SCIENCE WHOLE SCHOOL OVERVIEW

YEAR GROUP	AUTUMN TERM	SPRING TERM	SUMMER TERM
N	**TOPIC** **All About Me** **Let's Celebrate**	**TOPIC** **Let's Jump into a Book** **Down on the Farm**	**TOPIC** **Minibeasts** **A Trip on a Magic Carpet**
	Pupils to discuss how seasons change and what happens next. Pupils to begin to learn about space and how we would get there. Pupils to also explore and be introduced to the solar system. Pupils to explore materials and how they can change – Link to The Arctic and ice melting Pupils to learn about where some animals. Link to hibernation.	To be able to talk about the changes that occur in Spring/Summer. To begin to know what a plant needs to grow. To begin to know and understand the key features of the life cycle of a plant or animal. To recognise farm animals -Ian's mobile farm to visit.	To be able to name healthy foods and non healthy foods. To explore and taste a variety of fruit and vegetables. To explore and understand where minibeasts live and can be found. To observe the changes in the life cycle of a butterfly. To begin to create a healthy picnic – Link to the Very Hungry Caterpillar.

R	**TOPIC** **All about me/Families** **Seasons** **Celebrations**	**TOPIC** **Once Upon a Time** **Spring and Growth**	**TOPIC** **Kings and Queens** **Rainforest Explorers**
	To be able to talk about the changes that occur in Autumn. **Identifying, grouping and classifying** (e.g. sorting activities (e.g. leaves). To be able to name basic parts of their body. To be able to talk about the changes that occur in Winter. To gain an understanding of space. To know how we could travel to the moon and what to expect when we got there (no gravity etc). To explore cause and effect – linked to vehicles.	To be able to talk about the different materials in their environment – Link to Science week eggstronaut testing. To be able to talk about the changes that occur in Spring. To be able to name and match animals to their young. To understand the human lifecycle and the changes that occur to the human body as we grow. To understand simple lifecycles chick/ human To know what a plant needs to grow. To investigate what type of beans grow.	To discuss which materials are best for building with and why. To discuss the different properties of materials and group them. To be able to talk about the changes that occur in Summer. To begin to understand that animals have different habitats. To find out key facts about rainforest animals.
Ongoing throughout the Reception Year	To enjoy exploring the natural world around them, making observations. To show curiosity about the world around them by asking questions. To be able to draw pictures of the things they have observed. To know how they can look after the natural environment and know how to take care all living things. To be able to describe the different things they can see, hear and feel whilst exploring outside. To understand the effect of changing seasons on the natural world around them. To make observations around various states of matter, and use a range of vocabulary to describe these (e.g. melting, freezing, condensing etc). To use their imagination and curiosity to develop appreciation of, and wonder at, the natural world.		

1	**Autumn 1 and 2 TOPIC** Animals including humans	**Spring 1 TOPIC** Everyday materials	**Summer 1 TOPIC** Plants
	Identify, name, draw and label the basic parts of the human body and say what is associated with each sense. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals.	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including word, plastic, glass, metal, water & rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials based on their simple physical properties.	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.

	Sticky Knowledge To know we use our nose to smell. To know we use our tongue to taste To know we use our ears to hear To know we use our eyes to see To know we use our hands and feet to touch. To label head, arms, legs and know some bones e.g. skull, hip. There are many different animals with different characteristics. Animals have senses to help individuals survive. When animals sense things they are able to respond. Animals need food to survive. Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy. **Key vocabualary** body, head, neck, arms, elbows, hands, fingers, legs, knees, feet, face, skin, ears, eyes, nose, nostrils, hair, mouth, tongue, teeth, tall, taller, short, shorter, big, bigger, small, smaller, louder, softer, loud, quiet, high, low, senses, taste, hearing, touch, smell, sight, bitter, sweet, sour, sharp, tingly, fizzy, milky, loud/er, quiet/er, peaceful, silent, silence, noise, noisy,rough, smooth, bumpy,	**Sticky Knowledge:** There are many different materials that have different describable and measurable properties. Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastic and ceramics (including glass). The properties of a material determine whether they are suitable for a purpose. **Key vocabulary** materials, properties, hard, soft, fluffy, rough, smooth, shiny, dull, light, heavy,transparent (see-through), opaque (can't see-through), translucent (see something through), harder, lighter, rougher, stretch, stretchy, elastic, stiff, bend, bendy, not bendy, press, squash, twist, shape, aterproof, absorb, absorbent.	**Sticky Knowledge:** Plants grow from seeds/bulbs Plants need light and water to grow and survive Plants are important We can eat lots of plants. **Key vocabulary** pansy, geranium, busy Lizzie, petunia, begonia, daisy, snapdragon, fuchsia, lily, daffodil, tulip, buddleia, weed, buttercup, thistle, nettle, foxglove, poppy, dandelion, daisy, cornfl ower, periwinkle, bluebell, leaf, stem, flower, bud, shoot, root, root system, tap root, fi brous roots, tree, trunk, branch, twig, tall, short, taller, shorter, tallest, shortest, similar, different, compare, group, measure.

	wrinkled, , scent, pong, flowery, fruity, sour, sweet, bitter, sharp, strong, gentle, delicate, sensitive, fabric, material, layers, thick, thin, thicker, thinner, soft, hard. fish, amphibian, reptile, bird, mammal tail, paws, legs, feet, nose, ears, eyes, feather, fur, scales, fins, fish, tail, gills, scales, eyes, mouth, bill, beak, head, eye, legs, claws, wings, feather, down quill, webbed feet, legs, smooth skin, big eyes and mouth, nose, scaly skin, claws on feet, long tongue, big teeth, hop, leap, climb, clamber, swing, pad, pace, prowl, pounce, spring, flap, fly, flutter, flop, splash, splosh, dive, swim, slither, slide, hedgehog, fox, bat, badger, night, nocturnal, senses, sight, smell, sonar, food, feeding, roost, sett, burrow, tunnel, nest, carnivore, herbivore, omnivore.		

	SEASONAL CHANGES taught throughout the year as we experience them	Observe changes across 4 seasons. Describe weather associated with the seasons and how day length varies.	**Sticky Knowledge:** Name 4 seasons Talk about changes observed in each season **Key Vocabulary**: Winter, Spring Summer, Autumn, season.
2	**Autumn TOPIC** Animals including humans	**Spring TOPIC** Living things	**Summer TOPIC** Plants
	Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Explore and compare the difference between things that are living, dead and things that have 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. Identify and name a variety of plants and animals in their habitats, including micro habitats. Describe how animals obtain their food from plants and other animals, using the	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and warmth to grow and stay healthy.

		idea of a simple food chain, and identify and name the different sources of food.	
	Sticky Knowledge: Animals move in order to survive. Different animals move in different ways to help them survive. Exercise keeps animal's bodies in good condition and increases survival chances. All animal eventually die. Animals reproduce new animals when they reach maturity. Animals grow until maturity and then don't grow any larger. **Key Vocabulary** food, sort, classify, Venn diagram, Carroll diagram, healthy diet, dairy, fruits, vegetables, meat, fish, beans, fat, sugar, bread, potatoes, cereals, exercise, physical activity, hot, sweaty, heart beating, pulse,	**Sticky Knowledge:** Some things are living, some were once living but now dead and some things never lived. There is variation between living things. Different animals and plants live in different places. Living things are adapted to survive in different habitats. Environmental change can affect plants and animals that live there. **Key Vocabulry** Habitat, alive, living, once-lived,dead, never-lived, plants, animals, decay, rocks, soil, air, water, food chain, plants, animals, herbivores (eat plants and parts of plants), carnivores (eat other	**Sticky Knowledge:** Plants grow from seeds/bulbs Plants need light, water and warmth to grow and survive Flowers make seeds to make more plants (reproduce) Plants are important We need plants to survive (to clean air, to eat) We can eat different parts of the plants (leaves, stems, roots, seeds, fruit) **Key vocabulary** seeds, plant (verb and noun), apprentice, gardener, bulb, grow, observe, observations, describe, identify, expert, question, predict, prediction, water, compare, answer, investigate, bean, soil, surface, test, bury, light, dark, water, germinate, fair, same, plan, suitable, radicle, root, shoot,

	tired, aching, muscles, clean, hygiene, hygienic, wash, bath, shower, brush, comb, toothbrush, toothpaste, soap, water, shampoo	animals), omnivores (eat plants/parts of plants and other animals), direction, source of food, suited, habitat, features, names of habitats, living things and animal body parts.	leaves, change, evidence, height, tallest, shortest, bar chart, scale, pattern, question, connection, measure, seedling.
		Spring TOPIC Properties and suitability of materials	
		Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	
		Sticky Knowledge: -Materials can be changed by physical force (twisting, bending, squashing and stretching) **Key vocabulary** material, wood, property, metal, plastic, glass, rock, brick, paper, cardboard, fabric, smooth, rough, soft, hard, bendy, squashy, stiff, rigid, shiny, dull, see through, cold, warm,	

		breaks, fold, crease, waterproof, absorb, absorbent, wet, sunglasses, lenses, light, block, transparent, opaque, translucent, strength, strong, weak, tear, teabag, tea leaves, chair, legs, arms, seat, backrest, cushion, tent, stretchy, tent cover, frame, flexible, measure, record	
3	**Autumn TOPIC** Rocks and fossils	**Spring TOPIC** Light and shade	**Summer TOPIC** Plants
	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the sizes of shadows change.	Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers. Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal . Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	Sticky Knowledge: There are different types of rock.	**Sticky Knowledge:**	**Sticky Knowledge:**

	There are different types of soil. Soils change over time. Different plants grow in different soils. Fossils tell us what has happened before. Fossils provide evidence. Paleontologists use fossils to find out about the past. Fossils provide evidence that living things have changed over time. **Key vocabulary** Igneous, sedimentary, metamorphic, sandstone, granite, chalk, limestone, marble, pumice, rough, smooth, hard, soft, rock, stone, pebble, texture, particle, crystal, granule, properties, soil, clay, sandy, loam, peat, organic material, weather, weathering, frost, beach, cliff, trilobite, starfish, sea urchin, ammonite, fossil, fossilise, remains permeable, impermeable, durable	There must be light for us to see. Without light it is dark. We need light to see things even shiny things. Transparent materials let light through them and opaque materials don't let light through. Beams of light bounce off some materials (reflection). Shiny materials reflect light beams better than non-shiny materials. Light comes from a source. **Key vocabulary** light, dark, shadow, mirror, bright, dim, reflect, eye, opaque, transparent, translucent, ultraviolet, ray, beam, absorb, luminous, non-luminous, infrared, question, investigation, fair test, change, measure, predict, prediction, explain, explanation, observations, draw conclusions	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Recognise the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Recognise the way in which water is transported within plants. Begin to u understand the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal **Key vocabulary** plant, roots, stem, trunk, leaf/leaves, flower, leaflet, stalk, veins, surface, edge, lobes, tip, food, root hair, nutrients, anchor, support, seed, germination, seedling, growth, mature plant, flowering, pollination, seed formation, bud, petal, sepal, carpel, stamen, pollen, reproduce, nectar, seed, fruit, dispersal, animal, wind, water, self-dispersal, explosion, sprinkling, competition, air, light, stigma, style, ovary, anther, filament, observe, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions.

	Autumn TOPIC Animals including Humans	**Spring TOPIC** Forces and magnets	**Summer TOPIC** Plants
	Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract and repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, & identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets with attract or repel each other, depending on which poles are facing.	Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers. Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal . Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants Know the way in which water is transported between plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	Sticky Knowledge: Many animals have skeletons to support their bodies and protect vital organs.	**Sticky Knowledge:** Magnets exert attractive and repulsive forces on each other.	**Sticky Knowledge:** Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.

	Muscles are connected to bones and move them when they contract. Movable joints connect bones. Animals and humans are aapted to eat different foods (healthy plate / diet) **Key vocabulary** stay alive, survive, food, balanced diet, nutrition, nutrients, fruit and vegetables, carbohydrates, protein, roughage, fibre, sugar, fat, dairy, skeleton, bones, protect, support, move, muscles, joints, ribs, heart, skull, brain, backbone, spine, spinal column, vertebrate, footprint, trail, vitamins, minerals, question, classify, investigation, survey, measure, pattern, evidence, draw conclusions, oxygen	Magnets exert non-contact forces, which work through some materials. Magnets exert attractive forces on some materials. Magnet forces are affected by magnet strength, object mass, distance from object and object material. **Key vocabulary** push, pull, twist, force, air, turns, fast, slow, slows down, material, surface, magnet, attracts, magnetic material, magnetism, acts at a distance, non-magnetic material, metal, non-metal, strength, north pole, south pole, repel, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions	Recognise the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Recognise the way in which water is transported within plants. Begin to u understand the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Key vocabulary** plant, roots, stem, trunk, leaf/leaves, flower, leaflet, stalk, veins, surface, edge, lobes, tip, food, root hair, nutrients, anchor, support, seed, germination, seedling, growth, mature plant, flowering, pollination, seed formation, bud, petal, sepal, carpel, stamen, pollen, reproduce, nectar, seed, fruit, dispersal, animal, wind, water, self-dispersal, explosion, sprinkling, competition, air, light, stigma, style, ovary, anther, filament, observe.

4	**Autumn TOPIC** Living things: digestion and food chains	**Spring TOPIC** Sound: Vibrations, pitch and volume	**Summer TOPIC** States of matter
	Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.	Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
	Sticky Knowledge: Animals have teeth to help them eat. Different types of teeth do different jobs. Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood takes nutrients around the body. Nutrients produced by plants move to primary consumers then to secondary consumers through food chains.	**Sticky Knowledge:** Sound travels from its source in all directions and we hear it when it travels to our ears. Sound travel can be blocked. Sound spreads out as it travels. Changing the shape, size and material of an object will change the sound it produces. Sound is produced when an object vibrates.	**Sticky Knowledge:** Solids, liquids and gases are described by observable properties. Materials can be divided into solids, liquids and gases. Heating causes solids to melt into liquids and liquids evaporate into gases. Cooling causes gases to condense into liquids and liquids to freeze into solids. The temperature at which given substances change state are always the same.

	Key Vocabulary mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus, digestive system, digestion, carbohydrate, fat, sugar, protein, roughage, dairy, fruit, vegetables, vitamins, minerals, balanced diet, healthy, mechanical process, chemical process, absorb, nutrients, water, saliva, chemicals, enzyme, teeth, canine, incisor, premolar, molar, jaw, cutting, tearing, grinding, dental hygiene, decay, dentist, brushing, toothpaste, floss, mouthwash, food, plants, animals, food chain, food web, producer, consumer, predator, prey, herbivore, omnivore, carnivore	Sound moves through all materials by making them vibrate. Changing the way an object vibrates changes it's sound. Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds. Faster vibrations (higher frequencies) produce higher pitched sounds **Key Vocabulary** sound, loud, quiet, high, low, repeating, continuous, strike, blow, shake, pluck, vibration, vibrate, solid, gas, volume, strength of vibrations, sound source, fainter, distance, pitch, particles, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions	The stages of the water cycle. **Key Vocabulary** solid, liquid, hard, soft, ice, water, temperature, degree celsius, melt, melting, freeze, freezing, solidify, solidifying, heating, states of matter, change of state, melting point, freezing point,gas, air, carbon dioxide, helium, oxygen, bubbles, evaporate, evaporation, water vapour, boil, boiling, boiling point, steam, thermometer, data logger, sensor, condensation, water, droplets, cycle.

	Autumn TOPIC **Living Things: Grouping and changing environments**	**Spring TOPIC** **Electricity**	**Summer TOPIC** **States of matter**
	Recognise that living things can be grouped in a variety of ways. 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 danger to living things.	Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes the circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. Know the difference between a conductor and an insulator; giving examples of each.	Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

	Sticky Knowledge: Living things can be divided into groups based upon their characteristics. Environmental change affects different habitats differently. Different organisms are affected differently by environmental change. Different food chains occur in different habitats Human activity significantly affects the environment. **Key Vocabulary** features, sequence, key, distinguish, similarities, differences, vertebrate, fish, amphibian, reptile, classification, invertebrate bird, mammal, backbone, hair, scales, feathers, eggs, wings, beak, lungs, gills, cold blooded, warm blooded, suckle, head, thorax, abdomen, wing, segment, antennae, insects, arachnids (spiders), crustaceans, myriapods, molluscs, worms, observations, sort, group, classify, identify	**Sticky Knowledge:** A source of electricity (mains of battery) is needed for electrical devices to work. Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit faster. Devices work harder when more electricity goes through them. A complete circuit is needed for electricity to flow and devices to work. Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators. **Key Vocabulary** electricity, electrical, mains, plugged in, battery, power, rechargeable, solar, wind up, sound, light, heat, movement, cell, wire, bulb, bulb holder, buzzer, motor, component, circuit, complete circuit, short circuit, flow, break, make, metal, connect, disconnect, terminal, positive, negative, switch, press switch, toggle switch, tilt switch, pendulum switch, property, electrical conductor, electrical insulator.	**Sticky Knowledge:** Solids, liquids and gases are described by observable properties. Materials can be divided into solids, liquids and gases. Heating causes solids to melt into liquids and liquids evaporate into gases. Cooling causes gases to condense into liquids and liquids to freeze into solids. The temperature at which given substances change state are always the same. The stages of the water cycle. **Key Vocabulary** solid, liquid, hard, soft, ice, water, temperature, degree celsius, melt, melting, freeze, freezing, solidify, solidifying, heating, states of matter, change of state, melting point, freezing point,gas, air, carbon dioxide, helium, oxygen, bubbles, evaporate, evaporation, water vapour, boil, boiling, boiling point, steam, thermometer, data logger, sensor, condensation, water, droplets, cycle.

5	**Autumn TOPIC** Properties and Materials	**Spring TOPIC** Forces	**Summer TOPIC** Living Things and their habitat
	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. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives. Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.

	changes associated with burning and the action of acid on bicarbonate of soda.		
	Sticky Knowledge: When two or more substances are mixed and remain present the mixture can be separated. Some changes can be reversed and some can't. Materials change state by heating and cooling. Separating technique – difference in property required Magnets – some materials are magnetic Filtration and sieving – a solid that does not dissolve in liquid Different sized solids Evaporation – a solid dissolved in water and the solid has a high boiling temperature Floating – Some materials float and others sink **Key vocabulary** properties, material, solid, liquid, gas, evaporation, condensation, absorbancy, compare, contrast, group, organise, criteria, hardness, soluble, insoluble, transparent, transparency, opaque, hardness, strength, rigidity, flexibility, elastic, elasticity, ductile, electrical conductor/insulator, thermal conductor/insulator, magnetic, non-magnetic, attract, repel, viscosity, viscous,	**StickyKnowledge** Air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way. Friction is a force against motion caused by two surfaces rubbing against each other. Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move. **Key Vocabulary** air resistance, Aristotle, balanced , balanced forces, bevel gears, clockwork, cogs, compress, extend, effort, force arm, forces, force, friction, force arrow, fulcrum, gravity, Galileo, gear ratio, gears, gear trains, lever, lift, machine, mechanisms, movement, Newton, Newton meter, pinion, pivot, pulley, pull, push, rack, resistance, rotary motion, simple machines, speed, time, unbalanced force, upthrust, water resistance, weight arm, wheel	**Sticky Knowledge:** Variation exists within a population (and between offspring of some plants) Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms are best adapted to reproduce are more likely to do so. Organisms reproduce and offspring have similar characteristic patterns. Competition exists for resources and mates. **Key Vocabulary** life cycle, birth, growth, reproduction, metamorphosis, aging, death, animal, mammal, amphibian, insect, bird, elephant, toad, bumblebee, blue tit, hedgehog, bat, polar bear, mountain gorilla, cubs, pups, hibernate, nocturnal, marsupial, toad, newt, salamander, tree frog, metamorphosis, tadpole, larva, frog, toad, gills, cold blooded, ladybird, butterfl y, dragonfly, head, thorax, abdomen, antennae, egg, pupa, cocoon, adult, thrush, peregrine falcon, ostrich, emperor penguin, breeding cycle, clutch, brood, hatch, fledge, prey, predator, reproduce, habitat, environment, humpback whale, blue whale, swift, osprey, wildebeest, caribou, monarch butterfly, migrate, migration, navigate, genetic, endangered,

	thick, thicker, types of plastic – polyester, nylon, polythene, PVC, polystyrene acrylic – recycle, reuse, biodegradable, environmentally friendly		threatened, extinct, extinction, evolution, giant panda, black rhino, peregrine falcon, bumblebee, salamander, osprey, koala bear
	Autumn TOPIC **Properties and Materials**	**Spring TOPIC** **Earth and Space**	**Summer TOPIC** **Animals including humans**
	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. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	Describe the movement of the Earth, and other planets, relative to the sun in the solar system. Describe the movement of the moon relative to the Earth. Describe the sun, Earth and moon as approximately spherical bodies. Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Describe the changes as humans develop to old age**.**

	Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		
	Sticky Knowledge: When two or more substances are mixed and remain present the mixture can be separated. Some changes can be reversed and some can't. Materials change state by heating and cooling. Separating technique – difference in property required Magnets – some materials are magnetic Filtration and sieving – a solid that does not dissolve in liquid Different sized solids Evaporation – a solid dissolved in water and the solid has a high boiling temperature Floating – Some materials float and others sink **Key Vocabulary** material, compare, contrast, separate, mixture, sieve, filter, evaporate, solid, liquid, gas, powder, particle, dissolve, soluble, solution, contamination, contaminate,	**Sticky Knowledge:** Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Objects like planets, moons and stars spin. Smaller mass objects like planets orbit large mass objects like stars. Stars produce vast amounts of heat and light. All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars. **Key vocabulary** Aldebaran, Arctic, Antarctic, British summer time, Earth, Jupiter, Mars, Mercury, Milky Way, Moon, North Pole, Saturn, South Pole, Sun, Neptune, Universe, Uranus, Venus, asteroid, autumn, axis, crescent, dawn, degrees, dusk, equator, equinox, fixed stars, Full Moon, galaxy, gibbous, hemisphere, horizon, illuminate, leap year, longitude,	**Sticky Knowledge:** Name and sequence the stages of a human life cycle. Can compare human life cycle with that of other mammmals. Recognise the difference between girls and women. Identify differences between boys and men. Describe the changes that happen to boys during puberty. **Key vocabulary** life cycle, birth, growth, baby, toddler, teenager, adult, adulthood, childhood, pregnancy, gestation, sexual, mammal,puberty, reproduction, genitals, vagina, pubic hair, underarm hair, menstruation, period, eggs, breasts, hips, grow, shape, sweat, hygiene, spots, penis, testicles, sperm, facial hair, larynx

	contaminated, impurity, pure, purity, suspension, saturated, saturation, reversible, non-reversible, microbes, bacteria, types of oil, liquid, solid, detergent, sticky, filter.	lunar month, meridian, nebula, New Moon, northern, orbit, planet, reflect, rotate, rotation, solar system, solstice, southern, spin.	(Adam's apple), voice breaking, grow, shape, perspiration, hygiene, spots, mood, muscles
6	**Autumn TOPIC :** **Evolution and Inheritance**	**Spring TOPIC** **Electricity**	**Summer TOPIC** **Light**
	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Associate the brightness of a lamp or the volume of a buzzer with 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. Use recognised symbols when representing a simple circuit in a diagram.	Recognise that light appears to travel in 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. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		
	Sticky Knowledge: Life cycles have evolved to help organisms survive to adulthood. Over time the characteristics that are most suited to the environment become increasingly common. Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms are best adapted to reproduce are more likely to do so. **Key vocabulary** population, variation, environment, inheritance, adaptation, selective breeding, generation, survival, natural selection, evolution, fossils, genes, genetics, DNA, extinct, extinction, speciation. question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions	**Sticky Knowledge:** Batteries are a store of energy. This energy pushes electricity round the circuit. When the battery's energy is gone it stops pushing. Voltage measures the 'push.' The greater the current flowing through a device the harder it works. Current is how much electricity is flowing round a circuit. When current flows through wires heat is released. The greater the current, the more heat is released. **Key vocabulary** cell, battery, lamp, wire, buzzer, motor, circuit, current, filament, electrical insulator, electrical conductor, mains electricity, terminal, switch, toggle switch, push switch, slide switch, tilt switch, trembler switch, pressure switch, reed switch, series circuit, resistance, resistor, current, circuit diagram, recognised symbols, generate, generator, coal, gas, oil, fossil fuels, nuclear, biomass fired power stations, wind turbine, wave hub,	**Sticky Knowledge:** Recognise that light appears to travel in straight lines. That light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. That light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Define transparent, translucent and opaque. Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light so we don't see the beam. **Key vocabulary** light, dark, shadow, mirror, bright, dim, refl ect, eye, opaque, transparent, translucent, ultra violet, ray, beam, refraction, periscope, spectrum, dispersion, inverted, medium, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions

		tidal flow, hydro-electric, grid, pylon, transmission, transformer, solar panel	
		Spring TOPIC **Animals including Humans**	**Summer TOPIC** **Living Things and their Habitats**
		Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	Classify living things into broad groups according to observable characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics
		Sticky Knowledge: The heart pumps blood around the body. Oxygen is breathed into the lungs where it is absorbed by the blood. Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.) **Key vocabulary** aorta, artery, atrium, blood, blood vessel, body temperature, capillaries, carbon dioxide, cells, chamber, chest cavity,	**Sticky Knowledge:** Variation exists within a population (and between offspring of some plants) Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms are best adapted to reproduce are more likely to do so. Organisms reproduce and offspring have similar characteristic patterns. Competition exists for resources and mates. **Key vocabulary** identify, identification, classify, classification, division, family, genus, species, reason, common characteristics, distinguishing characteristics,

		circulation, circulatory system, deoxygenated blood, digestive system, digestive tract, health, heart, heart valves, humans, hydration, lubricant, lungs, muscular system, nutrients, nutrition, oxygen, oxygenated blood, plasma, platelets, pump, red blood cell, skeletal, system, transport, valve, vein, vena cava, ventricle, vessel, waste, waste gases, white blood cells	leaves, shape, size, colour, backbone, wings, jointed legs, cased, transparent, antennae,vertebrates, fish, amphibians, mammals, birds, reptiles, invertebrates, molluscs, annelids, arachnids, insects, arthropods