EYFS	Plants	Animals inc. humans	Living Things and their habitats	Electricity	Forces	(ENERGY)	Materials
						Seasons and how they change	
Pupils will learn to:	Make observations of plants	Show care and concern for living things.				Develop an understanding of change.	Ask questions about the place they live.
	Show some care for their world around them	Identify different parts of their body. Understand growth and change				Observe and explain why certain things may occur (e.g. leaves falling off trees, weather changes). Look closely at similarities, differences, patterns and change. Comments and questions about the place they live or the natural world.	Talk about why things happen and how things work. Discuss the things they have observed such as natural and found objects. Manipulate materials to achieve a planned effect
Sticky Knowledge	*Know some names of plants, trees and flowers*	*Have some understanding of healthy food and the need for variety in their diets.* *Know the effects exercise has on their bodies.* *Can talk about things they have observed including animals*				*<u>Know the order of seasons and associated vocabulary</u>* *spring, summer, autumn, winter, windy, sunny, , snow, rain, hot/cold*	*<u>Use vocabulary of properties of materials</u>* *Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof,*
Year 1 **Pupils will learn to:**	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. Identify and name the roots, trunk, branches and leaves of trees.	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				Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Distinguish between and object and the material from which it is made. Identify and name a variety of everyday materials, including wood, metal, plastic, glass, water and 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 properties
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*	*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.*				*Weather can change* *There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow, etc* *Days are longer and hotter in the summer* *Days are shorter and colder in the winter* *There are four seasons: Spring, Summer, Autumn, Winter*	*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.*
	Plants	**Animals inc. humans**	**Living Things and their habitats**	**Electricity**	**Forces**	**(ENERGY) Light and Sight**	**Materials**
Year 2 **Pupils will learn to:**	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	Know that animals, including humans, have offspring which grow into adults Know the basic stages in a life cycle for animals, including humans. Find out 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 idea of a simple food chain, and identify and name the different sources of food.				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	*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)*	*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 animals eventually die.* *Animals reproduce new animals when they reach maturity.* *Animals grow until maturity and then do not grow any larger.*	*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.*				*Materials can be changed by physical force (twisting, bending, squashing and stretching)*
Year 3	**Plants**	**Animals inc. humans**	**Living Things and their habitats**	**Electricity**	**Forces**	**(ENERGY) Light and Sight**	**Materials**

Pupils will learn to:	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	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. Know how nutrients, water and oxygen are transported within animals and humans. Know about the importance of a nutritious, balanced diet. Identify that humans and some other animals have skeletons and muscles for support, protection and movement:			Compare how things move on different surfaces. Know how a simple pulley works and make lifting an object simpler 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 based on whether they are attracted to a magnet and 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	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.	Compare and group together different kinds of rocks based on 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
Sticky Knowledge	*Plants are producers, they make their own food.* *Their leaves absorb sunlight and carbon dioxide* *Plants have roots, which provide support and draw water from the soil* *Flowering plants have specific adaptations which help it to carry out pollination, fertilisation and seed production* *Seed dispersal improves a plants chances of successful reproduction* *Seeds/bulbs require the right conditions to germinate and grow.* *Seeds contain enough food for the plant's initial growth*	*Different animals are adapted to eat different foods.* *Many animals have skeletons to support their bodies and protect vital organs.* *Muscles are connected to bones and move them when they contract.* *Movable joints connect bones.*		*Magnets exert attractive and repulsive forces on each other.* *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*		*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 travel 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*	*There are different types of soil.* *Soils change over time.* *Different plants grow in different soils.* *Fossils tell us what has happened before.* *Palaeontologists use Fossils to find out about the past.* *Fossils provide evidence that living things have changed over time*
Year 4	**Plants**	**Animals inc. humans**	**Living Things and their habitats**	**Electricity**	**Forces**	**(ENERGY) Sound**	**Materials**
Pupils will learn to:		Different animals are adapted to eat different foods. Many animals have skeletons to support their bodies and protect vital organs. Muscles are connected to bones and move them when they contract. Movable joints connect bones.	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 a lamp will light in a simple series circuit, based on whether 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 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. Safety when using electricity.		Know how sound is made associating some of them with vibrating. Know what happens to a sound as it travels from its source to our ears. Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know how sound travels from a source to our ears. Know the correlation between pitch and the object producing a sound.	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.*	*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*	*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.*		*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.* *Sound moves through all materials by making them vibrate.*	*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. d) 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*

				Materials that don't allow electricity to flow easily are called insulators		*Changing the way an object vibrates changes its sound.* *Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds.* *Faster vibrations (higher frequencies) produce higher pitched sounds*	
Year 5	**Plants**	**Animals inc. humans**	**Living Things and their habitats**	**Electricity**	**Forces**		**Materials**
Pupils will learn to:		Describe the changes as humans develop to old age.	Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. Know the process of reproduction in plants. Know the process of reproduction in animals.		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.		Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 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.
Sticky Knowledge		Different animals mature at different rates and live to different ages. Puberty is something we all go through, a process which prepares our bodies for being adults, and reproduction Hormones control these changes, which can be physical and/or emotional.	*Different animals mature at different rates and live to different ages.* *Some organisms reproduce sexually where offspring inherit information from both parents.* *Some organisms reproduce asexually by making a copy of a single parent.* *Environmental change can affect how well an organism is suited to its environment.* *Different types of organisms have different lifecycles*		*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*		*When two or more substances are mixed and remain present the mixture can be separated.* *Some changes can be reversed, and some cannot.* *Materials change state by heating and cooling.* 
					Earth and Space		**Materials (Changes)**
Pupils will learn to:					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.		Compare and group together everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Comparative and fair tests, for the uses of everyday materials, including wood, metals 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 this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda
Sticky Knowledge					*Stars, planets and moons have so much mass they attract other* *things, including each other due to a force called gravity.* *Gravity works over distance.* *Objects with larger masses exert bigger gravitational forces.* *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 matter (including gas) has mass.* *Sometimes mixed substances react to make a new substance. These* *Changes are usually irreversible.* *Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible.* *Indicators that something new has been made are: The properties of the material are different (colour, state, texture, hardness, smell, temperature)* *If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)*

					All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.		
Year 6	**Plants**	**Animals inc. humans**	**Living Things and their habitats**	**Electricity**	**Forces**	**(ENERGY) Light and Sight**	**Materials**
Pupils will learn to:		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.	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. Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.	
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.)*	*Variation exists within a population (and between offspring of some plants) – NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance.* *Organisms best suited to their environment are more likely to survive long enough to reproduce.* *Organisms reproduce and offspring have similar characteristic patterns.* *Competition exists for resources and mates*	*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.*		*Animals see light sources when light travels from the source into their eyes.* *Animals see objects when light is reflected off that object and enters their eyes.* *Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light, so we do not see the beam.* *Light travels in straight lines.*	
		(Evolution and Inheritance)					
Pupils will learn to:		Know about evolution and can explain what it is. Know how fossils can be used to find out about the past. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago					
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.* ***(NB: The following could be duplicated in Year 6 Living things and their habitats)*** *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.* *Variation exists within a population (and between offspring of some plants) Competition exists for resources and mates*					