Science Curriculum

Objectives taken from Developing Experts

Aspect	Year 1	Year 2
Areas taught	Animals, Including Humans – All About Me Animals, Including Humans – All About Animals Plants Everyday Materials Seasonal Changes	Animals, Including Humans – Life Cycles Animals, Including Humans – Growth Living Things and Their Habitats Living Things and Their Habitats – Habitats Around the World Plants Uses of Everyday Materials
Working Scientifically – Questioning, planning and predicting	C: Ask simple questions about own observations **C: As a class, plan a teacher-led experiment** **C: Make simple predictions about what they expect to see in a test**	C: Ask questions and understand that they can be answered in different ways **C: Plan a teacher-led experiment, and carry out as a group** **C: Make predictions about what they expect to see in a test, relating predictions to prior knowledge and experience**
Working Scientifically – Enquiring, testing and collecting data	C: Make simple observations visually **C: Gather simple data based on observations** C: Perform simple observational tests	C: Make observations, using simple equipment, and use these to suggest answers to questions **C: Gather data by observing outcomes of tests** C: Perform tests, understanding how they can be made fair
Working Scientifically – Recording, interpreting and reporting	**C; Gather and record data to help answer simple questions** **C: As a class, summarise their findings from their test**	**C: Gather, record and compare data to help answer questions** **C: Summarise findings from a class test**

Specific Knowledge and Concepts – Life processes and living things	**Animals, Including Humans - All About Me** **1. Identify and name the basic parts of the human body** **2. Identify which part of the body is associated with each sense** **Animals, Including Humans - All About Animals** **1. Identify and name common animals including fish, amphibians, reptiles, birds and mammals.** 2. Describe and compare the anatomical features of common animals (fish, amphibians, reptiles, birds and mammals, including pets) **3. Identify and name common animals that are carnivores, herbivores and omnivores.** **Plants** 1. Become familiar with common names of flowers and plant structures including seeds 2. **Identify and describe the basic of a variety of structure of common flowering plants, including trees** 3. Identify and name common wild and garden plants **4. Understand how plants change over time** **5.** Observe the growth of planted flowers and keep records of how plants change over time	**Animals, Including Humans – Life Cycles** **1. Notice that animals, including humans, have offspring which grow into adults** **Animals, Including Humans – Growth** **1. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)** **2. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene** **Living Things and Their Habitats** **1. Explore and compare the differences between things that are living, dead, and things that have never been alive** **2. Identify and name a variety of plants and animals in their habitats, including microhabitats** 3. Describe how animals obtain their food from plants and other animals **4. Identify a simple food chain** **5. Identify and name different sources of food** **Living Things and Their Habitats – Around the World** **1. 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** **2. Identify and name a variety of plants and animals in their habitats, including microhabitats** **Plants** 1. Observe and describe how seeds and bulbs grow into mature plants **2. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy** **3. Understand the requirements of plants for germination, growth and survival, as well as, the processes of reproduction and growth in plants**
Specific Knowledge and Concepts – Materials and their properties	**Everyday Materials** **1. Identify and name everyday materials including wood, plastic, glass, metal, water and rock.** **2. Distinguish between an object and the material it is made from.** **3. Describe the simple physical properties of a variety of everyday materials.** 4. **Compare and group together a variety of everyday materials on the basis of their simple physical properties.**	**Uses of Everyday Materials** **1. Identify and compare the suitability of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.** 2. **Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.**
Specific Knowledge and Concepts – Physical Processes	**Seasonal Changes** **1. Observe changes across the four seasons.** **2. Observe and describe weather associated with the seasons and how day length varies.**	

Aspect	Year 3	Year 4
Areas taught	Animals, Including Humans Plants Rocks Light Forces and Magnets Solar Ovens (Scientific Enquiry)	Animals, Including Humans Living Things and Their Habitats Living Things and Their Habitats - Conservation States of Matter Sound Electricity
Working Scientifically – Questioning, planning and predicting	C: Ask questions to develop enquiries **C: Set up simple practical enquiries and fair tests** **C: Make predictions for new values** based on your conclusions	C: Ask relevant questions using different types of scientific enquiries to answer them **C: Set up simple practical enquiries, comparative and fair tests** **C: Make predictions for new values based on your conclusions,** justifying with reasons
Working Scientifically – Enquiring, testing and collecting data	C: Make careful observations, taking accurate measurements using standard units **C: Gather and classify data to help answer questions**	C: Make systematic and careful observations, taking accurate measurements using standard units, using a range of equipment including data loggers **C: Gather and classify data in appropriate ways to help answer questions**
Working Scientifically – Recording, interpreting and reporting	**C: Record findings using simple scientific language, simple diagrams, bar charts and tables** C: Report on findings from enquiries, including oral and written explanations of results and conclusions **C: Use results to draw simple conclusions** and suggest improvements C: Identify differences, similarities or changes related to simple scientific ideas and processes	**C: Record findings using simple scientific language, labelled diagrams, keys, bar charts and tables** C: Report on findings from enquiries, including written explanations, displays, presentations of results and conclusions **C: Use results to draw simple conclusions, suggest improvements** and raise further questions C: Use straight-forward scientific evidence to answer questions or to support their findings

Specific Knowledge and Concepts – Life processes and living things	**Animals, Including Humans** **1. 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** **2. Identify that humans and some other animals have skeletons and muscles for support, protection and movement** **Plants** **1. 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** **2. Identify and describe the functions of different parts of a flowering plant** 3. Investigate the way in which water is transported within plants 4. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	**Animals, Including Humans** 1. Describe the simple functions of the basic parts of the digestive system in humans 2. Identify the different types of teeth in humans and their simple functions 3. Construct and interpret a variety of food chains, identifying producers, predators and prey **Living Things and Their Habitats** **1. Recognise that living things can be grouped in a variety of ways** 2. Making a guide to local living things **3. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment** **Living Things and Their Habitats – Conservation** **1.** Recognise that environments can change and that this can sometimes pose dangers to living things
Specific Knowledge and Concepts – Materials and their properties	**Rocks** **1. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties** 2. Explore how and why [rocks] might have changed over time **3. Describe in simple terms how fossils are formed when things that have lived are trapped within rock** 4. **Recognise that soils are made from rocks and organic matter**	**States of Matter** 1. Compare and group materials together, according to whether they are solids, liquids or gases 2. 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) 3. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Specific Knowledge and Concepts – Physical Processes	**Light** 1. **Recognise that they need light in order to see things** and that dark is the absence of light **2. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes** **3. Notice that light is reflected from surfaces** **4. Recognise that shadows are formed when the light from a light source is blocked by an opaque object** 5. Find patterns in the way that the size of shadows change **Forces and magnets** **1. Notice that some forces need contact between two objects, but magnetic forces can act at a distance** 2. Compare how things move on different surfaces **3. Describe magnets as having two poles.** 4. Predict whether two magnets will attract or repel each other, depending on which poles are facing **5.** 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	**Sound** **1. Identify how sounds are made, associating some of them with something vibrating** 2. Recognise that vibrations from sounds travel through a medium to the ear **3. Find patterns between the volume of a sound and the strength of the vibrations that produced it** **4. Find patterns between the pitch of a sound and features of the object that produced it** **5.** Recognise that sounds get fainter as the distance from the sound source increases **Electricity** 1. Identify common appliances that run on electricity **2. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers** 3. 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 **4. Recognise some common conductors and insulators, and associate metals with being good conductors** 5. **Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit**

Aspect	Year 5	Year 6
Areas taught	Animals, Including Humans Living Things and Their Habitats Properties of Materials Changes of Materials Earth and Space Forces	Animals, Including Humans Living Things and Their Habitats Evolution and Inheritance Light Electricity Looking After Our Environment (Scientific Enquiry)
Working Scientifically – Questioning, planning and predicting	**C: In small groups, plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** **C: Using test results to make predictions to set up further comparative and fair tests**	C: In small groups/ pairs plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary C: Using test results to make predictions to set up further comparative and fair tests
Working Scientifically – Enquiring, testing and collecting data	**C: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate**	**C: Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate**
Working Scientifically – Recording, interpreting and reporting	**C: Record data and results clarifying complex information using scientific diagrams and labels, classification keys, bar and line graphs** C: Reporting and presenting 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 presentations C: Identifying scientific evidence that has been used to support or refute ideas or arguments	**C: Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs** C: Reporting and presenting 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 presentations C: Identifying scientific evidence that has been used to support or refute ideas or arguments
Specific Knowledge and Concepts – Life processes and living things	**<u>Animals, Including Humans</u>** 1. Describe the changes as humans develop to old age **<u>Living Things and Their Habitats</u>** **1. Describe the life process of reproduction in some plants and animals** **2. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird**	**<u>Animals, Including Humans</u>** **1. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood** 2. Describe the ways in which nutrients and water are transported within animals, including humans **3. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function** **<u>Living Things and Their Habitats</u>** 1. Give reasons for classifying plants and animals based on specific characteristics **2. 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** **<u>Evolution and Inheritance</u>** **1. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents** **2. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution**

		3. **Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago**
Specific Knowledge and Concepts – Materials and their properties	**<u>Properties of Materials</u>** **1. 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** 2. Compare and group together everyday materials based on evidence from comparative and fair tests, including their conductivity of heat **3. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic** **4. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution** **5. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating** **<u>Changes of Materials</u>** 1. Describe how to recover a substance from a solution **2. Demonstrate that dissolving, mixing and changes of state are reversible changes** 3. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible 4. Explain changes associated with burning. 5. Explain changes associated the action of acid on bicarbonate of soda	
Specific Knowledge and Concepts – Physical Processes	**<u>Earth and Space</u>** 1. Describe the Sun, Earth and Moon as approximately spherical bodies **2. Describe the movement of the Earth and other planets relative to the Sun in the solar system** **3. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky** **4. Describe the movement of the Moon relative to the Earth** 5. Describe the Sun, Earth and Moon as approximately spherical bodies	**<u>Light</u>** **1. Recognise that light appears to travel in straight lines** **2. 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** 3. 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 **4. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them** **<u>Electricity</u>** **1. Use recognised symbols when representing a simple circuit in a diagram** **2. Associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit** 3. 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