Science Sticky Knowledge at Parkfield UKS2		
Curriculum Topic	**Year 5**	**Year 6**
Animals including Humans	**Humans life cycle** ✓ Prenatal – cells develop and grow into a foetus inside the mother's uterus. ✓ After around 9 months, the baby is born. ✓ Infancy – rapid growth and development. ✓ Children learn to walk and talk. Childhood – children learn new skills and become more independent. ✓ Adolescence – The body starts to change over a few years. ✓ The changes occur to enable reproduction during adulthood. ✓ Early adulthood – the human body is at its peak of fitness and strength. ✓ Middle adulthood – ability to reproduce decreases. ✓ There may be hair loss or hair may turn grey. ✓ Late adulthood – leading a healthy lifestyle can help slow down the decline of fitness and health with occurs during this stage. ✓ Girls – larynx (voice box grows), hair grows under armpits, skin becomes oilier, breasts grow, gain hair on arms and legs, start to menstruate, pubic hair grows. ✓ Boys – larynx (voice box) grows 'Adam's apple', hair grows on chest, pubic hair grows, skin becomes oilier, facial hair grows, hair under armpits grow, gain hair on arms and legs, scrotum, testes and penis develop, become more muscular. ✓ Both – grow taller, sweat glands produce more sweat, all parts of the body grow. Key Scientist: Anne McClaren is known for her research into reproductive biology and had a passion about safeguarding the future of endangered animals. Her project aimed to preserve the DNA of these animals before they became extinct.	**Our Body** ✓ The heart is an organ which constantly pumps blood around the circulatory system. ✓ The heart pumps blood to the lungs to get oxygen. ✓ It then pumps this oxygenated blood around the body. ✓ Blood vessels are the tube-like structures that carry blood through the tissues and organs. ✓ Veins, arteries and capillaries are the three types of blood vessels. ✓ Oxygenated blood has more oxygen, it is pumped from the heart to the rest of the body. Deoxygenated blood is blood where most of the oxygen has already been transferred to the rest of the body. ✓ I can name the key parts of the circulatory system: hearts, lungs, blood vessels, muscles, aorta, ventricles and atriums ✓ The water we drink is absorbed by the intestines, and circulated throughout the body in the form of body fluids such as blood. **Keeping Healthy** ✓ Drugs, alcohol and smoking have negative effects on the body. ✓ A healthy diet involves eating the right types of nutrients in the right amounts. ✓ Regular exercise strengthens muscles including the heart muscle, improves circulation and increases the amount of oxygen around the body. ✓ Exercise releases brain chemicals which help you feel calm and relaxed, helps you sleep more easily, and strengthens bones. ✓ Exercise can help to stop us from getting ill. ✓ Nutrients are found in food and water, once broken down, the nutrients are absorbed into the blood in the small intestine. ✓ Processed food is food that has been through a process that alters its natural state. ✓ There are tiny hair like villi in the intestine that help the process of breaking food down to happen. ✓ The nutrients are carried in the blood to the different parts of the body that need them. ✓ Water doesn't need breaking down and moves between membranes in the body to arrive in the correct place, again via our blood. ✓ Exercise can have negative effects on our bodies ✓ There should be a balance between exercise and eating a healthy diet. Key Scientist: Dr Alexander Fleming discovered penicillin, which was one of the most important scientific discoveries in the history of medicine.
Materials/ Uses of everyday materials	**Material properties** ✓ Different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency. ✓ A solution is made when solid particles are mixed with liquid particles. ✓ Materials that will dissolve are known as soluble. ✓ Materials that won't dissolve are known as insoluble. ✓ A suspension is when the particles don't dissolve. **Changes of state** ✓ Some changes can be reversed, and some cannot. ✓ Reversible changes, such as mixing and dissolving solids and liquids together, can be reversed by: Sieving - Smaller materials are able to fall through the holes in the sieve, separating them from larger particles. Filtering - The solid particles will get caught in the filter paper but the liquid will be able to get through. Evaporating -The liquid changes into a gas, leaving the solid particles behind. ✓ Irreversible changes often result in a new product being made from the old materials (reactants). For example, burning wood produces ash and mixing vinegar and milk produces casein plastic. Key Scientist: Stephanie Kwolek is known for creating synthetic fibres including Kevlar™	
Plants / classification	**Classification** ✓ Broad groupings, such as micro-organisms, plants and animals can be subdivided. ✓ Animals can be classified into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). ✓ A classification key is a set of questions about the characteristics of living things. ✓ A classification key helps to identify a living thing or decide which group it belongs to by answering questions. Key Scientist: Carl Linnaeus designed the classification system we use today using a taxonomy pyramid	
Living things and their habitats	**Animals** ✓ A lifecycle is the journey of changes that take place throughout the life of a living thing including birth, growing up and reproduction. ✓ The life cycle of a frog (amphibian) • Egg • Tadpole • Tadpole with legs • Young frog • Adult	**Evolution** ✓ Evolution is the process by which living things gradually change over time. ✓ Fossils provide information about living things from millions of years ago. ✓ Organisms reproduce and offspring have similar characteristic patterns. ✓ Over time the characteristics that are most suited to the environment become increasingly common.

	✓ A lifecycle is the journey of changes that take place throughout the life of a living thing including birth, growing up and reproduction. ✓ Different types of organisms have different lifecycles. ✓ Humans develop inside their mothers and are dependent on their parents for many years until they are old enough to look after themselves. ✓ Amphibians such as frogs are laid in eggs then, once hatched, go through many changes until they become an adult. ✓ Some animals, such as butterflies, go through complete metamorphosis to become an adult. ✓ Some animals, such as a cricket, go through incomplete metamorphosis to become an adult, their young look like the adult. ✓ Birds are hatched from eggs and are looked after by their parents until they are able to live independently. Key Scientist: Kristan Marhaver is a marine biologist who is currently working on new methods to regrow damaged coral reefs to return as marine habitats.	✓ Organisms best suited to their environment are more likely to survive long enough to reproduce. Variation exists within a population (and between offspring of some plants). ✓ Charles Darwin went on a voyage as a naturalist on the HMS Beagle. ✓ Charles Darwin went to the Galapagos Islands and studied the finches that inhabited the island and found that in different areas of the island finches had different beaks (e.g. shapes and sizes). Key Scientist: Charles Darwin is known for his theory of evolution by natural selection – this was recorded in his book, On The Origin of Species.
Light		**Light** ✓ Light from the sun travels in a straight line and hits an object. ✓ The light ray is then reflected off the objects and travels in a straight line to our eyes, enabling us to see the object. ✓ We need light to be able to see things. ✓ Light waves travel out from sources of light in straight lines. ✓ These lines are often called rays or beams of light. ✓ A shadow is always the same shape as the object that casts it. ✓ This is because when an opaque object is in the path of light travelling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling. Key Scientist: Charles Kao is the 'Father of Fibre Optics'. He developed the use of filaments to transmit light over long distances.
Electricity		**Electricity** ✓ More batteries or a higher voltage create more power to flow through the circuit. ✓ Shortening the wires means the electrons have less resistance to flow through. ✓ Fewer batteries or a lower voltage give less power to the circuit. ✓ More buzzers or bulbs mean the power is shared by more components. ✓ Lengthening the wires means the electrons have to travel through more resistance. ✓ The circuit must be complete for electricity to flow through it. ✓ A cell is a single power source and a battery can be made up of many cells put together. ✓ A complete circuit will let electricity pass though it and make a bulb or buzzer work ✓ An incomplete circuit will not allow electricity to pass through it ✓ The circuit can be made of a cell, a switch, a bulb or a buzzer. Key Scientist: Modern batteries were designed by Alessandro Volta in the 19th Century using a device known as the Voltaic Pile.
Forces	**Forces on objects** ✓ Gravity is a pulling force exerted by the Earth (or anything else which has mass). ✓ Mass is a measure of the amount of 'stuff' inside an object, and is measured in kilograms (kg). ✓ Weight is actually a measure of the strength of gravity acting on an object. It is measured in newtons (N). ✓ Earth's gravitational pull is the pull that Earth exerts on an object, pulling it towards Earth's centre. ✓ It is the Earth's gravitational pull which keeps us on the ground. ✓ Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. ✓ 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 Scientist: Isaac Newton discovered the theory of gravity	
Earth and Space		**Planets** ✓ Earth rotates (spins) on its axis. ✓ It does a full rotation once in every 24 hours. ✓ At the same time that Earth is rotating, it is also orbiting (revolving) around the Sun. ✓ It takes a little more than 365 days to orbit the Sun. ✓ The sun, moon and the Earth are astronomical objects shapes like spheres. **Night and Day** ✓ Daytime occurs when the side of Earth is facing towards the Sun. ✓ Night occurs when the side of Earth is facing away from the Sun. ✓ The Moon orbits Earth in an oval- shaped path while spinning on its axis. ✓ At various times in a month, the Moon appears to be different shapes. ✓ This is because as the Moon rotates round Earth, the Sun lights up different parts of it.

		Key Scientist: Dame Margaret Ebunoluwa Aderin-Pocock DBE is a British space scientist and science educator