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Science Knowledge and Skills Progression

Year	National Curriculum	Topic & Trips	Knowledge	Skills- Working Scientifically	Vocabulary
EYFS Autumn	**The Natural World:** •Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	**Project Focus:** Autumn/Winter	To know about the natural environment. To know how to respect and care for the natural environment To know about and recognise the signs of Autumn/Winter	Introduce Wild Area – exploring/respecting nature Go out on Autumn/Winter walks and observe/collect natural resources Reference non-fiction texts about nature Research/retrieve information from internet linked to environment	Nature Environment Seasons - Autumn/Winter Change Similarities/differences Respect
EYFS Spring		**Project Focus:** Science experiments – linked to children's ideas and suggestions	To know about features of the world and Earth To know some important processes and changes in the natural world including states of matter (freezing) To plant and observe the growth of seeds and talk about changes To know how to care for growing plants	Reference non-fiction texts about Earth Plan and carry out simple science experiments (inc. floating/sinking, freezing/melting, growing seeds in different locations etc) Reference non-fiction texts/internet about plants and plant growth	Earth Solar system Experiment Float/sink/freeze/melt Liquid/solid Growing - sunlight/water/soil
EYFS Summer		**Project Focus:** Chicken life-cycle (Raise chicks from eggs in incubator)	To learn about life cycles of plants and animals To know that some things in the world are man-made and some things are natural To harvest grown vegetables	Observe changes in plant growth (inc. wild area planting of vegetables to be harvested) Observe changes in embryo/chick development using egg incubator Observe changes in caterpillar/butterfly process (inc. reference to information texts) Pick vegetables and cook on fire	Life cycles Incubator Mate/Fertilised/Embryo/hatch Egg/Caterpillar/chrysalis/butterfly Metamorphosis Harvest Seasons Weather
1 (Autumn)	Animals including Humans Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Week 1 - 5: The Human Body	To know the body has lots of parts To know that each part of the body has a name. To know which part of the body is associated with each sense.	To be able to ask simple questions and recognise that they can be answered in different ways. To be able to use their observations and ideas to suggest answers to questions. To be able to perform simple tests.	Head: hair, face, ear, teeth, mouth, nose, eye neck, head, arm, knee, foot, leg, hand, elbow,

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	Seasonal Changes Observe changes across the four seasons.	Week 6: Seasonal Changes	To know that there are four seasons in one year. To know the seasons are spring, summer, autumn and winter. To know that in autumn, the hours of daylight start to become shorter and the nights start to become longer. To know some trees lose their leaves in autumn.	To be able to ask simple questions and recognise that they can be answered in different ways.	Autumn, daylight, night, weather, season, light, dark
	Everyday Materials	Week 7-11: Materials	To know that different objects are made from different materials To know which material an object is made from To know the freezing and melting properties of water To know which objects absorb water along with which ones will float and which will sink	To ask questions using scientific vocabulary To answer questions and make conclusions To make observations To gather, record and classify	material, shiny, dull, rock, heavy, light, rough, smooth, object, metal, wood, plastic, glass, wool, solid, liquid, melt, freeze, ice, float, sink, absorb, transparent, opaque
	Seasonal Changes Observe and describe weather associated with the seasons and how day length varies	Week 12: Seasonal Changes	To know there are four seasons in one year – spring, summer, autumn and winter. To know in winter, the hours of daylight are shorter and the nights are longer. To know the weather often changes in winter	To be able to gather and record data to help in answering questions To make observations	winter, rainfall, weather, rain-gauge, cold, snow, temperature, freezing
Spring	Plants	Week 1: Planting	To be able to label different parts of a plant To know the changes that occur when a plant is growing	To ask questions To gather, record and classify To make observations	flower, leaf, stem, roots, seed, soil

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		Week 2-7: Animals	To know the different types of animals and how they differ from each other To know that animals can be carnivores, herbivores or omnivores and be able to identify some of them	To answer questions and make conclusions To make observations	animal, mammal, fur, wild mammal, pet, bird, wings, beak, feathers, flipper, webbed feet, fish, fin, tail, scales, gills, amphibian, frog, toad, newt, webbed feet, reptile, lizard, crocodile, turtle, carnivore, herbivore, omnivore
Spring 2	Sustainability	Week 8-9: Sustainability -Caring for the Planet	To know why it is important to care for our planet To know how to care for our planet	To ask questions To answer questions and make conclusions	Earth, planet, land, water, animals, plants, clean, recycle, reuse
	Seasonal Changes	Week 10: Seasonal Changes	To know there are four seasons in one year – spring, summer, autumn and winter. To know in Spring, the hours of daylight get slightly longer and the nights are getting shorter. To know the weather often changes in Spring	To make observations To answer questions and make conclusions To consolidate	vegetable, fruit, Spring, daylight, night, weather, season, rain, sleet, cloud, sun, wind, snow
	Plants	Week 11: Planting	To know how a plant changes over time To know what a plant needs to grow To know the different parts of a plant	To make observations To ask question To consolidate	flower, leaf, stem, roots, seed, soil

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1 (Summer)	Plants	Week 1 – 5: Plants	To know the difference between plants and trees including the different parts and their names To know the difference between wild and garden plants To know what a deciduous tree is and what an evergreen tree is	To make observations To answer questions and make conclusions To consolidate	flower, petals, leaf, stem, roots, leaf, branch, trunk, fruit, wildflower, daisy, garden plant, sunflower, nettle, buttercup, dandelion, garden plant, deciduous tree, horse chestnut, oak, sycamore, evergreen, pine, holly, needles
	Plants	Week 6: Planting	To know how a plant changes over time To know what a plant needs to grow To know the different parts of a plant	To make observations To ask question To consolidate	growth, measure, trowel, observation
	Sustainability	Week 7-9: Sustainability – Growing and Cooking	To know where our food comes from To know what you can make using different foods available	To ask questions To answer questions and make conclusions	fruit, vegetables, meal, plant, meat
	Seasonal Changes	Week 10: Seasonal Changes	To know there are four seasons in one year – spring, summer, autumn and winter. To know that in Summer, the hours of daylight are longer and the nights are shorter. To know the weather often changes in Summer	To make observations To answer questions and make conclusions To consolidate	Summer, daylight, weather, night, season, rainy, windy, cloudy, sunny, daylight, record, weather

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2 (Autumn)	Animals including Humans	Week 1-4: Animals need for survival	To know examples of mammals, birds, fish, amphibians and reptiles To know what the different types of animals need to survive	To ask questions To answer questions and make conclusions	mammal, fur, carnivore, herbivore, omnivore, bird, feathers, beak, insect, wing, fish, scales, gills, fin, amphibian, webbed feet, frog, toad, newt, reptile, scales
	Animals including Humans	Week 5-6: Humans	To know why we exercise and the impact it has on us To know what a healthy diet includes To know about germs and how to be hygienic To know how to look after your teeth	To gather, record and classify To answer questions and make conclusions To make observations	adult, baby, shelter, heart, exercise, physical health, mental health, healthy diet, unhealthy diet, meat, vegetable, fruit, sugar, germs, hygiene, doctor, disease, teeth, plaque, filling, gums
	Uses of Everyday Materials	Week 7-11: Materials	To know which materials different objects are made from To know some things that you can make with specific materials and why To know properties of materials	To ask questions To answer questions and make conclusions To make observations	material, natural material, human-made material, recycle, smooth, rough, flexible, rigid, rock, stone, pebble, brick, material, brittle, flexible, transparent, translucent, opaque, hard, shiny, dull, fabric, flexible, tough, lightweight, tough, soft, bend, squash, twist, stretch
	Sustainability	Week 12: Sustainability: Plastic	To know how plastic is helpful and harmful To know how we can have an impact in our school	To ask questions To answer questions and make conclusions	waterproof, strong, breakable. recycle, reuse
2 (Spring)	Plants	Week 1-3: Plants: Light and Dark	To know and describe the different parts of plants To know what plants need to grow	To gather, record and classify To answer questions and make conclusions To make observations	blossom, stem, leaf, trunk, branch, seed, plant, sunlight, independent variable, dependant

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			To know the impact of light and darkness on plants		variable, controlled variables, compost
	Living Things And Their Habitats	Week 4- 10 Living Things And Their Habitats	To know what a habitat is To know which animals live in which habitats To know the difference between living, dead and never been alive To be able to draw a food chain	To ask questions To make observations	mammal, bird, deciduous tree, evergreen tree, habitat, carnivore, herbivore, arctic plants, hibernate, reptile, cactus, desert, rainfall, ocean, fish, mammal, seagrass, woodland, fern, moss, microhabitat, insect, spider, snail, diet, food chain, living, dead, never alive, plant, animal
	Plants	Week: 11 Plants: Light and Dark	To know what plants need to stay healthy To know the impact of light and darkness on a plant	To make observations To answer questions and make conclusions To consolidate To gather, record and classify	blossom, stem, leaf, trunk, branch, seed, plant, sunlight, independent variable, dependant variable, controlled variables, compost
2 (Summer)	Plants	Week 1-2 Plants: Bulbs and Seeds	To know what a bulb and a seed is To know what plants need to grow	To ask questions using scientific vocabulary To answer questions and make conclusions To make observations	plant, bulb, seed, shoot, roots, sunlight, temperature, growth, compost, measurement, observe
	Animals including Humans	Week 3-6: Growing Up	To know which offspring are linked to which parents To know the different stages of a human life cycle To know the life cycles of different animals	To make observations To answer questions and make conclusions	offspring, egg, adult, parent, baby, child, teenager, life cycle, mammal, adolescent, amphibian, frogspawn, tadpole, froglet, egg, caterpillar, pupa, butterfly, compare,

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	Plants	Week 7: Bulbs and Seeds	To know what a healthy and an unhealthy plant looks like and why To know how to use a ruler	To make observations To gather, record and classify	plant, bulb, seed, shoot, roots, sunlight, temperature, growth, compost, measurement, observe
	Animals including Humans	Week 8: Growing Up	To know the butterfly life cycle	To make observations To answer questions and make conclusions To consolidate To gather, record and classify	butterfly, life cycle, stages, chrysalis, pupa, caterpillar,
	Sustainability Plants Living Things & Their Habitats	Week 9-10: Sustainability – wildlife.	To know what wildlife does for us To know how animals help us	To ask questions To consolide	food chain, wildlife, habitat, crops, insect
3 (Autumn)	Animals Including Humans	Week 1-3: Skeletons	To identify and name bones in the human body and animals To know the function of the skeleton To know that some animals do not have spines	To make observations To answer questions and make conclusions	skeleton, skull, pelvis, femur, spine, ribcage, mammal, bird, fish, amphibian, reptile, antennae, insect
	Animals Including Humans	Week 4: Movement	To know the names of joints To know how we move	To make observations To answer questions and make conclusions To consolidate	exoskeleton, joint, hinge joint, ball-and-socket joint, muscle, bicep, tricep, contract, relax
	Animals Including Humans	Week 5-7: Nutrition and Diet	To know and understand food groups To know what a balanced diet looks like and compare diets To know the diet of animals	To ask questions To answer questions and make conclusions To make observations	carbohydrates, protein, dairy, fats, sugars, balanced diet, balanced meal, nutrition, eatwell guide, vegan diet, vegetarian diet, pescatarian diet, omnivorous diet, herbivore, carnivore, omnivore,

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	Sustainability	Week 8: Sustainability	To know what food waste is and how we reduce it	To ask questions To answer questions and make conclusions To consolidate	supermarket, landfill, sea, river, waste, recycle, environment
	Rocks	Week 9 -11: Rocks	To know how to identify and group rocks To know how to complete a fair test	To ask questions To gather, record and classify To make observations	granite, pumice, sandstone, chalk, marble, gneiss crystals, grains, layers, texture, hardness, float, sink, brittle, reaction, weathering
3 (Spring)	Rocks	Week 1-2: Fossils	To know how fossils are formed To know where fossils can be found	To ask questions To answer questions and make conclusions To make observations	fossil, rock, skeleton, shell, fossilisation, rock, skeleton, fossil
	Rocks	Week 3-5: Soils	To know the different types of soil To know what soil provides for plants and animals To know which soils absorb the most water	To ask questions To answer questions and make conclusions To make observations To gather, record and classify	sediment, soil, sandy soil, clay soil, peat soil, chalky soil, organic matter, nutrients, habitat loss, deforestation, habitat, filter paper, filter funnel, measuring cylinder, absorb, conclusion, evaluation, data
	Light	Week 6-11: Light	To know what a light source is To know how shadows are formed and how they change To know the difference between transparent, translucent and opaque	To ask questions To make observations To gather, record and classify	light, eyes, light sources, natural light sources, artificial light sources, sunglasses, protect, reflection, shiny, dull, opaque, translucent, transparent, shadow, independent variable, dependant variable, controlled variable, distance, evaluation
3 (Summer)	Plants	Week 1-6 Plants	To know the functions of different parts of a plant	To ask questions	leaf, stem, roots, flower, soil, dissection,

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			To know how plant growth is affected To know how water transportation works in plants To know how the reproductive cycle works in plants	To answer questions and make conclusions To consolidate	independent variable, dependant variable, controlled variable, seed, scales, measuring cylinder, water transportation, seedling, seed coating, germination, petal, stamen, pollen, pistil, eggs, reproductive organs, pollination, pollinators, dispersal, germination, seed dispersal, life cycle
	Forces & Magnets	Week 7-8: Forces	To know the different types of forces and the impact they have To know what friction is and how it affects movement	To ask questions To make observations To gather, record and classify	push, pull, force, contact force, friction, smooth, rough, independent variable, dependant variable, controlled variable, data, prediction,
	Forces & Magnets	Week 9-10: Magnets	To know what a magnet is To know which metals are magnets To know that there are north and south poles	To ask questions To answer questions and make conclusions To make observations	magnet, magnetic, poles, iron, magnetic force, metal, non-metal, attract, steel, aluminium, repel
	Plants	Week 11: Plants	To know how best seeds grow	To ask questions To make observations To gather, record and classify	leaf, stem, roots, flower, soil, dissection, independent variable, dependant variable, controlled variable, seed, scales, measure
	Sustainability	Week 12: Sustainability	To know what biodiversity is To know how we can increase biodiversity in our local area	To answer questions and make conclusions To consolidate	endangered, extinct, rewilding, habitat,

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4 (Autumn)	Animals Including Humans	Week 1-3 Group and Classify Living Things	To know what a spine is To know how to classify animals To know what vertebrates and invertebrates are To know how to classify plants	To ask questions To make observations To gather, record and classify	Mammal, bird, fish, amphibian, reptile, vertebrate, invertebrate, exoskeleton, insect, spider, soft-bodied invertebrate, flowering plant, non-flowering plant, stamen, pistil, pollination, fern, moss
	Living things and their habitats Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	Week 4: Data Collection	To know that in summer, flowers are pollinated and change into fruits. To know there is typically more active plant and animal life in summer. To know that in summer, there are more insects and other invertebrates than in the other three seasons.	To be able to gather, record, classify and present data in a variety of ways, to help in answering questions.	Vertebrate, invertebrate, flowering plant, non-flowering plant
	State of Matter	Week 5-11 State of Matter	To know the three states of matter and how to describe them To know the boiling and freezing temperature of water To know that states of matter can be changed To know how the water cycle works	To ask questions To answer questions and make conclusions To make observations To consolidate	bar chart, pictogram, data, prediction, solid, liquid, gas, states of matter, volume, pouring solid, volume, oobleck, flow, freezing, melting, boiling, condentation, evaporation, thermometer, stopwatch, beaker, temperature, independent variable, dependant variable, controlled variable, melting point, the water cycle, precipitation, atmosphere, petri dish, observe, conclusion

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4 (Spring)	Sound	Week 1-5: Sound	To know the definition of volume and pitch To know how instruments make sounds To know the different parts of the ear and what they are for	To ask questions To answer questions and make conclusions To make observations	vibration, ear, sound, volume, pitch, outer ear, ear bone, cochlea, ear canal, eardrum, decibel, decibel metre, insulate, high-pitched, low-pitched
	Living things and their habitats	Week 6: Data Collection	To know how to record data using a tally chart	To make observations To gather, record and classify	independent variable, dependant variable, controlled variable, background noise, conclusion, evaluate, vertebrate, invertebrate, flowering plants, non-flowering plants, bar chart, pictogram, data
	Electricity	Week 7-10: Electricity	To know common appliances that use electricity To know how to build and draw a circuit To know what conductors and insulators are	To ask questions To answer questions and make conclusions To make observations	appliances, plug, socket, cell, electrocuted, circuit, switch, battery, buzzer, conductor, insulator, metal, material
	Sustainability: How can we reduce our energy usage?	Week 11: Sustainability: Energy	To know that electricity is energy that flows in wires. To know that we use electricity to power our homes and schools. To know that electricity can be made from burning oil, coal and natural gas which is harmful for planet Earth.	To be able to use scientific evidence to answer questions and support their findings	Electricity, mains electricity, appliance, Earth, energy usage

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4 (Summer)	Animals Including Humans	Week 1-2: Data Collection	To know there is more active plant and animal life in the Summer To know flowers are pollinated and turn into fruits To know that bar charts and pictograms are used to represent information and you can use them to spot trends and patterns To know what data can be used to find changes over time and come to conclusions	To make observations To gather, record and classify	vertebrate, invertebrate, flowering plant, non-flowering plant, bar chart, pictogram, data, vertebrate, invertebrate, seasonal changes, increase, decrease, conclusion
		Week 3-4 Habitats	To know which habitats are for which animals To know what biodiversity and deforestation is To know how we have positive and negative impacts on the environment To know what vertebrates and invertebrates are	To ask questions To answer questions and make conclusions To make observations	compare, habitat, rural habitat, urban habitat, biodiversity, classification key, vertebrate, invertebrate, natural resources, deforestation, rewilding, nature reserve,
		Week 5: Sustainability Deforestation	To know what deforestation is To know what impact the UK and elsewhere in the world has on deforestation	To ask questions To answer questions and make conclusions	natural resource, deforestation, habitat destruction, biodiversity, palm oil, extinct, endangered, sustainable
		Week 6 - 10: The Digestive System	To know the different type of teeth that carnivores, herbivores and omnivores have To know the four types of teeth humans have and what they are used for To know the harms of plaque on your teeth	To ask questions To answer questions and make conclusions To make observations	teeth, carnivore, herbivore, omnivore, teeth, incisors, canines, premolars, molars, germs, enamel, root, plaque, decay, digestive system, mouth, oesophagus, stomach, intestines, rectum, saliva

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			To know the purpose of the different layers that teeth have		
		Week 11 - 12: Food Chains	To know what a food chain is and be able to understand it To know how to construct a food chain To know the effects of human behaviour	To answer questions and make conclusions To consolidate	food chain, producer, predator, prey, consumer, habitat, farming, overfishing, hunting
5 (Autumn)	Earth Space Forces	Week: 1-5: Forces	To know what friction is and how it can stop or slow down an object To know how friction is useful in our everyday lives To know that air resistance is a type of friction and how it increases and decreases To know that gravity is a non-contact force and how it works To know what levers, pulleys and gears are and the effects they have	To answer questions and make conclusions To consolidate To make observations	air resistance, drag, parachute, force, independent variable, dependent variable, controlled variable, air resistance, streamline, repeatability, precision, surface area, anomalous result, repeatability, water resistance, gravity, weight, contact force, non-contact force, lever, gear, pulley, machine
		Week: 6-10: Space	To know that the sun, planets and moons are approximately spherical bodies To know that the solar system is a collection of planets, moons and the sun To know that the sun is a star which releases heat and light To know that the sun is at the centre of the solar system To know there are eight planets that orbit the Sun	To ask questions To answer questions and make conclusions	solar system, planets, orbit, sun, planet, orbit, pluto, celestial body, model, heliocentric model, geocentric model, rotate, north pole, south pole, axis, Earth, night, day, moon, gravitational force, satelite

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			To know Mercury, Venus, Earth and Mars all have a solid surface To know Jupiter, Saturn, Uranus and Neptune are made mostly of gas and do not have a solid surface To know Pluto is classified as a dwarf planet To know Earth and the other planets orbit the Sun To know Scientific models are representations of ideas or processes and models can be created in different ways to represent the Solar System		
		Week 11: Sustainability: Global Warming	To know the greenhouse effect is caused by greenhouse gases trapping heat from the Sun. This leads to global warming To know that global warming can lead to glaciers and ice caps melting. This can cause sea levels to rise, leading to flooding To know that global warming can change weather patterns and can lead to drought or flooding. Drought and flooding make it hard to grow crops To know that global warming affects humans, animals and plants	To ask questions To answer questions and make conclusions	greenhouse, sun, planet, moon, flooding, drought, global warming, temperature, climate

			To know that global warming and climate change can cause icy habitats to melt due to increasing temperatures To know humans, animals and plants are affected by flooding and drought caused by global warming		
5 (Spring)	Living Things & Their Habitats Animals Including Humans	Week: 1-4: Properties of Materials	To know materials can be transparent, translucent or opaque To know a harder material will scratch a softer material To know most metals are non-magnetic. Only a few metals are magnetic, such as iron and steel To know an electrical conductor is a material that allows electricity to flow through it To know an electrical insulator is a material that does not allow electricity to flow through it To know metals are good electrical conductors but plastic, wood and paper are electrical insulators To know materials have specific uses To know metals are good conductors of electricity and heat but plastics are good insulators of electricity	To ask questions To answer questions and make conclusions To make observations	transparent, translucent, opaque, magnetism, hardness, electrical conductor, electrical insulator, circuit, cell, bulb, independent variable, dependent variable, controlled variable, thermal insulator, thermometer, control beaker, temperature, conclusion, anomalous result, properties, wood, metal, plastic
		Week 5- 9: Animals	To know the human life cycle has six main stages – foetus, baby, child, adolescent, adult and elderly adult	To ask questions To answer questions and make conclusions	lifespan, adolescent, baby, foetus, elderly adult, adult, life cycle, milestone, baby,

		including humans	To know every human goes through the same life stages in the same order and all humans start their life as a foetus inside their mother's womb To know after puberty, humans can reproduce To know babies are dependent on adults for food, warmth and comfort & most babies and toddlers hit certain milestones in their first two years of life, such as crawling and walking To know throughout childhood, children grow and develop at a rapid rate in terms of their mass, height and brain development To know puberty is the process that prepares humans for reproduction and hormones are chemicals that are released by your body during puberty which cause physical and emotional changes To know key changes that happen to females during puberty include the start of periods, growth of underarm and pubic hair, mood swings, spots and growth of breasts To know key changes that happen to males during puberty include growth of body hair, growth of the penis and testicles, spots, mood swings and deepening of the voice To know a person is classed as an adult from age 18 onwards and a person is classed as an elderly adult from approximately 65	To make observations	toddler, child, womb, adolescent, period, reproduce, puberty, hormone, life expectancy, gestation, mammal, offspring, correlation, anomaly, monotreme, offspring, mammary gland, mammal, amphibian

			To know when a person enters adulthood, their rate of growth slows down and their body is fully developed To know the human body gradually changes with age. For example, skin loses elasticity, resulting in wrinkles, bones may become weaker and height may decrease To know humans are mammals because they are warm-blooded, give birth to live young and feed their offspring on milk To know gestation is the period of time that a foetus develops in its mother's womb and mammals have different gestation periods- The gestation period of a human is approximately nine months To know the lifespan of an animal is how long the animal is alive and usually, the longer the gestation period of an animal, the longer the lifespan- Humans have a relatively short gestation period compared to their lifespan		
		Week:10-12: Life Cycles	To know the life cycle of a mammal has four main stages: foetus, young, adolescent and adult To know most mammals give birth to live young and have mammary glands that produce milk to feed their young To know when mammals become adults, they are able to reproduce	To ask questions To answer questions and make conclusions To consolidate	frogspawn, tadpole, froglet, metamorphosis, lava, pupa, chrysalis, insect, bird's egg, hatchling, nestling, fledgling, adult bird

			To know amphibians are small vertebrates that need water or a moist environment to survive To know the life cycle of a frog has four main stages: frogspawn, tadpole, froglet and adult frog To know tadpoles have gills to help them to breathe under water, a tail to help them to swim and a mouth to feed- Tadpoles take around 14 weeks to transform into frogs To know an adult frog has no tail and is fully equipped to live both on land and in water To know insects are small animals that have three body sections, six legs and antennae, and usually lay eggs To know there are four main stages of the life cycle of an insect: egg, larva, pupa and adult. Larvae are the young form of insects. Pupae are insects in the stage of development between larvae and adults. To know birds are vertebrates with wings, feathers and a beak To know the life cycle of birds includes five stages: egg, hatchling, nestling, fledgling and adult bird To know birds reproduce by laying eggs which are incubated by parents until they hatch		

			To know an adult bird is able to reproduce and will have all its feathers		
5 (Summer)	Properties & Changes of Materials	Week: 1-3: Reproduction	To know sexual reproduction involves two parents producing offspring To know offspring produced by sexual reproduction are not identical to the parents To know fertilisation is the process by which a sperm cell joins with an egg cell to create a new life To know the female part of a flowering plant is called the pistil, which consists of the stigma, style and ovary To know the male part of a flowering plant is called the stamen, which consists of the anther and filament To know the female sex cells in a plant are called ovules and are found in the ovary but the male sex cells in a plant are called pollen grains and are found on the anthers To know plants reproduce sexually through pollination which involves the transfer of pollen from the male anther of a flowering plant to the female stigma of a flowering plant To know pollen grains attach to the sticky stigma and travel down the style into the ovary	To ask questions To make observations To gather, record and classify	fertilisation, embryo, sperm cells, egg cells, sexual reproduction, anther, filament, ovule, ovary, style, stigma, pollen, stamen, pistil, pollination, fertilisation, clone, runner, tuber, bulb, asexual reproduction, independent variable, dependent variable, controlled variable, clone, cutting, parent plant, compost

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			To know fertilisation occurs when a male pollen grain joins with a female ovule inside an ovary To know asexual reproduction involves only one parent- offspring produced by asexual reproduction are identical to the parent To know some plants reproduce asexually by producing new plants at the end of runners or by producing bulbs or tubers- A starfish is an example of an animal that reproduces asexually		
		Week: 4-7: reversible and Irreversible changes	To know a soluble substance can dissolve in a liquid- Salt and sugar are soluble in a liquid To know an insoluble substance cannot dissolve in a liquid- Sand and flour are insoluble in a liquid To know to make a solution, a substance is dissolved into a liquid, increasing the temperature of the liquid increases the rate of dissolving, stirring the liquid increases the rate of dissolving To know sieving can be used to separate a mixture of different-sized solids To know, filtering can be used to separate an insoluble solid from a liquid- A liquid will pass through filter paper, but an insoluble solid will not. Filtering cannot be used to separate a soluble solid from a liquid	To ask questions To make observations To gather, record and classify To consolidate	dissolve, soluble, insoluble, solution, substance, sieve, filter paper, mixture, filtering, funnel, solution, dissolve, evaporation, mixture, states of matter, reversible change, reverse, chemical reaction, irreversible change, burning, heating, chemical reaction, vinegar, bicarbonate of soda, cutting, data, line graph, prediction

			To know evaporation is the change of state from a liquid to a gas which happens slowly from the surface of a liquid- Evaporation can be used to separate a soluble solid from a liquid To know the three states of matter are solids, liquids and gases- Some changes can be reversed, such as dissolving, mixing and changes of state To know changes of state include freezing, melting, evaporation and condensation- If you can retrieve the substances that you started with, then the change is reversible To know an irreversible change is when a change cannot be undone to get the same substances back again- Irreversible changes result in new substances being made To know when a new substance is made, a chemical reaction has taken place- Burning is an example of an irreversible change To know irreversible changes (such as burning and reactions with acids) cannot be reversed, and they result in new substances being made. When a new substance is made, a chemical reaction has taken place. When a substance fizzes, a gas has been made		
		Week 8: Sustainability	To know plastics are man-made materials that are often strong, lightweight and can be used to make plastic bottles, carrier bags and containers	To ask questions To make observations To gather, record and classify To consolidate	

			To know plastics are designed to last a very long time and do not break down easily To know, plastics can end up in landfill sites as well as the oceans. This has an impact on animal and plant life To know as a result of plastic pollution, lots of plastic ends up in landfill sites and the oceans To know microplastics are tiny pieces of plastics- Microplastics can be eaten by animals		
		Week 9-10: reproduction	To know asexual reproduction involves only one parent- offspring produced by asexual reproduction are identical to the parent To know a parent plant is a plant that can be used to create a new plant- Cuttings are parts of parent plants that can grow into a new plant To know some plants can reproduce both sexually and asexually To know asexual reproduction involves only one parent- Some plants can reproduce both sexually and asexually To know offspring produced by asexual reproduction are identical to the parent To know data can be used to make conclusions and predictions for further investigations	To ask questions To make observations To consolidate	reproduction, parent, plant, cuttings, offspring, identical, sexual, asexual

Science Knowledge and Skills Progression

6 (Autumn)	Living Things & Their Habitats Animals Including Humans Electricity	Week: 1-6: Living Things and Their Habitats	To know a living organism moves, reproduces, grows and excretes To know the stem of a plant moves towards the strongest light source and the roots move away from light To know plants can reproduce sexually and asexually To know vertebrates can be put into groups of mammals, birds, fish, amphibians and reptiles but Plants can be put into groups of flowering and non-flowering To know scientists group organisms based on their features- Grouping organisms can help scientists to understand how organisms are related to each other To know classification keys are used to classify animals- Classification keys are used to identify different animals based on their features. Classification keys are made up of several questions with “yes” or “no” answers To know classification keys are used to classify plants- Classification keys are used to identify different plants based on their features To know trees can be classified as deciduous, evergreen and coniferous To know bacteria are simple organisms invisible to the naked eye. Some bacteria can cause diseases and infections. Humans have	To ask questions To make observations To gather, record and classify To consolidate	organism, excretion, reproduction, living, non-living, vertebrate, invertebrate, flowering plant, non-flowering plant, classification key, mollusc, arachnid, classification, deciduous tree, evergreen tree, coniferous tree, microorganism, bacteria, virus, fungi, microscope, characteristics, Carl Linnaeus

			good bacteria in their bodies that help to digest food To know vViruses are microorganisms that need a host, and are invisible to the naked eye. They can cause diseases such as flu or a common cold- Fungi are microorganisms. Some can cause infections. Some can be used in bread making To know microorganisms, such as bacteria, viruses and fungi, can be classified- The classification of microorganisms is based on their features, such as shape To know bacteria, viruses and fungi have different shapes To know Carl Linnaeus was a Swedish botanist who wrote a book called Systema Naturae or System of Nature- Linnaeus was famous for developing the first system to classify animals and plants. The classification was based on a hierarchical system To know Linnaeus initially divided the Kingdom Animalia into six classes. These were mammals, birds, amphibians, fish, insects and worms		
		Week: 7-11 Electricity	To know a series circuit is one in which all the components are connected in one continuous loop To know a series circuit has a cell and wires, plus components such as a bulb, a buzzer and a switch	To ask questions To make observations To consolidate	series circuit, cell, battery, bulb, current, voltage, complete circuit, incomplete circuit, switch, buzzer, independent variable, dependent variable, controlled

			To know each component in a circuit diagram is represented by a circuit symbol To know current is the flow of electricity in a circuit- Voltage causes the current to flow To know for a circuit to be complete, all the components, including a cell, must be connected by wires and the switch must be closed- An incomplete circuit may have a break in the wires, a switch may be open or the cell may be in the holder the wrong way To know the current does not flow at all in an incomplete circuit To know the more components there are in a circuit, the dimmer the bulbs and the quieter the buzzers- The more components there are in a circuit, the more difficult it is for current to flow		variable, repeatability, accuracy, evaluate
		Week 12: Sustainability – Renewable Energy	To know solar power uses light energy from the Sun to generate electricity To know wind power uses wind to generate electricity To know solar and wind power are renewable energy sources. This means that they will not run out To know fossil fuels are non-renewable energy sources. This means that they will eventually run out	To ask questions To make observations To gather, record and classify To consolidate	solar power, fossils, energy source, non-renewable, electricity, power, gas emissions, global warming

Science Knowledge and Skills Progression

			To know, in the UK, burning fossil fuels to generate electricity is the largest source of greenhouse gas emissions- Emissions of greenhouse gases lead to the greenhouse effect and global warming To know renewable energy sources, such as solar and wind energy, can help limit the impact of global warming		
6 (Spring)	Animals Including Humans Light	Week: 1-5: Light	To know, luminous objects emit light and non-luminous objects do not emit light To know humans can see objects because a light source produces light To know light reflects from an object to the eye and light passes through the pupil to the retina To know light travels in straight lines To know light travels from a light source to an object- The light rays reflect from the object to the eye. A reflection is where light rays bounce off an object To know light travels in straight lines To know when light rays from a light source travel to an opaque object, they cannot pass through and a shadow is formed. The blocked light rays create an area of darkness behind the object, which is the shadow	To ask questions To make observations To gather, record and classify To consolidate	light source, iris, retina, pupil, lens, reflection, ray diagram, angle, periscope, shadow, opaque, translucent, transparent, solar eclipse, independent variable, dependent variable, controlled variable, conclusion, evaluate, refraction, medium, rainbow, prism, coloured filter, spectrum of light,

			To know tThe shape of a shadow is determined by the shape of the object that blocks the light. Shadows are always dark because they are areas from which light has been blocked To know when light passes from one medium to another, it can change direction. This is called refraction. Refraction happens because light travels at different speeds in different substances To know a pencil looks bent when it is put into water, because light travels at a different speed in water than it does in the air To know white light is composed of a mixture of colours To know Isaac Newton and Ibn al-Haytham discovered that white light is made up of different colours To know a rainbow is a spectrum of light formed when sunlight passes through, and is refracted by, raindrops		
		Week: 6: Sustainability- Light Polution	To know glare, light trespass and skyglow are all types of light pollution. Glare is caused by brightness from car or vehicle headlights To know light trespass is where light shines into areas it is not intended to. Skyglow is the brightening of the sky at night	To be able to use scientific evidence to answer questions and support their findings To consolidate	pollution, night, emissions, brightness

			To know there are ways to reduce our light emissions To know turning off lights, devices, appliances and machines, unplugging electronic equipment and using natural light as much as possible helps to reduce light pollution		
		Week 7-9: Life The Circulatory System	To know the circulatory system moves blood around the body- It is made up of the heart, blood vessels and blood To know the blood vessels that move blood towards the heart are called veins. The blood vessels that move blood away from the heart are called arteries. To know capillaries are small blood vessels that link veins and arteries together To know blood transports nutrients and oxygen to all parts of the body, and takes waste, such as carbon dioxide, away. Nutrients are carried in the plasma to provide the nourishment cells need to repair themselves and grow. To know oxygen is carried in red blood cells from the lungs to all cells in our body. White blood cells help to fight bacteria and viruses in our body to prevent illness To know the heart is part of the circulatory system To know the heart is a muscle which beats regularly. As the heart beats, it pumps blood	To ask questions To answer questions To consolidate	circulatory system, heart, blood vessels, veins, arteries, red blood cells, white blood cells, lungs, nutrients, plasma, oxygen, atria, ventricles, right atrium, right ventricle, left atrium, left ventricle, capillaries, oxygenated blood, deoxygenated blood, dissection, balanced diet, calories, unsaturated fats, saturated fats, trans fats, drug, pain killer, stimulants, depressants, cigarette, vape, tar, nicotine, carbon monoxide, addiction, independent variable, dependent variable, controlled variable, heart rate, duration, exercise, conclusion, evaluation

			around the body. • The heart is split into four chambers. It has two atria and two ventricles To know blood flows through the heart as part of its journey through the circulatory system To know veins carry blood towards the heart. They have valves to stop the blood flowing in the wrong direction. Blood then flows through the right atrium, then out of the right ventricle to the lungs. Blood from the lungs then flows into the left atrium and out of the left ventricle towards the rest of the body. To know oxygenated blood is blood that carries lots of oxygen and deoxygenated blood is blood that has little oxygen in it To know oxygenated blood mostly travels from the heart through the arteries. Deoxygenated blood mostly travels from the parts of the body back to the heart, through veins To know the left ventricle is thicker than the right ventricle because moving blood around the whole body requires more force than moving blood to the lungs		
		Week: 10-12: Diet, Drugs and Lifestyle	To know the circulatory system moves blood around the body. It is made up of the heart, blood vessels and blood. To know the blood vessels that move blood towards the heart are called veins. The blood	To ask questions To answer questions To consolidate	circulatory system, blood vessels, veins, arteries, heart, muscle, cells, repair, lungs, oxygen, bacteria, ventricle

			vessels that move blood away from the heart are called arteries. To know capillaries are small blood vessels that link veins and arteries together To know blood transports nutrients and oxygen to all parts of the body, and takes waste, such as carbon dioxide, away To know nutrients are carried in the plasma to provide the nourishment cells need to repair themselves and grow To know oxygen is carried in red blood cells from the lungs to all cells in our body. White blood cells help to fight bacteria and viruses in our body to prevent illness. To know the heart is part of the circulatory system. The heart is a muscle which beats regularly. To know as the heart beats, it pumps blood around the body. The heart is split into four chambers. It has two atria and two ventricles To know blood flows through the heart as part of its journey through the circulatory system To know veins carry blood towards the heart. They have valves to stop the blood flowing in the wrong direction. Blood then flows through the right atrium, then out of the right ventricle to the lungs. Blood from the lungs		

			then flows into the left atrium and out of the left ventricle towards the rest of the body To know oxygenated blood is blood that carries lots of oxygen and deoxygenated blood is blood that has little oxygen in it To know oxygenated blood mostly travels from the heart through the arteries and deoxygenated blood mostly travels from the parts of the body back to the heart, through veins To know the left ventricle is thicker than the right ventricle because moving blood around the whole body requires more force than moving blood to the lungs		
6 (Summer)	Evolution & Inheritance Animals Including Humans	Week: 1-2: Variation	To know an organism is a living thing such as an animal, plant, bacterium or fungus To know a species is a group of similar organisms where two parents can create offspring To know variation is the differences between organisms. All species show variation To know characteristics are the features of an organism, used to identify individuals or a group To know parents pass on characteristics to their offspring such as hair and eye colour. This process is called inheritance Humans can breed animals such as dogs for desirable characteristics	To ask questions To answer questions and make conclusions	organism, variation, species, offspring, characteristic, inheritance, desirable characteristics

Science Knowledge and Skills Progression

		Week: 3-6: Adaptations	To know adaptations are characteristics which improve an animal's chances of survival in a habitat To know animals in cold environments have characteristics which allow them to survive. For example, they may have thick fur or blubber. Animals in desert environments have characteristics which allow them to survive in extreme heat. Some of these include thin fur and long eyelashes To know adaptations are characteristics which improve the chances of survival in a habitat To know plants in desert environments have longer roots and larger stems, so they can absorb and store more water. This allows them to survive in hot, dry environments such as deserts, where there is not much water available To know evolution is a change in characteristics in animals and plants over a long period of time To know, evolution allows animals and plants to better adapt to their environments or habitats so that they can survive- Evolution explains how animals and plants have developed over time from simpler life forms that lived millions of years ago To know, Charles Darwin suggested the 'Theory of Evolution'	To ask questions To answer questions and make conclusions To consolidate	adaptations, polar habitat, desert habitat, habitat, evolution, Charles Darwin, common ancestor, theory, natural selection, Galapagos Islands, finch

			To know, Darwin suggested that different species of animals had evolved from a shared ancestor. Darwin also suggested that organisms change their characteristics over a long period of time, so that they can successfully adapt to their environment or habitat To know organisms have adapted over time to improve their chances of survival in a habitat- Organisms which are better adapted to their habitat are more likely to survive and reproduce To know the characteristics that have enabled these individuals to survive are passed on to the next generation. This theory is called "natural selection" To know, Darwin noticed that different finch species on the islands were closely related, but showed variations in beak type and body size. Some of the islands have a lot of plants which produce hard seeds and nuts To know the differences in size and shape of the beaks meant that different species were well adapted to eating different foods, such as seeds, insects, flowers and fruits. Finches with long and pointed beaks catch and eat insects, while those with broad, short beaks crack seeds and nuts		
		Week 7-8: Fossils	To know fossils are formed when an animal or plant dies. When an animal dies the soft parts decompose and leave the skeleton. The	To ask questions To answer questions and make conclusions To consolidate	fossil, rock, decompose, skeleton, Palaeontologist, Mary Anning

			skeleton is buried by sediment which compacts over time To know water seeps down into the rock and replaces the skeleton with minerals found in the water. This produces an imprint in a rock of a living thing To know older fossils tend to be smaller and simpler compared to newer fossils. Newer fossils tend to be larger and more complex- This supports Charles Darwin's theory of evolution that simple organisms evolved into more complex ones To know Mary Anning was a famous palaeontologist who discovered many fossils during the 1800s. She made many discoveries such as finding plesiosaur, ichthyosaur and pterosaur fossils To know Mary Anning's discoveries made her famous but, because she was a woman, her findings were often presented as male scientists' work		
		Week: 10-12: Themed Projects	To know that you can conduct investigations such as melting points and thermal conductivity	To ask questions To answer questions To consolidate	investigate, fair test, conclusion, evaluate, predict