Knowledge, Skills and Understanding for Science

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including Humans	*Knowledge*	Describe different habitats. Name and describe animals that live in different habitats.	Name a variety of common animals. Owl, duck, penguin, shark, clownfish, catfish, frog, toad, newt, snake, crocodile, gecko, dog, squirrel, rabbit Know the structure of a variety of animals. Tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves	Know that animal offspring grow into adults. Offspring, reproduction, life cycle, life stage, growth, child, young/old, stages, caterpillar, butterfly, eggs, larva, ladybird			**(Living things and their habitats)** Recognise the differences in the life cycle of different animal groups. Know how some animals reproduce. Life cycle, reproduction, sexual reproduction, sperm, fertilises, fertilisation, egg, live young, metamorphosis	**(Living things and their habitats)** Know how to classify living things into groups based on characteristics. Vertebrates, invertebrates, fish, amphibians, reptiles, birds, mammals, insects, spiders, snails, worms, micro-organisms, bacteria, yeast, taxonomy
			Know the basic parts of the human body. Head, hair, nose, lips, nostril, chin, tongue, foot, toes, finger, thumb, hand, body, eyes, ears, mouth, teeth, leg, knee Associate parts of the body with different senses. touch, see, smell, taste, hear		Know the functions of skeletons and muscles. Skeleton, bones, skull, cranium, ribs, rib cage, spine, vertebrae, vertebral column, scapula, joints, femur, radius, ulna, tibia, fibula, patella, pelvis, sternum, support, protect/protection, move/movement, muscle, contract, relax	Know the simple functions of the digestive system. digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, nutrients, rectum, anus Know the different types of teeth and their functions. Teeth, incisor, canine, molar, premolar, milk teeth, wisdom teeth, gums, enamel, dentin, pulp, cementum, crown	Know how humans change as they develop to old age. Puberty, adolescents, adolescence, elderly, foetus, gestation, period, adulthood, develop, development, maturity	Know the main parts of the human circulatory system. Explain the functions of parts of the circulatory system. Know how nutrients and water are transported in animals. Heart, pulse, pump, rate, blood, blood vessel, artery, veins, capillaries, chambers, valve, lungs, oxygenated, deoxygenated, oxygen, carbon dioxide
				List the basic needs of animals for survival. Basic needs, survival, food, water, air, oxygen Know the importance of exercise, hygiene and the right amounts of different food for humans. Exercise, heartbeat, breathing, hygiene, germs, disease, diet, protein, carbohydrate, fat, energy, food types – meat, fish, vegetables, fruit, bread, rice, pasta etc. **(Living things and their habitats)**	Know that animals need the correct nutrition. Know that animals get nutrition from food. protein, carbohydrate, fat, nutrient, nutrition, sugars, protein, vitamins, minerals, fibre, fat, water	How to construct a food chain. Recognise the parts of a food chain. herbivore, carnivore, omnivore, producer, predator, prey, apex predator, food chain, food web		Know how making healthy and unhealthy choices can impact on the way the body functions. Protein, carbohydrate, fat, nutrients, nutrition, sugars, protein, vitamins, minerals, fibre, fat, water, muscles, circulatory system, diet, drugs, lifestyle, exercise

				Know how animals obtain their food from different sources through food chains.				
Earth and Space	*Knowledge*	Explore the natural world around them. Describe what they see, hear and feel whilst outside.	**(Seasonal changes)** Know the four seasons. season, winter, spring, summer, autumn, weather **(Seasonal changes)** Describe weather associated with the seasons and how day length varies. sunrise, sunset, horizon, day length, day light, night-time, seasonal change				Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Sun, Moon, planets, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, spherical, elliptical, solar system, rotates, rotation, star, orbit, clockwise, anticlockwise Understand the movement of the Moon relative to the Earth. axis, Moon, Earth, spins, rotates Be able to describe the Sun, Earth and Moon as approximately spherical bodies. spherical Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky axis, Moon, Earth, spins, rotates, day, night, reflect.	
Electricity	*Knowledge*	Explore how things work. Repeat actions that have an effect.				Identify common appliances that run on electricity and identify those that run on batteries and those that are powered by mains electricity. electricity, electrical appliance/device, mains, plug, remote, mobile phone, toaster, flash light, kettle, microwave. Make a simple series electrical circuit, identifying and naming its basic parts.		Understand the brightness of a lamp or the volume of a buzzer is affected by the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. circuit, complete circuit, open circuit, cell, battery, positive, negative, connection, component,

						Cells, battery, wires, crocodile clip, bulb, bulb holder, switch, buzzer, motor, positive, negative, Know whether or not a lamp will light in a simple series circuit. electrical circuit, complete circuit, open circuit, closed circuit. Understand that a switch opens and closes a circuit. open circuit, closed circuit. switch Name some common conductors and insulators, and associate metals with being good conductors. conductor, insulator, metal, non-metal,		conductor, insulator, wire, metal, non-metal, voltage, current Use recognised symbols when representing a simple circuit in a diagram. circuit, complete circuit, open circuit, cell, battery, crocodile clip, bulb, bulb holder, switch, buzzer, motor, circuit symbol, circuit diagram,
Plants	*Knowledge*	Discuss how to respect and care for the natural environment and living things. Have a go at growing plants.	Identify and name a variety of common wild and garden plants. rose, dahlia, sunflower, fuschia, ivy, dandelion, daisy, nettle, buttercup, clover, lavender, bramble, dog rose, clematis	Describe how seeds and bulbs grow into the common plants they know. seeds, bulbs, seedlings, germination	Know how flowers support the life cycle of a flowering plant. seed formation, pollination, pollen Know different forms of seed dispersal. Seed dispersal (wind, animal and water dispersal)	**(Living things and their habitats)** Use classification keys to group plants. Classification, classification keys Know when environments change it can sometimes pose dangers to living things. environment, habitat, human impact, positive, negative, migrate, hibernate	**(Living things and their habitats)** Know the life cycle of plants Asexual reproduction, plantlet, runners, pollen, pollination, stigma, seed, bulb, cutting, budding, grafting, seed dispersal (wind, animal, water, gravity, explosion)	**(Living things and their habitats)** Classify plants by observable characteristics. Flowering, non-flowering, mushrooms, toadstools, moss, ferns
			Identify and name evergreen and deciduous trees. deciduous, evergreen, silver birch, alder, oak, fir, ash, elm, hawthorn, holly, sweet chestnut, yew, mulberry, willow					

			Know the basic structure of a variety of common flowering plants. Leaf/leaves, flowers, blossom, petals, fruit, roots, bulb, seed, stem, bud.	Know what plants need to grow and stay healthy. Light, temperature, water, shade, sun, warm, cool, water, grow, healthy	Know the requirements of different plants for life and growth. photosynthesis, Know the functions of parts of flowering plants. Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. Know how water is transported within plants. air, nutrients, minerals, soil, absorb, transport			
Rocks	*Knowledge*		**(Everyday Materials)** Name a variety of materials rock Know that objects can be made from different materials. Describe the physical properties of materials. Hard, shiny, dull, rough, smooth, brittle, absorbent	**(Uses of everyday materials)** Know which objects are suitable to be made from rock. Rock, suitability, hard, stiff, waterproof, absorbent	Describe the physical properties of different kinds of rocks. Rock, stone, pebble, boulder, grain, sedimentary, igneous, metamorphic, soil, porous, non-porous absorb, water, weathering, mineral, crystal, texture, hardness, drainage, layers, hard, soft, texture, marble, chalk, granite, sandstone, slate. Know how fossils are formed. Fossil Know that soil is made from rocks and organic matter. peat, sandy, chalk, clay soil, organic matter,			**(Evolution and Inheritance)** Know that fossils provide information about the past. evolution, species, fossils
Seasonal Changes	*Knowledge*	Describe what they see, hear and feel outside. Animals, young, plants, flowers, hibernate, migrate,	Know the four seasons. Spring, Summer, Autumn Winter, Seasons. Know the changes within each season. sunrise, sunset, horizon, day length, day light, night time, seasonal change Know the weather typically associated with each		**(Light)** Know the dangers of the Sun and how to protect their eyes. Light, light source, sunlight, dangerous		**(Earth and Space)** Explain how day and night are caused. Rotates, Sun, orbit, axis, Earth, Moon, Sun	

			season. Sunny, cloudy, hot, cold, weather, climate, temperature, warm, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, snowflake					
Sound	*Knowledge*	Listen to sounds outside and identify the source. Have a go at making sounds.	**(Animals, including humans)** Know the parts of the body associated with each sense. Ears, sense, hear, hearing			Know how sounds are made. Sound, source, vibrate, vibration, travel Know how vibrations from sounds reach the ear. Sound, source, vibrate, vibration, travel, air particles. Know the association between pitch and the producing object's features. Pitch, high, low, frequency Know how the strength of vibrations effect sound. Volume, faint, loud Know that distance from the sound source impacts sound. Volume, faint, loud, insulation, solid, liquid, gas, dissipate, spread		
Light	*Knowledge*	Describe what they see, hear and feel whilst outside. Explore shadows. Explore rainbows.	**(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. Sense, See, eye **(Materials)** Describe the simple physical properties of a variety of everyday materials.		Understand that they need light in order to see things and that dark is the absence of light. light, light source, luminous, non-luminous, dark, absence of light, Know that light is reflected from surfaces. reflect, reflector surface, transparent, translucent, opaque, shiny, matt, mirror Know light from the sun can be dangerous and know ways to protect their eyes.		**(Properties and changes of materials)** Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Transparent, opaque, thermal/electrical insulator/conductor, soluble, insoluble	Know that light appears to travel in straight lines. light, light source, reflected, straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. luminous, non-luminous, moonlight, reflected sunlight, dark, periscope, mirror, transparent, translucent, opaque, shiny, matt, shadow, reflect, straight lines, ray diagram, light rays, angle of

			shiny, dull, see-through, not see-through		sunlight, dangerous, UV rays, sun glasses Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Opaque, shadow, angle of incidence, visible spectrum Find patterns in the way that the size of shadows change.			incidence, visible spectrum, convex lense, concave lens Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. straight lines, light rays Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Evolution and Inheritance	*Knowledge*	Recognise some environments that are different to the one in which they live.		**(Living things and their habitats)** Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. excretion, reproduction, respiration, basic needs, shelter, move, feed habitat, grassland, forest, pond, woodland, desert, ocean, polar, microhabitat, mountains, river, suited, suitable, food, food chain, predator, prey **(Animals, including humans)** Know that animals, including humans, have offspring which grow into adults. offspring, reproduction, life cycle, life stage, growth, child, young/old stages adolescent	**(Rocks)** Know how fossils are formed fossil **(Plants)** Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. flowers, attracting pollinators, anther, filament, stigma, style, ovule, ovary, fertilisation, stomata, transpiration, xylem pollen, pollination, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)	**(Living things and their habitats)** Recognise that environments can change and that this can sometimes pose dangers to living things. deforestation, meteor strike, pollution human impact, positive, environment, habitat, negative, migrate, migration, hibernate, endangered, extinct	**(Living things and their habitats)** Describe the life process of reproduction in some plants and animals. life cycle, reproduction, sexual reproduction, sperm, fertilises, fertilisation, egg, live young, metamorphosis, asexual reproduction, plantlets, runners, pollen, pollination, stigma, seed, bulb, cutting, propagation, budding, grafting, seed dispersal	Understand that living things have changed over time. vary / variation, characteristics, adaption, environment, inherited, evolution, species, suited Know that fossils provide information about living things in the past. fossils Know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Sexual reproduction, asexual reproduction, offspring, reproduction, vary / variation, characteristics Identify how animals and plants are adapted to suit their environment in different ways. characteristics, adaption, environment, evolution, species, suited, evolved Know that adaptation may lead to evolution.

Living Things and Their Habitats	*Knowledge*	Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Explore the plants and animals in the surrounding natural world.	**(Plants)** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. rose, dahlia, sunflower, fuschia, ivy, dandelion, daisy, nettle, buttercup, clover, lavender, bramble, dog rose, clematis, deciduous, evergreen, silver birch, alder, oak, fir, ash, elm, hawthorn, holly, sweet chestnut, yew, mulberry, willow **(Plants)** Know the basic structure of a variety of common flowering plants, including trees. Leaf/leaves, flowers, blossom, petals, fruit, roots, bulb, seed, stem, bud, trunk. **(Animals including humans)** Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Owl, duck, penguin, shark, clownfish, catfish, frog, toad, newt, snake, crocodile, gecko, dog, squirrel, rabbit **(Animals including humans)** Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Animals including humans)** Describe and compare the structure of a variety of common animals (fish,	Explore and compare the differences between things that are living, dead, and things that have never been alive. living, dead, never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold Identify and name a variety of plants and animals in their habitats, including microhabitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **(Animals including humans)** Notice that animals, including humans, have offspring which grow into adults.	**(Plants)** Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. seed formation, pollination, pollen, seed dispersal (wind, animal and water dispersal)	Recognise that living things can be grouped in a variety of ways. Classification, classification keys, Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things. environment, habitat, human impact, positive, negative, migrate, hibernate **(Animals, including humans)** Construct and interpret a variety of food chains, identifying producers, predators and prey. herbivore, carnivore, omnivore, producer, predator, prey, apex predator, food chain, food web	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Life cycle, reproduce, Describe the life process of reproduction in some plants and animals. Sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers. Give reasons for classifying plants and animals based on specific characteristics. **(Evolution and inheritance)** Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Sexual reproduction, asexual reproduction, offspring, reproduction, vary / variation, characteristics **(Evolution and inheritance)** Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. characteristics, adaption, environment, evolution, species, suited, evolved

			amphibians, reptiles, birds and mammals, including pets). **(Seasonal Changes)** Observe changes across the four seasons. sunrise, sunset, horizon, day length, day light, night time, seasonal change, sunny, cloudy, hot, cold, weather, climate, temperature, warm, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, snowflake					
Properties and Changes of Materials	*Knowledge*	Explore a range of materials, including natural materials Make objects from different materials, including natural materials Compare how materials change over time and in different conditions	Know how to distinguish between an object and a material. Object, material Know a range of everyday materials. wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay Know the properties of everyday materials. hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	Know why materials are suitable for their uses. Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Know that the shape of some solid materials can be changed. Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	**(Rocks)** Describe the physical properties of different kinds of rocks. Rock, stone, pebble, boulder, grain, sedimentary, igneous, metamorphic, soil, porous, non-porous absorb, water, weathering, mineral, crystal, texture, hardness, drainage, layers, hard, soft, texture, marble, chalk, granite, sandstone, slate. **(Forces and Magnets)** Know that some materials are attracted to a magnet. Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, attract, repel, magnetic material, metal,	Know that materials can be solids, liquids and gases. solid, liquid, gas Know that heating and cooling can cause materials to change states. heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle **(Electricity)** Know some common conductors and insulators. conductor, insulator, metal, non-metal,	Know that everyday materials can be grouped by their properties and magnetism. Thermal conductor, thermal insulator, electrical conductor, electrical insulator Know that some materials dissolve. change of state, mixture, dissolve, solution, soluble, insoluble, Know how to recover a substance from a solution. filter, filtration, sieve, evaporation Recognise reversible changes. reversible/non-reversible	

					iron, steel, poles, north pole, south pole		Recognise that changes to materials can result in new materials. irreversible change, burning, rusting, burning, rusting, new material	
Forces and Magnets	*Knowledge*	Explore the natural world around them. Describe what they see, hear and feel whilst outside		**(Uses of everyday materials)** Know that the shape of some solid materials can be changed. Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Force, push, pull, twist, contact force, non-contact force, magnetic force Observe how magnets attract or repel each other and attract some materials and not others. magnet, attract, repel, magnetic material, metal, iron, steel Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles Poles, north pole, south pole. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Force, gravity, Earth Identify the effects of air resistance, water resistance and friction that acts between moving surfaces. Air resistance, water resistance, friction, Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. mechanisms, simple machines, levers, pulleys, gears	