Science Overview

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|  |  | Scientific Thinking | | | | | | |
| Concept | Pre-School | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| To work scientifically | I can talk about what I can see using a wide range of vocabulary | I can ask simple questions and make observations | I can ask simple questions and make predictions based on observations  I can perform simple tests and observe closely to gather and record results | I can ask simple questions and make predictions based on observations  I can perform simple tests and observe closely to gather and record results | I can ask relevant questions  I can set up simple practical enquiries and fair tests  I can make accurate measurements  I can record my findings using simple language, drawings, labelled diagrams, bar charts and tables | I can ask relevant questions  I can set up simple practical enquiries and fair tests  I can make accurate measurements  I can record my findings using simple language, drawings, labelled diagrams, bar charts and tables | I can plan enquiries including variables  I can use appropriate techniques and apparatus  I can take accurate measurements  I can record data using scientific diagrams and labels, classification keys, graphs and models | I can plan enquiries including variables  I can use appropriate techniques and apparatus  I can take accurate measurements  I can record data using scientific diagrams and labels, classification keys, graphs and models  I can report findings as well as explanations of results  I can present findings in written form, displays and other presentations  I can use test results to make predictions and set up further fair tests |

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|  |  | Biology | | | | | | |
| Concept | Pre-School | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| To understand plants | I can plant seeds and care for growing plants  I can begin to understand the key features of the life cycles of a plant | I can identify plants and flowers in the garden  I can begin to understand the key features of the life cycles of a plant | I can identify and name a variety of common plants and trees  I can observe and describe how seeds and bulbs grow in to mature plants | I can identify and name a variety of common plants and trees  I can observe and describe how seeds and bulbs grow in to mature plants  I can identify and describe the basic structure of a variety of common flowering plants  I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy |  | I can explore the requirements of plants for life and growth and how this varies from plant to plant  I can investigate the way in which water is transported within plants  I can explore the role of flowers in the life cycle of a plant |  | I can relate knowledge of plants to studies of all living things  I can relate knowledge of plants to studies of evolution and inheritance |
| To understand animals and humans | I can begin to care for the natural environment and living things | I can identify and name insects (mini beasts) we would find in the garden  I can link animals to seasons | I can identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.  I can identify and name a variety of plants and animals in their habitats, including microhabitats.  I can identify, name, draw and label the basic parts of the human body and say which part is associated with each sense | I can identify and name a variety of plants and animals in their habitats, including microhabitats.  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  I know animals and humans have offspring with grow to adults  I can describe the importance for humans of exercise, eating right and hygiene  I can investigate and describe the basic needs of animals and humans for survival | I can identify that animals, including humans need the right types and amounts of nutrition and that they cannot make their own food – getting nutrition from what they eat  I can construct and interpret a variety of food chains, identifying producers, predators and prey  I can describe the simple functions and parts of the digestive system in humans  I can identify the different types of teeth in humans and their simple functions  I can identify that humans and some animals have skeletons and muscles for support, protection and movement |  | I can describe changes as humans develop to old age  I can identify and name the main parts of the human circulatory system and describe their functions  I can recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions  I can describe the ways in which nutrients and water are transported within animals and humans |  |
| To investigate living things | I can begin to care for the natural environment and living things | I can explore natural habitats found in gardens  I can describe basic life cycles of garden plants and animals |  | I can identify that most living things live in habitats to which they are suited and describe how the different habitats meet an animal’s needs  I can identify and name a variety of plants and animals in their habitats and describe how simple food chains work | I recognise that living things can be grouped in a variety of ways  I can explore and use classification keys  I can recognise that environments change and this can sometimes pose dangers to specific habitats |  | I can describe the different life cycles of mammals, amphibians, insects and birds  I can describe the process of reproduction in some plants and animals  I can describe how living things are classified in to broad groups according to common observable characteristics  I can give reasons for classifying plants and animals based on specific characteristics |  |
| To understand evolution and inheritance |  |  |  |  |  | I can identify how plants and animals resemble their parents in many features  I can recognise that living things have changed over time and that fossils and other sources of information help us identify living things who lived on the Earth long ago  (I can identify how animals and plants are suited to and adapt to their environment in different ways |  | I can recognise that living things have changed over time and 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  I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution |

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|  |  | Chemistry | | | | | | |
| Concept | Pre-School | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| To investigate materials | I can use my senses to explore natural materials  I can explore naturally occurring changes in state | I can use my senses to explore natural materials  I can talk about the differences between materials and changes | I can distinguish between an object and the material from which it is made  I can identify and name a variety of everyday materials as well as describe their simple physical properties | I can identify and name a variety of everyday materials as well as describe their simple physical properties  I can compare and group 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 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 different kinds of rocks based on simple physical properties  I can relate the properties of rocks to their formation – igneous or sedimentary  I can describe how fossils are formed when things that have lived are trapped within sedimentary rock  I can recognise that soils are made from rocks and organic matter | I can compare and group materials according to whether they are solids, liquids or gases  I can observe some materials change state of matter when heated or cooled and measure the temperature at which this happens  I can identify the part played by evaporation and condensation in the water cycle and link the rate of evaporation to temperature | I can understand how 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 filtering, sieving and evaporating  I can demonstrate that dissolving, mixing and changes of state are reversible but that some changes result in the formation of new materials and that this kind of change is not reversible  I can group together materials based on evidence from comparative fair tests  I can give reasons based on evidence from fair tests for the particular uses of materials |  |

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|  |  | Physics | | | | | | |
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| To understand the Earth’s movement in space | I can use my senses to explore the weather linked to the changing seasons | I can explore and experience the changing seasons  I can understand the effect of changing seasons | I can observe changes across the four seasons and describe weather associated with the seasons | I can observe changes across the four seasons and describe weather associated with the seasons  I can observe the apparent movement of the sun during the day | I can describe the Earth’s movement around the sun and the moon relative to Earth  I understand what the stars are |  | I can describe the movement of the Earth and other planets relative to the sun  I can describe the movement of the moon relative to the Earth  I can describe the Sun, Earth and Moon as approximately spherical bodies  (I can use the idea of the Earth’s rotation to explain day, night and the apparent movement of the sun across the sky  I can use the idea of the Earth’s rotation to explain day, night and the apparent movement of the stars across the night sky |  |
| To understand light and seeing | I can explore light and shadows | I can explore how light travels using natural light sources  I can explore my senses |  | I can observe and name a variety of light sources  I can explain that we see things because light travels from them to our eyes |  | I can recognise that we need light to see and that darkness is the absence of light  I know light is reflected from surfaces  I know light from the sun can be dangerous for my eyes and skin  I can recognise how shadows are formed and find patterns in the way they change |  | I can understand that light travels in straight lines  I can explain that objects are seen because they give out or reflect light in to the eyes  I can explain how shadows have the same shape as the objects that cast them and predict the size of shadows when the position of a light source changes |
| To investigate sound and hearing | I can explore my senses | I can explore my senses |  |  | I can identify how sounds are made, associating 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 source increases |
| To understand electrical circuits |  |  |  | I can identify common appliances that run on electricity  I can construct a simple series electrical circuit |  | I can identify common appliances that run on electricity  I can construct a simple circuit and identify and name its basic parts  I can identify whether or not a lamp will light on a circuit based on if it is complete or not  I can recognise common conductors and insulators |  | I can associate the brightness of the lamp or volume of a buzzer with the number and voltage of cells  I can compare and give reasons for variations in how components function  I can use recognised symbols when representing a simple circuit in a diagram |
| To understand movement, forces and magnets | I can explore and talk about different forces I can feel | I can observe and interact with forces |  |  | I can compare how things move on different surfaces  I can discuss the fact that some forces need contact between two 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 objects based on their magnetism  I can describe magnets as having two poles and use my knowledge to predict attraction or repulsion |  | I can describe magnets as having two poles  I can predict whether two magnets will attract or repel  I can identify the effect of drag forces e.g. water resistance and friction  I understand that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect  I can explain that unsupported objects fall towards the Earth because of gravity |  |