# Science Key concepts and enquiry questions – Progression document

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|---|
| **Enquiry question (Big question to answer)** | | | | | | | |
| **Autumn 1** | How have I changed since I was a baby? | How can we measure the weather? | Why are there different types of habitats? | What are the different parts and functions of a flowering plant? | Can electricity be dangerous? | How do plants and animals reproduce? | How can bulbs get brighter in a circuit? |
| **Autumn 2** | Why does the weather change? | Why are there lots of different trees? | How can we investigate different materials? | What systems can be found in the human body? | Why is classification so important? | Why do materials have different properties? | How can diet and exercise impact the body's systems? |
| **Spring 1** | What is a life cycle? | What material is best to use for an umbrella? | What do plants need to grow? | What can be find out from studying fossils? | Why do we need to look after our teeth? | Can changes always be reversed? | Why are animals and humans classified in groups? |
| **Spring 2** | How does a flower grow? | How do animals stay alive? | What stages are there in a plant's life cycle? | How is water transported in plants? | How are sounds made? | How does gravity work? | How have living things evolved over time? |
| **Summer 1** | | What plants grow on the Isle of Wight? | How do humans stay healthy? | Why are magnetic forces so important? | Why is the world made up of solids, liquids and gases? | How does my body change as I get older? | |

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| **Summer 2** | Why do we have beaches on the Isle of Wight? | How do we use our senses? | | Why do we need light? | | What is our place in the Solar system? | How does light travel? |
| **Scientific knowledge and conceptual understanding**<br>The sequence of knowledge and concepts taught through biology, chemistry and physics disciplines. | | | | | | | |
| **Autumn 1** | **Marvellous me** | **Seasons** | **Living things and their habitats** | **Plants** | **Electricity** | **Living things and their habitats** | **Electricity** |
| **Specific discipline** | Biology | Physics | Biology | Biology | Physics | Biology | Physics |
| **Autumn 2** | **All around the world** | **Living things and their habitats** | **Uses of everyday materials** | **Animals, including humans (systems of the body)** | **Living things and their habitats** | **Properties and changes of materials** | **Animals, including humans** |
| **Specific discipline** | Physics | Biology | Chemistry | Biology | Biology | Chemistry | Biology |
| **Spring 1** | **Animals in Action** | **Everyday materials** | **Plants** | **Rocks** | **Animals, including humans** | **Properties and changes of materials** | **Living things and their habitats** |
| **Specific discipline** | Biology | Chemistry | Biology | Chemistry | Biology | Chemistry | Biology |

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| Spring 2 | Our World | Animals including humans | Plants | Plants | Sound | Forces | Evolution and Inheritance |
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| **Specific discipline** | Physics | Biology | Biology | Biology | Physics | Physics | Biology |
| **Summer 1** | | **Plants** | **Animals, including humans** | **Forces and magnets** | **States of matter** | **Animals Including Humans** | |
| **Specific discipline** | | Biology | Biology | Physics | Chemistry | Biology | |
| **Summer 2** | **Sunny days and sandy toes** | **Animals including humans** | | **Light** | | **Earth and space** | **Light** |
| **Specific discipline** | Chemistry | Biology | | Physics | | Physics | Physics |
| **Working Scientifically**<br>the understanding of the nature, processes and methods of science for each year group | | | | | | | |
| **Asking Questions** | | | | | | | |
| | To comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. | Ask questions about their world and the world around them (what I can see, smell, taste, touch etc)<br><br>Begins to shape questions using different question stems. | With support, suggest your own questions that might be investigated.<br>Begin to ask questions with relevance to a topic.<br>Increasingly asking about unknown phenomena. | Asks questions independently and generate own ideas to explore through Scientific enquiry.<br><br>Recognise different ways to answer a question. | Asks questions and offers ideas for a range of scientific enquiry.<br><br>With support, improves focus of question to clarify its scientific purpose. | Independently asks questions and offers ideas for scientific enquiry, which have a clear scientific purpose. | Recognises scientific questions that do not yet have definitive answers. |

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| | | | Recognise different ways to answer a question. | | | | |
| **Making Predications** | | | | | | | |
| | Generating a variety of ideas for testing (not always realistic/appropriate<br><br>Simple guess - what might happen?) | Decides which questions can be answered practically and which cannot. | Suggests the next step, or a sequence of steps, in a plan. Decides independently simple questions that could be answered practically and some that cannot. | Recognises when to answer a question by using a fair test method and when other methods might be needed.<br><br>A fair test identifies what to keep the same and what to change and measure. | Knows when to answer a question by using a fair test method and when better evidence could be generated in other ways, e.g. through a survey, diary/log or research.<br>Set up a fair test controlling variables. | Identifies the most appropriate enquiry methods to use to generate evidence needed to solve problems and answer scientific questions.<br><br>Plan familiar enquiry types in appropriate detail. | Selects methods to use to solve problems or answer questions, including a full range of enquiry methods, which are planned in detail. |
| **Scientific testing** | | | | | | | |
| | Looking at objects and pictures and discussing what they can see. | Begins to choose appropriate equipment to use to make observations and follows simple instructions for using it correctly and safely.<br>Standard units of measurement.<br>Use simple equipment to measure length, time, capacity, weight). | Begins to use basic equipment for measuring length or mass, in standard units, sometimes working independently of adult support.<br>Select the most appropriate measurement and equipment.<br><br>Use scientific vocabulary to aid measurement. | Selects from a wider range of equipment what to use in an investigation.<br><br>Uses basic equipment correctly, safely and with increasing accuracy.<br><br>Uses standard measuring | Uses a wide range of equipment for example thermometers and data loggers, correctly, safely, and accurately.<br><br>Deals with most equipment difficulties independently before asking for help if necessary. | Selects the most appropriate equipment to use in a range of contexts and enquiries.<br><br>Takes measurements using a range of science equipment with increasing accuracy and precision. | Explains why particular pieces of equipment or information sources will provide better quality evidence. |

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| | | | | equipment for quantities, such as volume and temperature. | | | |
| **Observing and Measuring** | | | | | | | |
| | Measuring. Measure by direct comparison. General sensory observations of animals and plants. Simple descriptions of the world around them.<br><br>Non-standard units of measurement.<br><br>Talking about objects and events.<br><br>Simple recording – pictures/images. | Can use non-standard units of measures where appropriate<br><br>Refine observations (more descriptive)<br><br>Makes relevant observations in familiar contexts.<br><br>With support take some non-standard measurements. | Can begin to use standard units of measurements where appropriate (to nearest cm etc.)<br><br>Make relevant observations. Takes non-standard measurements | Can take accurate measurements using standard units, using a range of equipment, including thermometers and start using data loggers | With support, takes accurate readings on measuring equipment, recognising when to repeat them.<br><br>Chooses to make a series of observations that will add to the evidence they collect while investigating. | Can take accurate measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br><br>Chooses to make a series of observations or measurements that will add to the quality of the evidence collected while investigating. | Can take accurate measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br><br>Repeats sets of observations or measurements, where appropriate, selecting suitable ranges and intervals, to give sufficient depth of evidence. |
| **Recording Data** | | | | | | | |
| | Use simple drawings and labels to present | Use simple drawings and labels to present | Uses drawings and labels to present evidence. | Gathers, records, classifies and presents data in a | Selects the most appropriate way to present | Records data and results of increasing complexity using scientific diagrams, | Decides on the most appropriate formats to present sets of scientific |

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| | evidence. | evidence.<br><br>With support, uses prepared simple tables and charts, including ICT forms. | Uses prepared tables and block graphs, including ICT forms.<br><br>Relate results to initial questions using scientific vocabulary.<br>Identify patterns in data and explain.. | variety of ways to help in answering questions.<br><br>Sometimes creates own tables and bar charts, using ICT where appropriate.<br><br>Interprets a line graph with support. | evidence they have collected.<br><br>Records findings using drawings, labelled diagrams, bar charts, tables and graphs, using ICT where appropriate.<br><br>Uses simple | classification keys, tables, bar and line graphs and models.<br><br>Communicates findings in written form, displays and uses other forms of presentation.<br>Uses scientific language to communicate increasingly detailed | data, such as using line graphs for continuous variables.<br><br>Communicates findings in written form, across a range of genres, and uses multimedia and other forms of presentation. |
| **Evaluating** | | | | | | | |
| | Can talk about what they have done and if they think it could be better | Reviews their work and with support, recognises some of the difficulties encountered. | Reviews their work and recognises some of the difficulties encountered. With support, suggests how these might have been avoided. | Suggests how an enquiry might be improved.<br><br>With support, recognises some of the limitations and significance of evidence. | Suggest how much to trust results, identifying some of the limitations of evidence.<br><br>Suggests new questions and predictions for setting up further tests. | Recognises some of the limitations of their evidence and can suggest why it should not be trusted.<br><br>Uses test results to set up further comparative tests. | Evaluates the effectiveness of their working methods, making practical suggestions for improving them.<br><br>Identifies scientific evidence that has been used to support or refute ideas or arguments. |
| **How we talk like Scientists** | | | | | | | |
| | To talk about some of the things they have observed, such as plants, animals, natural | Describes simple observations of an object or objects or of an event and with support makes a | Describes what has happened, making comparisons where appropriate. With support, sequences results, e.g. from | Reports on findings from enquiries, including oral and written, displays or presentations of results and | Makes a comparative statement, sometimes referring to the factors under | Where appropriate, makes a comparative statement, describing relationships between factors being investigated. | Uses scientific evidence to answer questions or support findings.<br><br>Draws valid conclusions that utilise more than |

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| | and found objects | simple comparison.<br>.<br>With support, recognises the links between cause and effect in simple, familiar situations. | smallest to largest<br>Recognises the link between cause and effect in simple, familiar situations.<br><br>Begins to notice simple patterns in results. | conclusions.<br><br>Make a general statement about simple patterns they notice in a set of results.<br><br>Provides explanations for simple patterns in results, referring to everyday experiences when explaining reasoning. | investigation.<br><br>Uses straightforward scientific evidence to answer questions or to support their findings.<br>Relates explanations of patterns in results to scientific knowledge and understanding when explaining reasoning. | Uses simple models to help describe scientific ideas.<br><br>Relates explanations of evidence gathered to scientific knowledge and understanding.<br><br>Makes generalisations about what that evidence seems to indicate. | one piece of supporting evidence.<br>Provides explanations for differences in repeated observations or measurements, identifying reasons for any anomalies noticed. |
| **Scientific Vocabulary taught** | | | | | | | |
| Autumn 1 | **Marvellous Me**<br>Science, older, younger, change, baby, toddler, child, teenager, adult, elderly person, people, grow, bigger, smaller, life cycle, body parts, environment, world, planet, pollution, same, similar, different, change, order, compare | **Seasons**<br>Seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature | **Habitats**<br>Biology, Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade, | **Plants**<br>Biology, Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll | **Electricity**<br>Physics, Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component. | **Habitats**<br>Biology, Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant | **Electricity**<br>Physics, Electricity,, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor. |

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| Autumn 2 | **All around the world**<br>Science, change, different, similar<br>Seasons (summer, autumn, winter, spring) | **Habitats**<br>Tree, branch, root, deciduous, evergreen, habitat, classify | **Materials**<br>Chemistry, absorbent, Waterproof, fabric, rubber, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending | **Body systems**<br>Biology, Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax, | **Habitats**<br>Biology, Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation. | **Materials**<br>chemistry, hardness, Solubility, filter, evaporation, dissolving, mixing material, dissolve, insoluble, suspension, chemical, physical, solution, separate, mixture, permeable, soluble, property | **Living things**<br>Biology, circulatory, digestive, muscular, system, heart, lungs, blood, organ, vessel, damage, transport, nutrient, function |
| Spring 1 | **Animals**<br>Science, observe, people, animals, changes, different, grow,, sunlight, seed, seedling, germinate, shade, soil, nutrients<br>Plant parts (stem, root) Live births, eggs, hatch, hatchling, gestation, chick, chicken, candling, pipping, life cycle<br>Predators, prey (species examples)<br>Trees | **Materials**<br>Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque, | **Plants**<br>Biology, Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight. | **Rocks**<br>Chemistry, Sedimentary, Metamorphic. Igneous<br>Plate tectonics<br>Core, crust, mantle, texture, colour, properties, chalk, granite, crystals, grains, sediments, eroding, weathering. | **Animals**<br>Biology, Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer. | **Materials**<br>chemistry, hardness, conductivity, magnetic, evaporation, mixing material, conductor, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, flexible, permeable, soluble, property, magnetic | **Habitats**<br>Biology, Variation Organisms, Classification Characteristics Environment,, fish, amphibians, reptiles, mammals,, Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean. |

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| | Animals<br>Living things | | | | | | |
| Spring 2 | **Our World**<br>Leaves, trunk, branch, root, seed, bulb, flower, stem | **Animals**<br>Herbivore, carnivore, omnivore, diet, mammals, reptiles, birds, amphibians, fish, similarities, differences, | **Plants**<br>Biology, Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight. | **Plants**<br>Biology, Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll | **Sound**<br>Physics, Amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave. | **Forces**<br>Physics, Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley. | **Evolution**<br>Chemistry, Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence, |
| Summer 1 | | **Plants**<br>Leaves, plant,, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, fruit, vegetable, grow | **Animals**<br>Biology, Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade, | **Forces**<br>Physics, Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass | **States of matter**<br>Chemistry, Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, | **Animals**<br>Biology, Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional | |
| Summer 2 | **Sunny days**<br>Science, change, different Recycle, waste, pollution, environment, | **Animals**<br>, sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, | | **Light**<br>Physics, Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, | | **Earth and Space**<br>Physics, Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. | **Light**<br>Physics, Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, |

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| | environmentally friendly, eco-friendly | fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow | | travel, straight, opaque, shadow, block, transparent, translucent. | | Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric. | shadow, block, transparent, translucent. Reflect Absorb Emitted Scattered Refraction |