



## Stratford Upon Avon Primary School

### KS1 and KS2 Progression of Science skills and knowledge based on the National Curriculum for KS1, KS2 and Curriculum Maestro

Big idea	Concept/Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Humankind</b>	<b>Human body</b>	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	<p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Describe the stages of human development (baby, toddler, child, teenager, adult, and elderly).</p>	Identify that humans and some other animals have skeletons and muscles for support, protection, and movement.	Describe the simple functions of the basic parts of the digestive system in humans.	Describe the life process of reproduction in some plants and animals.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
	<b>Staying Safe</b>	<p>Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.</p> <p><b>Breadth</b> Know about safe and unsafe exposure to the sun, and how to reduce the risk of sun damage, including skin cancer.</p> <p>Describe ways to stay safe in some familiar situations.</p>	Find out about and describe the basic needs of animals, including humans, for survival (water, food, and air).	<p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Know about safe and unsafe exposure to the sun, and how to reduce the risk of sun damage, including skin cancer.</p>	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.



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<b>Health Lifestyle</b>	<p>Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p> <p><b>Breadth</b> Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>	<p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Know the risks associated with an inactive lifestyle (including obesity). Know what constitutes a healthy diet (including understanding calories and other nutritional content).</p> <p>Know the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health). Know the importance of sufficient good quality sleep for good health and that a lack of sleep can affect weight, mood and ability to learn.</p> <p><b>Required coverage.</b> Know about dental health and the benefits of good oral hygiene and dental flossing, including regular check-ups at the dentist. Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>	<p>Identify that animal, 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.</p> <p>Know what constitutes a healthy diet (including understanding calories and other nutritional content).</p>	<p>Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p> <p><b>Breadth</b> Know the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health). Know about dental health and the benefits of good oral hygiene and dental flossing, including regular check-ups at the dentist.</p>	<p>Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.</p> <p><b>Breadth</b> Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing. Know key facts about puberty and the changing adolescent body, particularly from age 9 through to age 11, including physical and emotional changes.</p>	<p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p><b>Required coverage</b> Know the benefits of physical exercise, time outdoors, community participation, voluntary and service-based activity on mental wellbeing and happiness.</p> <p><b>Required coverage</b> Know the risks associated with an inactive lifestyle (including obesity). <b>Required coverage</b> Know what constitutes a healthy diet (including understanding calories and other nutritional content). Know the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health). Know the facts about legal and illegal harmful substances and associated risks, including smoking, alcohol use and drug taking.</p>
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<b>Processes</b>	<b>Pattern seeking</b>	Observe changes across the four seasons.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	Find patterns in the way that the size of shadows changes.	Find patterns between the pitch of a sound and features of the object that produced it. <b>Required coverage</b> Find patterns between the volume of a sound and the strength of the vibrations that produced it.	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	<b>Changes</b>	Observe and describe weather associated with the seasons and how day length varies.	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	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).	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.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
	<b>Earth</b>	Observe and describe weather associated with the seasons and how day length varies.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	Recognise that soils are made from rocks and organic matter.	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	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.	Recognise that light appears to travel in straight lines.  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.  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.
	<b>Phenomena</b>	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Recognise that they need light in order to see things and that dark is the absence of light.  Recognise that shadows are formed when the light from a light source is blocked by a solid object.	Identify how sounds are made, associating some of them with something vibrating.  Recognise that vibrations from sounds travel through a medium to the ear.	Describe the Sun, Earth and Moon as approximately spherical bodies.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.



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	<b>Forces</b>	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Notice that some forces need contact between two objects, but magnetic forces can act at a distance.	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.	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
	<b>Modelling</b>	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.  Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Use recognised symbols when representing a simple circuit in a diagram.
<b>Creativity</b>	<b>Report and Conclude</b>	Use their observations and ideas to suggest answers to questions.	Use their observations and ideas to suggest answers to questions.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.  Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.  Use straightforward scientific evidence to answer questions or to support their findings.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.  Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.  Use straightforward scientific evidence to answer questions or to support their findings.	Use test results to make predictions to set up further comparative and fair tests.  Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.  Identify scientific evidence that has been used to support or refute ideas or arguments.	Use test results to make predictions to set up further comparative and fair tests.  Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.  Identify scientific evidence that has been used to support or refute ideas or arguments.
	<b>Gather and record</b>	Gather and record data to help in answering questions.	Gather and record data to help in answering questions.	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, keys, bar charts, and tables.	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, keys, bar charts, and tables.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.



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<b>Investigation</b>	<b>Questioning</b>	Ask simple questions and recognise that they can be answered in different ways.	Ask simple questions and recognise that they can be answered in different ways.	Ask relevant questions and using different types of scientific enquiries to answer them	Ask relevant questions and using different types of scientific enquiries to answer them.	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
	<b>Measurement</b>	Observe closely, using simple equipment	Observe closely, using simple equipment	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
	<b>Investigation</b>	Perform simple tests.	Perform simple tests.	Set up simple practical enquiries, comparative and fair tests.	Set up simple practical enquiries, comparative and fair tests.	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
	<b>Observation</b>	Identify and classify.	Identify and classify.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.  Identify differences, similarities or changes related to simple scientific ideas and processes.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.  Identify differences, similarities or changes related to simple scientific ideas and processes.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.



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<b>Materials</b>	<b>Identification and Classification</b>	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.	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Notice that light is reflected from surfaces.	Compare and group materials together, according to whether they are solids, liquids or gases	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.	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
	<b>Properties and uses</b>	Describe the simple physical properties of a variety of everyday materials.	Identify and name a variety of plants and animals in their habitats, including microhabitats.  Notice that animals, including humans, have offspring which grow into adults.	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.  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.	Recognise some common conductors and insulators, and associate metals with being good conductors.	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 uses of everyday materials, including metals, wood and plastic.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
<b>Nature</b>	<b>Identification and classification</b>	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.  Identify and name a variety of common animals including fish, amphibians, reptiles, birds, and mammals.	Identify and name a variety of plants and animals in their habitats, including microhabitats.  Notice that animals, including humans, have offspring which grow into adults.	Gather, record, classify and present data in a variety of ways to help in answering questions.  Identify that humans and some other animals have skeletons and muscles for support, protection, and movement.	Recognise that living things can be grouped in a variety of ways.  Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	Describe the life process of reproduction in some plants and animals.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants, and animals.



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	<b>Parts and functions</b>	Identify and describe the basic structure of a variety of common flowering plants, including trees.  Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds, and mammals, including pets).	Find out and describe how plants need water, light, and a suitable temperature to grow and stay healthy.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.  Investigate the way in which water is transported within plants.	Identify the different types of teeth in humans and their simple functions.	Describe the life process of reproduction in some plants and animals.	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
	<b>Nutrition</b>	Identify and name a variety of common animals that are carnivores, herbivores, and omnivores.	Find out about and describe the basic needs of animals, including humans, for survival (water, food, and air)	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.	Construct and interpret a variety of food chains, identifying producers, predators, and prey.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.	Describe the ways in which nutrients and water are transported within animals, including humans.
	<b>Survival</b>	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.	Find out about and describe the basic needs of animals, including humans, for survival (water, food, and air).	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.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	Describe the life process of reproduction in some plants and animals.	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
<b>Place and space</b>	<b>Habitats</b>	Use their observations and ideas to suggest answers to questions.	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.	Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry, and physics.	Recognise that environments can change and that this can sometimes pose dangers to living things.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	Give reasons for classifying plants and animals based on specific characteristics.
<b>Comparison</b>	<b>Physical things</b>	Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Explore and compare the differences between things that are living, dead, and things that have never been alive.	Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	Identify common appliances that run on electricity.	Describe the differences in the life cycles of a mammal, an amphibian, an insect, and a bird.	Develop understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
	<b>Phenomena</b>	Develop understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Develop understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Compare how things move on different surfaces.	Recognise that sounds get fainter as the distance from the sound source increases.	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	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.



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<b>Change</b>	<b>Living things</b>	Develop understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Observe and describe how seeds and bulbs grow into mature plants.	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Recognise that environments can change and that this can sometimes pose dangers to living things.	Describe the changes as humans develop to old age. Know key facts about puberty and the changing adolescent body, particularly from age 9 through to age 11, including physical and emotional changes.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
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