	A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.			
	By the end of Reception	***By the end of Year 2***	***By the end of Year 4***	***By the end of Year 6***
To work Scientifically	*Look closely at similarities, differences, patterns and change*	*Ask simple questions* *Know how to use simple equipment* *Know how to observe closely* *Understand how to perform simple tests* *Know how to identify and classify Use observations and ideas to suggest answers to questions* *Know how to gather and record data to help answer questions*	*Ask relevant questions* *To know how to set up simple practical enquiries and comparative and fair tests To know how to make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.* *To know how to gather, record, classify and present data in a variety of ways to help in answering questions.* *Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.* *Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.* *Know how to use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.* *Knows how to identify differences, similarities or changes related to simple, scientific ideas and processes.* *Understands how to use straightforward, scientific evidence to answer questions or to support their findings*	*Plan enquiries, including recognising and controlling variables where necessary. Knows how to use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.* *Knows how to take measurements, using a range of scientific equipment, with increasing accuracy and precision.* *Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.* *Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative and fair tests.* *Know how to use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.*

	By the end of Reception	By the end of Year 1	By the end of Year 2	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Biology	Children should know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	**<u>To understand plants</u>** 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 flowering plants (seeds, roots etc), including trees.	**<u>To understand plants</u>** To observe and know how seeds and bulbs grow into mature plants To find out and describe how plants need water, light and suitable temperature to grow and stay healthy	**<u>To understand plants</u>** Identify, know and describe the functions of different parts of flowering plants: roots, stem/truck, leaves and flowers Explore and know 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 Investigate and understand 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.			

		To understand animals and humans 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.	**To understand animals and humans** To know that animals, including humans, have offspring which grow into adults To know and describe the basic needs of animals, including humans, for survival (water, food and air) Know and describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	**To understand animals, including humans** To identify and know 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 and know that humans and some animals have skeletons and muscles for support, protection and movement	**To understand animals and humans** 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.	**Animals, including humans** To describe the changes as humans develop to old age	**Animals, including humans** 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.

			To investigate living things 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		**To investigate living things** Identify and name a variety of living things (plants and animals) in the local and wider Give reasons for classifying plants and animals based on specific characteristics. Recognise that environments are constantly changing and that this can sometimes pose dangers to specific habitats.	**All living things and their habitats** To know and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	**Living things and their habitats** 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. **Evolution and inheritance** 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.

			idea of a simple food chain, and identify and name different sources of food.				

	By the end of Reception	By the end of Year 1	By the end of Year 2	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Chemistry		**<u>To investigate everyday materials</u>** To know how to 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, water, and rock To be able to describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials based on their simple physical properties.	**<u>To investigate everyday materials</u>** Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Identify and compare and know the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard	**<u>Rocks</u>** 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 that have lived are trapped within rock Recognise that soil are made from rocks and organic matter	**<u>To investigate materials</u>** (States of Matter) 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**<u>Properties and changes of materials</u>** 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 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	

	By the end of Reception	By the end of Year 1	By the end of Year 2	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Physics		**To understand seasonal changes** Observe and talk about changes across the four seasons Observe and describe weather associated with the seasons and how day length varies, including understanding that it is unsafe to look directly at the Sun.		**To investigate light** Recognise that they need light in order to see things and that dark is absence of light	**To investigate sound and hearing** 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 pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound's source increases.	**Earth and space** 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, and the apparent movement of the sun across the sky.	**Light** recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that

				Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect the eyes. Recognise that shadows are formed when light from a light source is blocked by a solid object Find patterns in the way that the size of shadows change	**<u>To understand electrical circuits</u>** 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		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 our eyes 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>** 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.

				Forces and magnets compare how things move on different surfaces notice that some forces need contact between 2 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	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.	**Forces and Magnets** 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	

				describe magnets as having 2 pole Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.			