keeping us warm or for keeping something cold.</p> <p>Know how to use their knowledge of materials to suggest ways to classify. (solids, liquids, gases)</p>
Earth and Space	<p>Know how to identify and explain the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>Know how to explain how seasons and the associated weather is created.</p> <p>Know how to describe and explain the movement of the Moon relative to the Earth.</p> <p>Know how to describe the sun, earth and moon as approximately spherical bodies.</p> <p>Know how to use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Know how to compare the time of day at different places on the earth.</p> <p>Know how to create shadow clocks.</p> <p>Know how to begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge.</p> <p>Know how to explore the work of some scientists. (Ptolemy, Alhazen, Copernicus)</p>
Forces	<p>Know how to explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object.</p> <p>Know how to identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Know how to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Know how to describe and explain how motion is affected by forces, (including gravitational attractions, magnetic attraction and friction)</p> <p>Know how to design very effective parachutes.</p> <p>Know how to work out how water can cause resistance to floating objects.</p> <p>Know how to explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p>

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	Year 6
Animals inc Humans	<p>Know how to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Know how to recognise the impact of diet, exercise, drugs and lifestyle on the way their body's function.</p> <p>Know how to describe the ways in which nutrients and water are transported within animals and plants, including humans.</p> <p>Know how to compare the organ systems of humans to other animals.</p> <p>Know how to make a diagram of the human body and explain how different parts work and depend on one another.</p> <p>Know how to name and locate the major organs in the human body.</p>
Living Things and their habitats	<p>Know how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals.</p> <p>Know how to give reasons for classifying plants and animals based on specific characteristics.</p> <p>Know why classification is important.</p> <p>Know how to readily group animals into reptiles, fish, amphibians, birds and mammals.</p> <p>Know how to sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates.</p> <p>Know how to find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p>
Evolution and inheritance	<p>Know that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago.</p> <p>Know how to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Know how to give reasons why offspring are not identical to each other or to their parents.</p> <p>Know how to explain the process of evolution and describe the evidence for this.</p> <p>Know how to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Know the work of famous scientists, such as Charles Darwin, Mary Anning or Alfred Wallace.</p> <p>Know how to explain how some living things adapt to survive in extreme conditions.</p>
Electricity	<p>Know how to identify and name the basic parts of a simple electric series circuit. (cells, wires, bulbs, switches, buzzers)</p> <p>Know how to compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches.</p> <p>Know how to use recognised symbols when representing a simple circuit in a diagram.</p> <p>Know the advantages of a parallel circuit.</p> <p>Know how to explain how to make changes in a circuit.</p> <p>Know how to explain the impact of changes in a circuit.</p>
Light	<p>Know how to recognise that light appears to travel in straight lines.</p> <p>Know how to 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.</p> <p>Know how to 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>Know how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>Know how different colours of light can be created.</p> <p>Know how to use and explain how simple optical instruments work. (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope)</p> <p>Know how to explore a range of phenomena, including rainbows, colour on soap bubbles, objects looking bent in water and coloured filters.</p>