SCIENCE
KNOWLEDGE AND SKILLS PROGRESSION

BIOLOGY - ANIMALS INCLUDING HUMANS

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Know the name of parts of the human body that can be seen	Know the basic stages in a life cycle for animals, (including humans) Know why exercise, a balanced diet and good hygiene are important for humans Describe the basic needs of an animal for survival.	Know about the importance of a nutritious, balanced diet Know how nutrients, water and oxygen are transported within animals and humans Know about the skeletal and muscular system of a human	Identify and name the parts of the human digestive system Identify and know the different types of human teeth and their functions. Use and construct food chains to identify producers, predators and prey	Create a timeline to indicate stages of growth in humans	Identify and name the main parts of the human circulatory system Know the function of the heart, blood vessels and blood Know the impact of diet, exercise, drugs and lifestyle on health Know the ways in which nutrients and water are transported in animals, including humans

BIOLOGY - ALL LIVING THINGS AND THEIR HABITATS

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds Know and classify animals by what they eat (carnivore, herbivore and omnivore)	Classify things by living, dead or never lived Know how a specific habitat provides for the basic needs of things living there (plants and animals)		Use classification keys to group, identify and name living things Know how changes to an environment could endanger living things	Know the life cycle of different living things e.g. mammal, amphibian, insect and bird Know the differences between different life cycles	Classify living things into broad groups according to observable characteristics and based on similarities and differences Know how living things have been classified

Describe and compare the structure of a variety of common animals.	Identify and name a variety of plants and animals in their habitats. Name some different sources of food for animals Know about and explain a simple food chain			Know the process of reproduction in plants Know the process of reproduction in animals	Give reasons for classifying plants and animals in a specific way

BIOLOGY - PLANTS

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree Identify and name trees classified deciduous and evergreen.	Know and explain how seeds and bulbs grow into plants Know what plants need in order to grow and stay healthy (water, light & suitable temperature)	Know how water is transported within plants Know the plant life cycle, especially the importance of flowers Know the function of different parts of flowering plants and trees Know the role of flowers in the life cycle of flowering plants.			

BIOLOGY - EVOLUTION AND INHERITANCE

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
					Know how the Earth and living things have changed over time

					Know how fossils can be used to find out about the past Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) Know how animals and plants are adapted to suit their environment Link adaptation over time to evolution

CHEMISTRY - EVERYDAY MATERIALS, ROCK, STATES OF MATTER, PROPERTIES AND CHANGES IN MATERIALS					
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Know the name of the materials an object is made from Know about the properties of everyday materials	Know how materials can be changed by squashing, bending, twisting and stretching Know why a material might or might not be used for a specific job	Compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made and how fossils are formed Know about and explain the difference between sedimentary, metamorphic and igneous rock Describe how fossils are formed.	Know the temperature at which materials change state Know about and explore how some materials can change state Know the part played by evaporation and condensation in the water cycle Compare and group materials according to whether they are solids, liquids or gases.	Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets Know and explain how a material dissolves to form a solution Know and show how to recover a substance from a solution Know and demonstrate how some materials can	Know how fossils can be used to find out about the past

				be separated (e.g. through filtering, sieving and evaporating) Know and demonstrate that some changes are reversible and some are not Know how some changes result in the formation of a new material and that this is usually irreversible	

PHYSICS – FORCES					
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Know about and describe how objects move on different surfaces Know how some forces require contact and some do not, giving examples Know about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason		Know what gravity is and its impact on our lives Identify and know the effect of air and water resistance Identify and know the effect of friction Explain how levers, pulleys and gears allow a smaller force to have a greater effect	

PHYSICS – LIGHT					
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Know that dark is the absence of light		Know how light travels	

		Know that light is needed in order to see and is reflected from a surface Know and demonstrate how a shadow is formed and explain how a shadow changes shape Know about the danger of direct sunlight and describe how to keep protected		Know and demonstrate how we see objects Know why shadows have the same shape as the object that casts them Recognise that light appears to travel in straight lines. Explain that we see things because light travels from light sources to our eyes	

PHYSICS – ELECTRICITY

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			Identify and name appliances that require electricity to function Construct a series circuit Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) Predict and test whether a lamp will light within a circuit Know the difference between a conductor and an insulator; giving examples of each		Compare and give reasons for why components work and do not work in a circuit Draw circuit diagrams using correct symbols Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer

WORKING SCIENTIFICALLY

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Ask questions such as: • Why are flowers different colours? • Why do some animals eat meat and others do not? Set up a test to see which materials keeps things warmest, know if the test has been successful and can say what has been learned Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken	Ask questions such as: • Why do some trees lose their leaves in Autumn and others do not? • How long are roots of tall trees? • Why do some animals have underground habitats? Use equipment such as thermometers and rain gauges to help observe changes to local environment as the year progresses Use microscopes to find out more about small creatures and plants Know how to set up a fair test and do so when finding out about how seeds grow best Classify or group things according to a given criteria, e.g. deciduous and coniferous trees Draw conclusions from fair tests and explain what has been found out	Ask questions such as: • Why does the moon appear as different shapes in the night sky? • Why do shadows change during the day? Where does a fossil come from? Use a thermometer to measure temperature and know there are two main scales used to measure temperature Gather and record information using a chart, matrix or tally chart, depending on what is most sensible Observe at what time of day a shadow is likely to be at its longest and shortest Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens	Ask questions such as: • Why are steam and ice the same thing? • Why is the liver important in the digestive systems? • What do we mean by 'pitch' when it comes to sound? Gather and record information using a chart, matrix or tally chart, depending on what is most sensible Group information according to common factors e.g. materials that make good conductors or insulators Use research to find out how much time it takes to digest most of our food Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings Use research to find out which materials make effective conductors and insulators of electricity	Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not Able to present information related to scientific enquiries in a range of ways including using IT such as power-point and iMovie Set up a fair test when needed e.g. which surfaces create most friction? Use diagrams, as and when necessary, to support writing Set up an enquiry based investigation e.g. find out what adults / children can do now that they couldn't when a baby Is evaluative when explaining findings from scientific enquiry Know what the variables are in a given enquiry and can isolate each one when investigating e.g. finding out how effective	Know which type of investigation is needed to suit particular scientific enquiry e.g. looking at the relationship between pulse and exercise Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases Set up a fair test when needed e.g. does light travel in straight lines? Clear about what has been found out from their enquiry and can relate this to others in class Know how to set up an enquiry based investigation e.g. what is the relationship between oxygen and blood? Explanations set out clearly why something has happened and its possible impact on other things

	Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with	Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc. Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings Use research to find out how reflection can help us see things that are around the corner Know how to use a key to help understand information presented on a chart Use research to find out what the main differences are between sedimentary and igneous rocks Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape Test to see which type of soil is most suitable when growing two similar plants	Present findings using written explanations and include diagrams, when needed Carry out tests to see, for example, which of two instruments make the highest or lowest sounds and to see if a glass of ice weighs the same as a glass of water Write up findings using a planning, doing and evaluating process Set up a fair test with more than one variable e.g. using different materials to cut out sound Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned Explain to others why a test that has been set up is a fair one e.g. discover how fast ice melts in different temperatures	parachutes are when made with different materials Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass Their explanations set out clearly why something has happened and its possible impact on other things Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons) Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys Able to record data and present them in a range	Know what the variables are in a given enquiry and can isolate each one when investigating Aware of the need to support conclusions with evidence Justify which variable has been isolated in scientific investigation Keep an on-going record of new scientific words that they have come across for the first time and use these regularly in future scientific write ups Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class Able to record data and present them in a range of ways including diagrams, labels,

		Present findings using written explanations and include diagrams when needed Test to see if their right hand is as efficient as their left hand Make sense of findings and draw conclusions which help them to understand more about scientific information Set up a fair test with different variables e.g. the best conditions for a plant to grow Amend predictions according to findings Explain to a partner why a test is a fair one e.g. lifting weights with right and left hand, etc. Be prepared to change ideas as a result of what has been found out during a scientific enquiry Measure carefully (taking account of mathematical knowledge up to Year 3)	When making predictions there are plausible reasons as to why they have done so Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning Able to amend predictions according to findings Use a data logger to check on the time it takes ice to melt to water in different temperatures Prepared to change ideas as a result of what has been found out during a scientific enquiry Use a thermometer to measure temperature and know there are two main scales used to measure temperature	of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs Keep an on-going record of new scientific words that they have come across for the first time Make predictions based on information gleaned from investigations Able to relate causal relationships when, for example, studying life cycles Create new investigations which take account of what has been learned previously Frequently carry out research when investigating a scientific principle or theory	classification keys, tables, scatter graphs and bar and line graphs Able to give an example of something they have focused on when supporting a scientific theory e.g. classifying vertebrate and invertebrate creatures or why certain creatures choose their unique habitats Make accurate predictions based on information gleaned from their investigations and create new investigations as a result Frequently carry out research when investigating a scientific principle or theory Able to present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie

		and add to scientific learning			