Catton Grove Primary School Science Long Term Plan

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	**Unit Title:**	**Unit Title:**	**Unit Title:** Seasonal Change	**Unit Title:** Living Things and their Habitats	**Unit Title:** Forces and Magnets	**Unit Title:** Electricity	**Unit Title:** Forces	**Unit Title:** Light
	Concepts:	**Concepts:**	**Concepts:** The Universe	**Concepts:** Identifying Living Things	**Concepts:** Pushes and Pulls	**Concepts:** Electricity	**Concepts:** Pushes and Pulls	**Concepts:** Energy
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • It always snows in winter. • It is always sunny in the summer. • There are only flowers in spring and summer. • It rains most in the winter..	**Misconceptions:** • An animal's habitat is like its 'home'. • Plants and seeds are not alive as they cannot be seen to move. • Fire is living. • Arrows in a food chain mean 'eats'.	**Misconceptions:** • The bigger the magnet the stronger it is. • All metals are magnetic.	**Misconceptions:** • Electricity flows to bulbs, not through them. • Electricity flows out of both ends of a battery. • Electricity works by simply coming out of one end of a battery into the component.	**Misconceptions:** • The heavier the object the faster it falls, because it has more gravity acting on it. • forces always act in pairs which are equal and opposite. • Smooth surfaces have no friction. • Objects always travel better on smooth surfaces. • A moving object has a force which is	**Misconceptions:** • We see objects because light travels from our eyes to the object.

							pushing it forwards and it stops when the pushing force wears out. • A non-moving object has no forces acting on it. • Heavy objects sink and light objects float.	
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science En...	**Key Knowledge:** Science E...
	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Seasons- Spring, Summer, Autumn, Winter. Hot, cold, sunny, rain, snow, windy, wet, dry Temperature, Degrees Celsius, Thermometer	**Key Vocabulary:** Habitat, microhabitat, living, dead, never been alive, suited, basic needs, food, food chain, shelter, move, feed Names of local habitats e.g. pond, woodland etc.	**Key Vocabulary:** Force- push, pull, contact force, non-contact force, magnetic force, Magnets- strength, attract, repel, magnetic material, poles, north pole, south pole.	**Key Vocabulary:** Electricity, electrical appliances, circuit, complete, series, conductor, insulator. Components- battery, cell, bulb, bulb holder, buzzer, crocodile clip, motor, wires, switch.	**Key Vocabulary:** Force, gravity, friction, air resistance, water resistance, upthrust. Newtons (N), push, pull, balance, grams and kilograms. Mechanical devices – gears, levers, pulleys, springs.	**Key Vocabulary:** Light source, light ray, transparent, translucent, opaque, straight line, shadow, reflect, absence of light.

				Names of micro-habitats e.g. under logs, in bushes etc.		Switches – open, close.		

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 2	**Unit Title:**	**Unit Title:**	**Unit Title:** Everyday Materials	**Unit Title:** Everyday Materials	**Unit Title:** Light	**Unit Title:** States of Matter	**Unit Title:** (Forces Cntd.) Properties and Changes of Materials	**Unit Title:** Electricity
			Concepts: Materials	**Concepts:** Materials	**Concepts:** Energy	**Concepts:** Materials	**Concepts:** Materials	**Concepts:** Energy
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • Only fabrics are materials. • Only building materials are materials. • Only writing materials are materials. • The word 'rock' describes an object rather than a material. • 'Solid' is another word for hard.	**Misconceptions:** • Only fabrics are materials. • Only building materials are materials. • Only writing materials are materials. • The word rock describes an object rather than a material. • Solid is another word for hard.	**Misconceptions:** • We can still see even where there is an absence of any light. • Our eyes 'get used to' the dark. • The moon and reflective surfaces are light sources. • A transparent object is a light source.	**Misconceptions:** • 'Solid' is another word for hard or opaque • Solids are hard and cannot break or change shape easily and are often in one piece. • Substances made of very small particles like sugar or sand cannot be solids.	**Misconceptions:** • To address the difference between physical/chemical changes and reversible and irreversible changes. •Solids dissolved in liquids have vanished and so you cannot get them back. • Lit candles only melt, which is a	**Misconceptions:** • Larger-sized batteries make bulbs brighter. • A complete circuit uses up electricity. • Components in a circuit that are closer to the battery get more electricity.

					• Shadows contain details of the object, such as facial features on their own shadow. • Shadows result from objects giving off darkness.	• Particles in liquids are further apart than in solids and they take up more space. • Water in different forms – are all different substances. • All liquids boil at the same temperature as water (100 degrees). • Melting, as a change of state, is the same as dissolving. • Steam is visible water vapour (only the condensing water droplets can be seen). • Clouds are made of water vapour or steam.	reversible change.	
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**

	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil. Properties of materials: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy. Verbs associated with materials: crumble, squash, bend, stretch, twist, melt, burn, heat Senses: touch, see, hear, smell and taste.	**Key Vocabulary:** Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – Year 1 vocab + opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.	**Key Vocabulary:** Light, light source, bright, dark, absence of light, transparent, translucent, opaque, shiny, surface, shadow, reflect, sunlight.	**Key Vocabulary:** Solid, liquid, gas, particles, heating, cooling, state change, melting, freezing, boiling, evaporation, condensation, temperature, water cycle.	**Key Vocabulary:** Change of state, reversible/non-reversible change, Thermal conductivity – thermal conductor, thermal insulator. Electrical conductivity – electrical conductor, electrical insulator Dissolving – soluble, insoluble, solid, liquid, particles. Separating materials- filter, evaporate, condense.	**Key Vocabulary:** Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage/volts Effects of electricity: Light, sound, movement, heat

	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Spring 1	**Unit Title:**	**Unit Title:**	**Unit Title:**	**Unit Title:**	**Unit Title:**	**Unit Title:**	**Unit Title:**	**Unit Title:**

			(Everyday materials Cntd.)	(Uses of everyday materials Cntd.)	Animals inc. Humans.	(States of Matter Cntd.) Sound	(Properties and Changes of Materials Cntd.) Earth and Space	Animals inc. Humans
	Concepts:	**Concepts:**	**Concepts:** Materials	**Concepts:** Materials	**Concepts:** The Survival of Animals and Humans.	**Concepts:** Energy	**Concepts:** The Universe	**Concepts:** The Survival of Humans and Animals.
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • Only fabrics are materials. • Only building materials are materials. • Only writing materials are materials. • The word 'rock' describes an object rather than a material. • 'Solid' is another word for hard.	**Misconception:** • Only fabrics are materials. • Only building materials are materials. • Only writing materials are materials. • The word rock describes an object rather than a material. • Solid is another word for hard.	**Misconceptions:** • Certain whole food groups like fats are 'bad' for you • Certain specific foods, like cheese are also 'bad' for you. • Diet and fruit drinks are 'good' for you. • Snakes are similar to worms, so they must also be invertebrates. • Invertebrates have no form of skeleton.	**Misconceptions:** • Sound is only heard by the listener. • Sound only travels in one direction from the source. • Sound can't travel through solids and liquids. • High sounds are loud and low sounds are quiet.	**Misconceptions:** • The Earth is flat. • The Sun is a planet. • The Sun rotates around the Earth. • The Sun moves across the sky during the day. • The Sun rises in the morning and sets in the evening. • The Moon appears only at night. • Night is caused by the Moon getting in the way of the Sun or the Sun	**Misconceptions:** • Your heart is on the left side of your chest. • The heart makes blood. • The blood travels in one loop from the heart to the lungs and around the body. • When we exercise, our heart beats faster to work the muscles more. • Some blood in our bodies is blue and some blood is red.

							moving further away from the Earth.	• We just eat food for energy • All drugs are bad for you.
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** Science En...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...	**Key Knowledge:** Science E...
	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil. Properties of materials: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy. Verbs associated with materials: crumble, squash, bend, stretch, twist, melt, burn, heat	**Key Vocabulary:** Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – Year 1 vocab + opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending,	**Key Vocabulary:** Nutrition, nutrients, diet Vitamins, minerals, fats, proteins and carbohydrates Functions of skeletons – protect, support and movement, bones, joints, muscles.	**Key Vocabulary:** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation.	**Key Vocabulary:** Day and night - Earth, axis, rotate Solar system – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune Phases of the Moon e,g full moon, half moon, crescent moon. Lunar month, orbit, planets.	**Key Vocabulary:** Circulatory system – heart, pulse, rate, pumps, blood, blood vessels, veins, artertries, transported, lungs, oxygenated, deoxygenated, nutrients Diet – balanced, vitamins, minerals, proteins, carbohydrates, sugars, fats Exercise, drugs, lifestyle.

			Senses: touch, see, hear, smell and taste.	stretch/stretching.				

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Spring 2	**Unit Title:**	**Unit Title:**	**Unit Title:** Plants	**Unit Title:** Animals including Humans	**Unit Title:** Rocks	**Unit Title:** (Sound Cntd.)	**Unit Title:** Earth and Space Cntd.	**Unit Title:** Evolution and Inheritance
	Concepts:	**Concepts:**	**Concepts:** The Survival of Plants	**Concepts:** The Survival of Animals and Humans	**Concepts:** Materials	**Concepts:** Energy	**Concepts:** The Universe	**Concepts:** Identifying Living Things
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • Plants are flowering plants grown in pots with coloured petals and leaves and a stem. • Trees are not plants. • All leaves are green. • All stems are green. • A trunk is not a stem. • Blossom is not a flower.	**Misconceptions:** • An animal's habitat is like its 'home'. • All animals that live in the sea are fish. • Respiration is breathing. • Breathing is respiration.	**Misconceptions:** • Rocks are all hard in nature. • Rock-like, man-made substances such as concrete or brick are rocks. • Materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'.	**Misconceptions:** • Sound is only heard by the listener • Sound only travels in one direction from the source • Sound can't travel through solids and liquids • High sounds are loud and low sounds are quiet.	**Misconceptions:** • The Earth is flat. • The Sun is a planet. • The Sun rotates around the Earth. • The Sun moves across the sky during the day. • The Sun rises in the morning and sets in the evening. • The Moon appears only at night.	**Misconceptions:** • Adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life. • Offspring most resemble their parents of the same sex, so that

					• Certain found artefacts, like old bits of pottery or coins, are fossils • A fossil is an actual piece of the extinct animal or plant. • Soil and compost are the same thing.		• Night is caused by the Moon getting in the way of the Sun or the Sun moving further away from the Earth.	sons look like fathers. • All characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited.
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**
	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Roots, shoots, soil, stability, plant, leaves, stem, petal, tree, trunk, branch, leaf, root, bark, evergreen, deciduous	**Key Vocabulary:** Classification, offspring, reproduction, growth, stages of life, Life processes- growth, nutrition, respiration. Exercise, heartbeat, hygiene, germs,	**Key Vocabulary:** Rock, grain, crystals, layers, texture, absorb,erode, fossil, minerals, soil, classify Types – Sedimentary, metamorphic, igneous. Properties – Hard/soft, permeable/impermeable.	**Key Vocabulary:** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation.	**Key Vocabulary:** Day and night - Earth, axis, rotate Solar system – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune Phases of the Moon e,g full moon, half	**Key Vocabulary:** Evolve, survival, offspring, reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.

				disease, food types			moon, crescent moon. Lunar month, orbit, planets.	

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Summer 1	**Unit Title:**	**Unit Title:**	**Unit Title:** Animals including humans	**Unit Title:** (Animals including Humans Cntd.)	**Unit Title:** (Rocks Cntd.) Plants	**Unit Title:** Animals inc. Humans	**Unit Title:** Animals inc. Humans	**Unit Title:** (Evolution and Inheritance Cntd.)
	Concepts:	**Concepts:**	**Concepts:** The Survival of Animals and Humans.	**Concepts:** The Survival of Animals and Humans	**Concepts:** The Survival of Plants.	**Concepts:** The Survival of Animals and Humans.	**Concepts:** The Survival of Animals and Humans.	**Concepts:** Identifying Living Things
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • Only four-legged mammals, such as pets, are animals • Humans are not animals • insects are not animals • All 'bugs' or 'creepy crawlies', such as spiders, are part of the insect group	**Misconception:** • An animal's habitat is like its 'home'. • All animals that live in the sea are fish. • Respiration is breathing. • Breathing is respiration.	**Misconceptions:** • Plants eat food • Food comes from the soil via the roots • Flowers are merely decorative rather than a vital part of the life cycle in reproduction • Plants only need sunlight to keep them warm • Roots suck in water which is	**Misconceptions:** • Arrows in a food chains mean 'eats' • The death of one of the parts of a food chain or web has no, or limited, consequences on the rest of the chain • There is always plenty of food for wild animals	**Misconceptions:** • A baby grows in a mother's tummy • A baby is "made".	**Misconceptions:** • Adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life. • Offspring most resemble their

			• Amphibians and reptiles are the same.		then sucked up the stem.	• Your stomach is where your belly button is • food is digested only in the stomach • When you have a meal, your food goes down one tube and your drink down another • The food you eat becomes "poo" and the drink becomes "wee".		parents of the same sex, so that sons look like fathers. • All characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited.
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** **Science E…**	**Key Knowledge:** **Science E…**	**Key Knowledge:** **Science E…**	**Key Knowledge:** **Science E…**	**Key Knowledge:** **Science En…**	**Key Knowledge:** **Science E…**
	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Senses, hear, sight, taste, smell and touch bird, vertebrate, invertebrate, minibeast, fish, amphibians, reptiles, mammals, herbivores,	**Key Vocabulary:** Classification, offspring, reproduction, growth, stages of life, Life processes- growth, nutrition, respiration.	**Key Vocabulary:** Pollen, pollination, seed, dispersal, nutrients, soil, absorb, transport. Parts of plants – roots, stalk, leaf, flower, petal, seeds.	**Key Vocabulary:** Digestive system –, oesophagus, stomach, acid, small and large intestine, saliva, nutrients. Teeth – Incisors, canines, premolars, molars,function	**Key Vocabulary:** Gestation, Foetus, Fertilisation, Species, Baby, Toddler, Adolescent, Adult, Elderly person, Puberty, Hormones.	**Key Vocabulary:** Evolve, survival, offspring, reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.

			carnivores and omnivores.	Exercise, heartbeat, hygiene, germs, disease, food types	Parts of a flower – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule).	Food Chain – producer, consumer, predator, prey, herbivore, carnivore, omnivore.		

	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Summer 2	**Unit Title:**	**Unit Title:**	**Unit Title:** Animals including humans Cntd.	**Unit Title:** Plants	**Unit Title:** (Plans Cntd.)	**Unit Title:** Living Things and their Habitats	**Unit Title:** Living Things and their Habitats	**Unit Title:** Living Things and their Habitats
	Concepts:	**Concepts:**	**Concepts:** The Survival of Animals and Humans.	**Concepts:** The Survival of Plants	**Concepts:** The Survival of Plants.	**Concepts:** Identifying Living Things	**Concepts:** Identifying Living things Survival of Plants	**Concepts:** Identifying Living things
	Misconceptions:	**Misconceptions:**	**Misconceptions:** • Only four-legged mammals, such as pets, are animals. • Humans are not animals. • insects are not animals. • All 'bugs' or 'creepy crawlies', such	**Misconceptions:** • Plants are not alive as they cannot be seen to move. • Seeds are not alive. • All plants start out as seeds. • Seeds and bulbs need sunlight to germinate.	**Misconceptions:** • Plants eat food. • Food comes from the soil via the roots. • Flowers are merely decorative rather than a vital part of the life cycle in reproduction.	**Misconceptions:** • The death of one of the parts of a food chain or web has no or limited consequences on the rest of the chain. • There is always plenty of food for wild animals.	**Misconceptions:** • All plants start out as seeds. • All plants have flowers. • Plants that grow from bulbs do not have seeds. • Only birds lay eggs.	**Misconceptions:** • All micro-organisms are harmful. • Mushrooms are plants.

			as spiders, are part of the insect group. • Amphibians and reptiles are the same.		• Plants only need sunlight to keep them warm. • Roots suck in water which is then sucked up the stem.	• Animals are only land-living creatures. • Animals and plants can adapt to their habitats, however they change. • All changes to habitats are negative.		
	Key Knowledge:	**Key Knowledge:**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**	**Key Knowledge:** **Science E...**
	Key Vocabulary:	**Key Vocabulary:**	**Key Vocabulary:** Senses, hear, sight, taste, smell and touch bird, vertebrate, invertebrate, minibeast, fish, amphibians, reptiles, mammals, herbivores, carnivores and omnivores.	**Key Vocabulary:** Year 1 Vocab + light, shade, sun, heat, cool, water, grow, healthy, temperature Parts of plants – Roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs Trees, plants, wild, flowering, garden	**Key Vocabulary:** Pollen, pollination, seed, dispersal, nutrients, soil, absorb, transport. Parts of plants – roots, stalk, leaf, flower, petal, seeds. Parts of a flower – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule).	**Key Vocabulary:** Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate, observe, mammal, amphibian, reptile, bird, fish, invertebrates.	**Key Vocabulary:** Life cycle, reproduce, sexual, asexual, Animals – amphibians, reptiles, birds, mammals, insects, fish Animal development – egg, larva, offspring, adult, metamorphosis Parts of a flower – petal, stamen, carpel.	**Key Vocabulary:** Classification, vertebrate, invertebrate Kingdoms: animal, plant, 'micro-organism' Classes: amphibian, reptile, bird, mammal, Flowering plant, non-flowering plant

							Processes – pollination, fertilisation, germination	

Working Scientifically Vocabulary	
Nursery and Reception	look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group.
Year 1 and 2	observe, changes, patterns, grouping, sorting, compare, same, different, identify, measure, data, record, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying.
Year 3 and 4	Practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve.
Year 5 and 6	variables, independent variable, dependent variable, control variable, evidence, justify, causal relationship, accuracy, precision, reliability, scatter graphs, bar graphs, line graphs, force metre.