Working Scientifically Science Skills Progression

| Science | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Working Scientifically** Planning | Ask simple questions when prompted.<br><br>Suggest ways of answering a question.<br><br>Use our school's investigation planning sheets to plan as a whole class. | Ask simple questions.<br><br>Recognise that questions can be answered in different ways.<br><br>Use our school's investigation planning sheets to plan as a whole class and certain strands in small groups. | Ask relevant questions when prompted.<br><br>Use different types of scientific enquiry to answer them.<br><br>Set up simple and practical enquiries, comparative and fair tests with some support.<br><br>Use our school's investigation planning sheets to plan as a class and as a group. | Ask relevant questions.<br><br>Use different types of scientific enquiries to answer their questions.<br><br>Set up simple and practical enquiries, comparative and fair tests.<br><br>Use our school's investigation planning sheets to plan as a class, small groups and independently. | Plan different types of scientific enquiries to answer questions.<br><br>With prompting, recognise and control variables where necessary.<br><br>Use our school's investigation planning sheets to plan in a range of contexts. | Plan different types of scientific enquiries to answer questions.<br><br>Recognise and control variables independently.<br><br>Use our school's investigation planning sheets to plan in a range of contexts. |
| **Working Scientifically** Enquiry and Testing | Make relevant observations using simple equipment.<br><br>Conduct simple tests, with support.<br><br>Identify and classify with guidance. | Observe closely, using simple equipment.<br><br>Begin to recognise when a test or comparison is unfair | Make systematic and careful observations, using simple equipment.<br><br>Use standard units when taking measurements.<br>Carry out a fair test with support recognise and explain why it is a fair test. | Make systematic and careful observations using a range of equipment, including thermometers.<br><br>Take accurate measurements using standard units, where appropriate.<br><br>Pupils begin to vary one factor while keeping others the same. | Previous year group and:<br><br>Select, with prompting, and use appropriate equipment to take readings.<br><br>Take precise measurements using standard units. | Previous year group and:<br><br>Take measurements with increasing accuracy and precision.<br>Take repeat readings when appropriate. |

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| | | | | Decide on an appropriate approach in their own investigations to answer questions<br>describe which factors they are varying and which will remain the same explaining why. | Begin to understand the need for repeat readings. | |
| **Working Scientifically**<br>Observing and Recording | Gather and record finding using visuals and written text using simple scientific language.<br><br>Use their observations and ideas to suggest answers to simple questions. | Record and communicate their findings in a range of ways.<br><br>Suggest how to find things out<br><br>Identify key features.<br><br>With prompting, suggest conclusions from enquiries. Suggest how findings could be reported. | Use pictures, writing, diagrams and tables as directed by teacher<br><br>Record their observations in written, pictorial and diagrammatic forms.<br><br>Report on findings from enquiries, including oral and written explanations, of results and conclusions. | Record observations, comparisons and measurements using tables and bar charts.<br><br>Begin to plot points to form a simple graph<br><br>Use graphs to point out and interpret patterns in their data | Take and process repeat readings.<br><br>Record data using labelled diagrams, keys, tables and charts. (including line graphs).<br><br>Begin to explain anomalous data.<br><br>With prompting, report and present findings from enquiries, including conclusions and causal relationships. | Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs.<br><br>Choose scales for graphs which show data and features effectively.<br><br>Explain anomalous data.<br><br>Report and present findings from enquiries, including conclusions and causal relationships. |

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| **Working Scientifically** Vocabulary | questions, answers, equipment, gather, measure, record, results sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, | Previous vocab, and: observe changes over time, notice patterns, secondary sources, identify, classify, data | Previous vocab, and: comparative tests, fair tests, accurate, observations, equipment, conclusions, predictions, support | Previous vocab, and: enquiry types increase, decrease, independent variable, dependent variable identify, classify, order, notice patterns, relationships, appearance, | Previous vocab, and: controlled variable, accuracy, precision, | Previous vocab, and: Opinion, fact, anomaly |

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| | Year 1 | Year 2 | Year 3 |
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| **Knowledge** | • identify and name at least five common wild and garden plants,<br>• identify and name at least five deciduous and/or evergreen trees<br>• the structure of plants and trees e.g. roots, trunk, stem, flower, canopy<br>• identify and name at least ten common animals including fish, amphibians, reptiles, birds and mammals<br>• identify and name at least five common animals that are carnivores, herbivores and omnivores<br>• the basic parts of the human body and say which part of the body is associated with each sense.<br>• what an object is made from<br>• the names of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock and identify<br>• know the simple physical properties of a variety of everyday materials<br>• The name the four seasons and the key changes that occur | • the differences between things that are living, dead, and things that have never been alive<br>• that most living things live in habitats to which they are suited<br>• how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other<br>• the name a variety of plants and animals in their habitats, including micro-habitats<br>• how animals obtain their food from plants and other animals, using the idea of a simple food chain,<br>• name different sources of food.<br>What plants need to grow and stay healthy<br>• that animals, including humans, have offspring which grow into adults<br>• the basic needs of animals, including humans, for survival (water, food and air)<br>• the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.<br>• the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses<br>• how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | • the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers<br>• 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<br>• the way in which water is transported within plants<br>• the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.<br>• 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<br>• that humans and some other animals have skeletons and muscles for support, protection and movement.<br>• simple terms, how fossils are formed when things that have lived are trapped within rock<br>• that soils are made from rocks and organic matter.<br>• that they need light in order to see things and that dark is the absence of light<br>• that light is reflected from surfaces<br>• that light from the sun can be dangerous and that there are ways to protect their eyes<br>• that shadows are formed when the light from a light source is blocked by a solid object<br>• That different things move differently on different surfaces<br>• that some forces need contact between two objects, but magnetic forces can act at a distance<br>• that magnets attract or repel each other and attrad some materials and not others that some everyday materials that are attracted to a magnet, and identify some magnetic materials<br>• that magnets have two poles |
| Vocabulary | Deciduous, root, stem, flower, seed, canopy, trunk, fish, amphibians, reptiles, birds, mammals, carnivores, herbivores, omnivores, (body parts), wood, plastic, glass, metal, water, rock, flexible, hard, soft, absorbs, Summer, Spring, Autumn, Winter, Sun, day, Moon, night, light, dark | Previous year vocab and:<br>Habitat, dead, alive, food chain, prey, predator, light, air, oxygen, water, warmth, source, states, shapes, suitability, waterproof, classify, group, human, hygiene, nutrition | Previous year vocab and:<br>Magnetic, forces, attract, attraction, repel, poles, transported, life cycle, pollination, seed, formation, dispersal, opaque, transparent, translucent, reflected, fossils, protection, skeleton |

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| | Year 4 | Year 5 | Year 6 |
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| | • that living things can be grouped in a variety of ways<br>• that classification keys help group, identify and name a variety of living things in their local and wider environment<br>• that environments can change and that this can sometimes pose dangers to living things. | • the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>• the life process of reproduction in some plants and animals. | • 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 |
| | • the simple functions of the basic parts of the digestive system in humans<br>• the different types of teeth in humans and their simple functions<br>• that food chains vary and know what are producers, predators and prey. | • describe the changes as humans develop to old age. | • the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood<br>• the impact of diet, exercise, drugs and lifestyle on the way their bodies function<br>• the ways in which nutrients and water are transported within animals, including humans. |
| | • That materials, are solids, liquids or gases<br>• 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)<br>• the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | • The properties of everyday materials, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets<br>• that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution<br>• how mixtures might be separated, including through filtering, sieving and evaporating that dissolving, mixing and changes of state are reversible changes<br>• 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. | • that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago<br>• that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents<br>• how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. |
| | • how sounds are made, associating some of them with something vibrating<br>• that vibrations from sounds travel through a medium to the ear<br>• that there are patterns between the pitch of a sound and features of the object that produced it<br>• that there are patterns between the volume of a sound and the strength of the vibrations that produced it<br>• that sounds get fainter as the distance from the sound source increases. | • the movement of the Earth, and other planets, relative to the Sun in the solar system<br>• the movement of the Moon relative to the Earth<br>• that the Sun, Earth and Moon are as approximately spherical bodies<br>• the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. | • that light appears to travel in straight lines<br>• that objects are seen because they give out or reflect light into the eye<br>• that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes<br>• that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |
| | • Name at least 5 common appliances that run on electricity<br>• How to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers<br>• 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<br>• that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit<br>• some common conductors and insulators, and associate metals with being good conductors. | • that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object<br>• the effects of air resistance, water resistance and friction, that act between moving surfaces<br>• that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | • the recognised symbols when representing a simple circuit in a diagram. |
| Vocabulary | Previous year vocab and: | Previous year vocab and: | Previous year vocab and: adaptation, fossils, environment, reflect, reflection, reflecting, source, shadow, Characteristics, |

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| | Classification, keys, digestion, stomach, acid, incisor, molar, canine, producer, solids, liquids, gases, states, evaporation, condensation, vibration, pitch, volume, strength, circuit, cells, wire, buzzer, motor, insulator, conductor | Earth, Sun, spherical, properties, axis, rotation, day, night, phases of the Moon, air resistance, water resistance, friction, gravity, Newton, gears, pulleys Hardness, solubility, transparency, conductivity, magnetic filter, evaporation, dissolving, mixing, mammal, reproduction, offspring, Fetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty | micro-organisms, offspring, adaptation, evolution, inhabited, electricity, appliance, device, electrical circuit, complete circuit, components, positive, negative, connection, voltage, current, resistance.<br>Circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, exercise, drugs, lifestyle, evolution, suited/suitable, adapted, adaptation, offspring, reproduction, variation, inherit, inheritance, fossils<br>Organism, micro-organism, fungus, mushrooms, classification keys, environment, vertebrates, invertebrates, arachnid, mollusc, insect, crustacean |