

Year	Working scientifically – investigative skills		
	Asking questions, predicting, planning and doing	Observing, measuring and recording	Interpreting, explaining and communicating
1	<p>Ask questions</p> <p>Participate in discussions about how to find answers</p> <p>With help, suggest what might happen</p>	<p>Use all five senses to make observations</p> <p>Follow instructions about how to use simple equipment</p> <p>Make some simple non-standard measurements</p>	<p>With support, recognise cause and effect in simple situations</p> <p>Describe to others, what they did and what they observed.</p>
<b>Topics and Concepts to be covered:</b>			<b>Key Vocabulary</b>
<u>Plants</u> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees			leaf/leaves, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable
<u>Animals</u> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores			wild animals, pets, body, head, neck, arms, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, tongue, feet, tail, wing, claw, fin, scales, feathers, fur, beak, senses
<u>Materials</u> 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 Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties			object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy/floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through
<u>Seasonal Change</u> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies			season, spring, summer, autumn, winter, weather, hot/warm, cool/cold, sun/sunny, cloud/cloudy, wind/windy, rain/rainy, snow/snowing, hail/hailing, sleet, frost, fog/mist, ice/icy, rainbow, thunder, lightning, storm, light/dark, day/night

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2	Ask relevant questions Offer suggestions about how to find answers Perform simple tests Work safely with other people	Make close observations Follow instructions about how to use equipment Use non-standard measurements With guidance, record observations (e.g. complete given table)	Talk about what they have done or observed Make simple comparisons Communicate findings in a simple way With help, decide how to sort and group objects or materials
<b>Topics and Concepts to be covered:</b>			<b>Key Vocabulary</b>
<u>Plants</u> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy			Seeds, bulbs, fully grown, water, light, damp/wet/dry, dark/light, hot/warm/cool/cold, , grow/growth, healthy, shoot, seedling, wither/limp, die, dry/crispy, soil, earth
<u>Animals</u> Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene			Offspring, babies, young, grow, change, adults, older/younger, baby/toddler/child/teenager, basic needs, water, food, air, breathing, survival, exercise, food types, fruit and vegetable, bread, rice, potato, pasta, milk and dairy foods, foods high in fat or sugar, meat, fish, egg, beans, hygiene, clean, wash, healthy, medicine, drugs
<u>Materials</u> Identify and compare the suitability of a variety of everyday material, including wood, plastic, metal, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching			suitable/unsuitable, use/useful, object, material, property, hard, soft, stretchy, rigid, flexible, waterproof, absorbent, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, shape, changed, push, pull, twist, squash, bend, stretch, pinch, poke, roll, squeeze
<u>Living Things and their habitats</u> Explore and compare the differences between things that are alive, once alive and never alive Describe how living things are suited to their habitats and how plants and animals in them depend on each other Identify and name a variety of plants and animals in their habitats/microhabitats Describe how animals obtain their food from plants and other animals; use the idea of a simple food chains			Living, dead, never been alive, move, grow Feed, have offspring/young/babies, name local habitats, name micro-habitats, damp/wet/dry, dark/light, hot/warm/cool/cold, suited/suitable, basic needs, food, food chain, shelter

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3	<p>With help develop investigations from their own ideas</p> <p>Recognise that that questions can be answered in different ways</p> <p>Make simple predictions</p> <p>Notice if they are working safely</p>	<p>Make several related observations</p> <p>Use simple equipment provided</p> <p>Use non-standard measurements</p> <p>Record observations in simple tables</p> <p>With help, use simple pictograms, venn diagrams and bar charts</p>	<p>Link observations to their ideas and questions</p> <p>Explain simply what happened and whether this was expected</p> <p>Suggest how to sort and group objects or materials</p>
<b>Topics and Concepts to be covered:</b>			<b>Key Vocabulary</b>
<u>Plants</u> Identify and describe the functions of different parts of a plant: root, stem/trunk, flowers, leaves Explore the requirements of plants for life and growth (air, light, water, nutrients, space) and how they vary from plant to plant Investigate how water is transported in plants Explore the part flowers play in plant life cycles, including pollination, seed formation and seed dispersal			Part, role, leaf, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, water, light, air, nutrients, soil, fertiliser, damp/wet/dry, dark/light, hot/warm/cool/cold, use comparatives e.g. hotter, grow/growth, healthy, transported, life cycle, pollination, seed formation, seed dispersal
<u>Animals</u> Identify that animals need the right types and amounts of nutrition; they cannot make their own food – they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement			Nutrition, nutrients, food types, fruit and vegetable, carbohydrates, protein, vitamins and mineral, fat, fibre, water, balanced diet, skeleton, muscles, support, protection, movement, skull, ribs, spine/vertebra, joints, sockets, bones, tendons
<u>Rocks</u> Compare and group rocks according to appearance and simple physical properties Describe in simple terms how fossils are formed Recognise that soil is made from rocks and organic matter			Rock, stone, pebble, boulder, soil, fossils, grains, crystals, hard/soft, texture, absorb, water, let water through, marble, chalk, granite, sandstone, slate, sandy soil, clay soil chalky soil, peat
<u>Lights and Shadow</u> Recognise we need light to see and dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and the need to protect their eyes Recognise that shadows are formed when light from a source is blocked; identify patterns in how the size of a shadow changes			Light, light source, names of light sources e.g. torch, dark/darkness, reflect, reflective, mirror, shadow, block, direct/ direction, transparent , opaque , translucent
<u>Forces and Magnets</u> Compare how things move on different surfaces Notice that magnetic force can act at a distance Observe how magnets attract or repel each other and attract some materials and repel others Compare and group materials according to if they are magnetic Describe magnets as having two poles and use this to predict if they will attract or repel			Force, push, pull, contact force, non- contact, force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic, material, metal, iron, steel, non-magnetic material, poles, north pole, south pole

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4	suggest ideas or make predictions that can be tested Ask relevant questions, Suggest different types of enquiry to answer questions Recognise whether or not a test is fair	Make several related observations Use simple equipment provided Use non-standard measurements Record observations in simple tables With help, use charts and graphs	Link observations to their ideas and questions Explain simply what happened and whether this was expected Recognise the need to communicate findings Decide how to sort and group objects/materials
Topics and Concepts to be covered:			Key Vocabulary
<u>Living things and their habitats</u> Recognise that living things can be grouped in a variety of ways Explore and use classification keys to group, identify and name a variety of living things in the local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things			classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, human impact
<u>Animals</u> Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their function Construct and interpret a range of food chains; identify producers, predators, prey			digestive system, nutrition, nutrients, mouth, teeth, canines, incisor, molar, pre-molar, saliva, tongue, rip, tear, chew, grind, cut, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain
<u>States of Matter</u> Compare and group materials according to whether they are solid, liquid or gas Observe that some materials change state when they are heated or cooled and measure the temperatures at which these changes happen Identify evaporation and condensation in the water cycle and link the rate of evaporation with temperature			states of matter, solid, liquid, gas, air, oxygen, powder, grain/granular, crystals, change state, ice/water/steam, water vapour, heated, cooled, temperature, degrees Celsius, melt, freeze, solidify, melting point, molten, boil, boiling point, evaporate/evaporation, condense/condensation, water cycle, precipitation, transpiration
<u>Sound</u> Identify how sounds are made and recognise that vibrations from sounds travel to the ear Find patterns between the pitch of a sound and the object that makes the sound Find patterns between the volume of a sound and the strength of the vibrations Recognise that sounds get fainter as the distance from the source increases			Sound, sound source, noise, vibrate/vibration Travel, solid/liquid/gas, pitch, tune, high/low, volume, loud/quiet, fainter, muffle, strength of vibrations, insulation, instrument, percussion, strings, brass, woodwind, tuned instrument
<u>Electricity</u> Identify common appliances that run on electricity Construct a simple series circuit; identify and name its parts Recognise that a component will only work if the circuit is complete and that a switch open and closes a circuit Identify common conductors and insulators Observe how magnets attract or repel each other and attract some materials and repel others Compare and group materials according to if they are magnetic Describe magnets as having two poles and use this to predict if they will attract or repel			Electricity, appliances/device, mains, plug, electrical circuit, complete circuit, circuit, diagram, circuit symbol, components, cell, battery, positive/negative, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, motor, fast(er)/slow(er), conductor, insulator, metal/non metal

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5	<p>Explain whether or not a test is fair</p> <p>Identify risks and decide how to work safely</p> <p>Suggest what evidence should be collected</p> <p>Begin to select measuring instruments independently</p>	<p>Make careful observations and accurate measurements</p> <p>Choose and use a range of equipment appropriately</p> <p>Use standard measurements</p> <p>Record observations in a variety of ways</p>	<p>Explain simple patterns in their recorded measurements</p> <p>Use results to make links between what happened and what was expected, and make an attempt to explain why</p> <p>Use evidence collected to disprove or support their original predictions; with help make further predictions</p>
<b>Topics and Concepts to be covered:</b>			<b>Key Vocabulary</b>
<p><u>Living things and their habitats</u></p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the process of reproduction in some plants and animals</p>			<p>life cycle, reproduction, sexual, asexual, germination, pollination, seed formation, seed dispersal, pollen, stamen, stigma, plantlets, e.g. spider plant, runners e.g. strawberry, plant, mammal, amphibian, insect, bird</p> <p>fish, reptile, eggs, live young</p>
<p><u>Animals</u></p> <p>Describe the changes as humans develop from babies to old age</p>			Life cycle
<p><u>Materials</u></p> <p>Compare and group properties on the basis of their properties (hardness, solubility, transparency, magnetism and conductivity – electrical and thermal)</p> <p>Know that some materials will dissolve and describe how to recover them from a solution</p> <p>Use knowledge of solids, liquids and gases to separate mixtures of materials</p> <p>Give reasons for particular uses of materials</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible</p> <p>Explain that some changes are irreversible and result in the formation of new materials</p>			<p>Hard, soft, stretchy, rigid, flexible, waterproof, absorbent, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, solubility, electrical, conductivity, thermal conductivity, melting, states of matter, solid, liquid, gas, change state, dissolve, solution, soluble, insoluble, condensing, reversible changes, new material, not usually reversible, burning, gas given off, rusting, solute, solvent, particle, mix/mixture, filtering, sieving, evaporating, residue</p>
<p><u>Earth and Space</u></p> <p>Describe the movement of the Earth and other planets relative to the Sun in the solar system</p> <p>Describe the movement of the moon relative to earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>			<p>Earth, planets, Sun, solar system, Moon, celestial body, sphere/spherical, rotate/rotation, spin, night and day, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, 'dwarf' planet, orbit</p> <p>Revolve, geocentric model, heliocentric model, shadow clocks, sundials, astronomical clocks</p>
<p><u>Forces</u></p> <p>Explain that unsupported objects fall to earth because of the force of gravity acting between the Earth and the object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that levers, pulleys and gears allow a smaller force to have a greater effect</p>			<p>Fall, Earth, gravity, air resistance, water, resistance, friction, moving surfaces, mechanisms, levers, pulleys, gears, force, transfers</p>

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6	<p>Make predictions based on scientific knowledge</p> <p>Plan different types of scientific enquiry to answer questions</p> <p>Explain why in a fair test, only one factor should be changed</p> <p>Decide independently what evidence should be collected</p> <p>Select measuring instruments independently</p>	<p>Present observations and measurements clearly</p> <p>Use appropriate bar graphs, tables and charts to present results</p> <p>Use a range of equipment appropriately and with care and precision</p> <p>Begin to plot points to form simple graphs</p>	<p>Link the outcome of the investigation to the original question or idea</p> <p>Begin to use line graphs to point out and interpret patterns in data</p> <p>Begin to relate conclusions to patterns in the data and to their scientific knowledge and understanding</p> <p>Identify problems with their work; begin to suggest improvements</p>
<b>Topics and Concepts to be covered:</b>			<b>Key Vocabulary</b>
<p><u>Living things and their habitats</u></p> <p>Describe how living things are classified into groups according to observable characteristics based on similarities and differences, including micro-organisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p>			<p>Organism, micro-organisms, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, arachnid, mollusc, insect, crustacean</p>
<p><u>Animals</u></p> <p>Identify and name the main parts of the circulatory system and describe their functions</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on body function</p> <p>Describe how nutrients and water are transported within animals including humans</p>			<p>circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, water, diet, exercise, drugs, lifestyle</p>
<p><u>Evolution and Inheritance</u></p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that offspring vary from and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment and that this may lead to evolution</p>			<p>Evolution, suited/suitable, environment, suited, adapted/adaptation, offspring, characteristics, vary/variation, inherit/inheritance, fossils</p>
<p><u>Light</u></p> <p>Recognise that light travels in straight lines and that we see things when objects give out or reflect light into the eye</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then our eyes</p> <p>Use the idea that light travels in straight lines to explain the shapes of shadows</p>			<p>Light, light source, names of light sources e.g. torch, dark/darkness, reflect, reflective, mirror, shadow, block, absorb, direct/ direction, transparent, opaque, translucent</p>
<p><u>Electricity</u></p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function</p> <p>Use recognised symbols in simple circuit diagrams</p>			<p>Electricity, appliances/device, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, terminal,, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), conductor, insulator, metal/non- metal, voltage, current, resistance</p>