Science Knowledge and Skills Progression
Year 1

Biology			Chemistry	Physics
Animals, including Humans	**Animals, including Humans**	**Plants**	**Everyday Materials**	**Seasonal Change**
• **Name common animals** **Carnivores, etc**	• **Human body and senses**	• **Common plants** • **Plant structure**	• **Properties of materials** • **Grouping materials**	• **The four seasons** • **Seasonal weather**
• Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds • Know differences between omnivore, carnivore and herbivore • Know and classify animals by what they eat (carnivore, herbivore and omnivore) • Know how to sort by living and non living things	• Know the name of parts of the human body that can be seen • Know the 5 human senses and their function • Know the body parts that are connected to the 5 senses	• 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 • Know difference between deciduous and evergreen trees	• Know the name of the materials an object is made from • Know about the properties of everyday materials • Know the differences between everyday materials by their properties	• Know the 4 seasons • Know when each season occurs • Know the type of weather typical in each season • Know why the weather changes in each season • Know that day length changes depending upon the season

Science Knowledge and Skills Progression
Year 1

Working Scientifically - Know how to …
❑ Ask questions such as: Why are clouds different shapes? • Why are flowers different colours? • Why do some animals eat meat and others do not?
❑ Classify or group things according to a given criteria, e.g. deciduous and coniferous trees
❑ 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
❑ Measure (within Year 1 mathematical limits) to help find out more about the investigations undertaken

Science Knowledge and Skills Progression
Year 2

Biology			Chemistry	
All living things and their habitats	**Animals, including Humans**	**Plants**	**Everyday Materials**	
• **Alive or dead** • **Habitats** • **Adaptations** • **Food chains**	• **Animal reproduction** • **Healthy living** • **Basic needs**	• **Plant and seed growth** • **Plant reproduction** • **Keeping plants healthy**	• **Identify different materials** • **Name everyday materials** • **Properties of materials**	• **Compare the use of different materials** • **Compare movement on different surfaces**
• Know how to 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) • Know why living things are suited to their habitat • Know some different sources of food for animals depending on habitat • Know about and explain a simple food chain	• Know the basic stages in a life cycle for animals, (including humans) • Know why exercise is important for humans • Know main food groups • Know how to create a balanced diet • Know why good self-care and hygiene are important for humans	• Know and explain how seeds and bulbs grow into plants • Know the parts of plants related to the stages of growth • Know what plants need in order to grow and stay healthy (water, light & suitable temperature)	• Know what a solid shape is • Know how materials can be changed by: ○ squashing, bending, ○ twisting and stretching	• Know why to choose a material for a specific job by its properties • Know why a material might not be used for a specific job

Science Knowledge and Skills Progression
Year 2

Working Scientifically - Know how to …
❑ 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. habitat and food sources
❑ Draw conclusions from fair tests and explain what has been found out
❑ Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with

Science Knowledge and Skills Progression
Year 3

Biology			Chemistry	Physics	
Animals, including humans	**Plants**	**Plants**	**Rocks**	**Forces**	**Light**
• **Skeleton and muscles** • **Nutrition** • **Exercise and health**	• **Plant life** • **Basic structure and functions**	• **Life cycle** • **Water transportation**	• **Fossil formation** • **Compare and group rocks** • **Soil**	• **Different Forces** • **Magnets**	• **Reflections** • **Shadows**
• Know about the importance of a nutritious, balanced diet • Know the different nutrition types and their benefits • Know the amounts of each nutrition required • Know that humans and some animals have skeletons and muscular systems for support and protection	• Know the function of different parts of flowing plants and trees • Know the plant life cycle including the role of flowers • know the importance of flowers in pollination, seed growth and seed dispersal	• Know how water is transported within plants • Know what plants need in order to grow and stay healthy (water, light, air, nutrients, room to grow)	• Know how to compare and group rocks based on their appearance and physical properties, justifying reasons • Know how soil is made • know how fossils are formed • Know about and explain the difference between sedimentary, metamorphic and igneous rock	• Know how objects move on different surfaces • Know how some forces require contact and some do not, giving examples • Know magnets have poles and predict their attraction • Know how magnets attract and repel some materials • Know how to predict whether magnets will attract repel materials and give a reason • Know some magnetic materials	• Know that dark is the absence of light • Know that light is needed in order to see • Know light is reflected from a surface • Know and demonstrate how a shadow is formed • Know how a shadow changes shape • Know about the danger of direct sunlight and describe how to keep protected

Science Knowledge and Skills Progression
Year 3

Working Scientifically - Know how to …	
❑ 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
❑ 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 to record findings
❑ Use research to find out: • what the main differences are between sedimentary and igneous rocks • how reflection can help us see things that are around the corner	❑ use a key to help understand information presented on a chart
	❑ 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
❑ 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) and add to scientific learning	

Science Knowledge and Skills Progression
Year 4

Biology		Chemistry	Physics	
Animals, including humans	**living things and their habitats**	**States of Matter**	**Electricity**	**Sound**
• **Digestive system** • **Teeth** • **Food chains**	• **Grouping living things** • **Classification keys** • **Adaptation of living things**	• **Compare and group materials** • **Solids, liquids and gases** • **Changing state** • **Water cycle**	• **Uses of electricity** • **Simple circuits and switches** • **Conductors and insulators**	• **How sounds are made** • **Sound vibrations** • **Pitch and Volume**
• Know and identify the parts of the human digestive system • Know the functions of the organs in the human digestive system • Identify and know the different types of human teeth • Know the functions of different human teeth • Know the importance of heathy teeth and how to keep them healthy	• Know how to use classification keys to group, identify and name living things • Know how changes to an environment could endanger living things • Know how construct food chains to show the flow of energy • Know how to identify producers, predators, consumers and prey in food chains	• Know how to group materials based on their state of matter (solid, liquid, gas • 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 • Know when condensing and evaporation takes place in their lives	• Know a range of appliances that require electricity to function • Know the components in a series circuit (including cells, wires, bulbs, switches and buzzers) • Know how to construct a series circuit • Know how to predict and test whether a lamp will light within a circuit • Know the function of a switch • Know the difference between a conductor and an insulator • Know that metals are good conductors	• Know how sound is made, associating some of them with vibrating • Know how sound travels from a source to our ears • Know the link between pitch and the object producing a sound • Know the link between the volume of a sound and the strength of the vibrations that produced it • Know what happens to a sound as it travels away from its source

Science Knowledge and Skills Progression
Year 4

Working Scientifically - Know how to …	
❑ 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 • which materials make effective conductors and insulators of electricity	❑ Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings
	❑ 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	❑ When making predictions there are plausible reasons as to why they have done so
❑ Measure (in line with Year 4 mathematics) carefully 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	

Science Knowledge and Skills Progression
Year 5

Biology		Chemistry	Physics	
living things and their habitats	**Animals, including humans**	**Properties and changes in materials**	**Forces**	**Earth and Space**
• Life cycles – plants and animals **• Reproductive processes** **• Famous naturalists**	**• Changes as humans develop from birth to old age**	**• Compare properties of everyday materials** **• Soluble/ dissolving** **• Reversible and irreversible substances**	**• Gravity** **• Friction** **• Forces and motion of mechanical devices**	**• Movement of the Earth and the planets** **• Movement of the Moon** **• Night and day**
• Know the life cycle of different living things e.g. mammal, amphibian, insect and bird • Know the differences between different life cycles • Know the reproductive parts of plants • Know the process of reproduction in plants including asexual • Know that plants use a range of reproduction methods • Know the process of reproduction in some animals	• Know the key stages of growth in humans • Know the key changes to the body that take place during puberty	• Know how to compare and group materials based on their properties, 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 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	• Know what gravity is, its effect on objects and its impact on our lives • Know and identify the effect of air resistance • Know and identify the effect of water resistance • Identify and know the effect of friction • Explain how levers, pulleys and gears allow a smaller force to have a greater effect	• Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Know the meaning of spherical • Know how to determine the Sun, Earth and Moon are spherical

Science Knowledge and Skills Progression

Year 5

Working Scientifically - Know how to …	
❑ set up an investigation when it is appropriate e.g. finding out which materials dissolve or not	❑ present information related to scientific enquiries in a range of ways including using IT such as power-point and iMovie
❑ create 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 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 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

Science Knowledge and Skills Progression
Year 6

Biology			Physics	
Animals, including humans	**Living things and their habitats**	**Evolution and Inheritance**	**Electricity**	**Light**
• The circulatory system **• Water transportation** **• Impact of exercise on body**	**• Classification of living things and the reasons for it**	**• Identical and non identical off-spring** **• Fossil evidence and evolution** **• Adaptation and evolution**	**• Electrical components** **• Simple circuits** **• Fuses and voltage**	**• How light travels** **• Reflection** **• Ray models of light**
• Know 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	• Classify living things into broad groups according to observable characteristics and based on similarities and differences • Know how living things have been classified • Give reasons for classifying plants and animals in a specific way	• 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 • Know that adaptation over time links to evolution • Know about evolution and explain its key points	• Know the symbols to represent components in a circuit diagram and how to draw circuit diagrams • Know how to identify why components work and do not work in a circuit • Know how voltage affects components in a circuit • Know how using parallel circuits affects components • Know the impact of varying positions of components in parallel circuits • Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer	• Know how light travels • Know and demonstrate how we see objects • Know why shadows have the same shape as the object that casts them • Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

Science Knowledge and Skills Progression
Year 6

Working Scientifically - Know how to …	
❑ 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
❑ 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
❑ record data and present them in a range of ways including diagrams, labels, 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
❑ present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie	