Knowledge Progression: Science

Year group	Autumn A	Spring A	Summer A	Autumn B	Spring B	Summer B
Year 1	**Topic: Animals, including Humans** - Herbivores eat plants - Carnivores eat meat - Omnivores eat both plants and meat. - Humans have key parts but these vary from person to person. - Humans have 5 senses. - Humans have five senses – sight, touch, taste, hearing and smell.	**Topic: Plants** - An evergreen tree keeps its leaves all year round. - A deciduous tree loses its leaves in Autumn. - Trees have common parts, but they vary between the different types.	**Topic: Materials** - Some materials can be shiny - Some materials can be rough - Some materials can be stretchy	**Topic: Animals, including Humans** - All animals have needs. - Animals have offspring. - Some animals lay eggs - All animals, including humans, have basic needs. - To grow into healthy adults, we need to look after ourselves. - Good hygiene is also important.	**Topic: Living Things and their Habitats** - All objects are either living, dead or have never been alive. - A habitat provides shelter, food and water. - Animals and plants live in a habitat to which they are suited.	**Topic: Seasonal Changes** - The weather changes with the seasons. - In the UK, we have more daylight in the summer. - Spring, Summer, Autumn and Winter are the four seasons.
Year 2	**Topic: Animals, including Humans** - Herbivores eat plants and name two animals - Carnivores eat meat and name two animals - Omnivores eat both plants and meat and name two animals - Humans have key parts but these vary from person to person and name some of them - Humans have 5 senses and use comparative language. - Humans have five senses – sight, touch, taste, hearing and smell (e.g., louder/quieter, sweet/sour) **Topic: Scientists and Inventors** - Louis Pateur loved learning about science. - Germs spread through the air or touch. - A microscope can see tiny mould germs living on food.	**Topic: Plants** - Plants may grow from either seeds or bulbs - Plants need sunlight, water and nutrients to grow. - Seeds and bulbs 'germinate' and form seedlings. **Topic: Scientists and Inventors** - Tim Smit built a series of massive greenhouses. - The green houses he built are called biomes. -The Eden project is in Cornwall.	**Topic: Materials** - All objects are made of one or more materials - Clay can be shaped by squashing, stretching, rolling, pressing etc. - Some materials can be squashed, bent and stretched but some cannot. **Topic: Scientists and Inventors** - James Blyth was the first person to make electricity using energy from the wind. - A wind turbine changes energy from the wind into electric energy. - There are over 6,000 wind turbines in the UK.	**Topic: Animals, including Humans** - All animals need to eat, drink and breathe. - Animals have offspring which grow into adults. - Some animals lay eggs and name some. - All animals, including humans, have the basic needs of feeding, drinking and breathing. - To grow into healthy adults, we also need the right amounts and types of food and exercise. - Good hygiene is also important in preventing infections and illnesses **Topic: Scientists and Inventors** - Charles Macintosh experimented with chemicals to make new materials. - He found that rubber would dissolve. - Raincoats are called mackintosh.	**Topic: Living Things and their Habitats** - The plants and animals in a habitat depend on each other for food and shelter etc. - Within a habitat there are different microhabitats - The way that animals obtain their food from plants and other animals can be shown in a food chain. **Topic: Scientists and Inventors** - Rachel Carson studies the ocean and environment. - Rachel Carson described an ocean food chain. - She noticed that the water of the ocean had chemicals in it.	**Topic: Seasonal Changes** - The weather changes with the seasons and name common weathers for each season. - In the UK, we have more daylight in the summer and describe its affects - Spring, Summer, Autumn and Winter are the four seasons and name the corresponding months. **Topic: Scientists and Inventors** - Elizabeth Garrett Anderson was the first English women to qualify as a doctor in Britain. - Elizabeth Garrett Anderson studied science to become a doctor. - She founded the first hospital staffed by women.
Year 3	**Topic: Forces** - A force is a push or a pull. - Magnets have two poles – a north pole and a south pole - A magnet attracts magnetic material. **Topic: Electricity** - Some electrical devices plug into mains and others run on batteries. - Electricity flows around a circuit. - Some materials are conductors and others are insulators.	**Topic: Light** - Dark is the absence of light. - Some objects are sources of light. - The light from the sun can damage our eyes **Topic: Sound** - Volume is used to describe the loudness of sound. - Pitch describes how high or low a sound is. - Some materials absorb sound or are soundproof.	**Topic: Animals, including Humans** - A producer is the name given to a living thing that produces its own food - Prey is an animal that is hunted by another for food. Prey are hunted by predators. - A predator is a wild animal which hunts or preys on other animals for food.	**Topic: Materials** - A solid keeps its shape and has a fixed volume. - A liquid has a fixed volume but changes in shape to fit the container. - A gas fills all available space; it has no fixed shape or volume. **Topic: Rocks** - Rock is a natural material. - There are different types of rock. - Some rocks contain fossils which were formed millions of years ago.	**Topic: Plants** - The roots absorb water and nutrients from the soil. - The stem transports water and nutrients/minerals around the plant. - The leaves use sunlight and water to produce the plant's food.	**Topic: Animals, including Humans** - Animals (including humans) need to eat to get the nutrients their body needs to survive. - There are 5 food groups that humans need to have a balanced diet. - Plants make their own food unlike animals (including humans).

	Year 4	**Topic: Forces** - A force is a push or a pull and can go in different directions. - Magnets have two poles – a north pole and a south pole, they repel or attract each other. - A magnet attracts magnetic material and name some. **Topic: Electricity** - Some electrical devices plug into mains and others run on batteries and name some. - If there is a break in the circuit, the component will not work. - Metals are good conductors so are used as wires in a circuit.	**Topic: Light** - Light reflects off surfaces. - A shadow is formed when an object blocks the light. - Name the pupil and retina parts of the eye. **Topic: Sound** - A sound produces vibrations which travel through a medium from the source to our ears. - Dogs can hear much higher sounds than humans, and bats and dolphins can hear sounds much lower than humans. - Sound travels at 770 miles per hour	**Topic: Animals, including Humans** - Classification keys can be used to identify and name living things. - Environments may change naturally or via Humans (either in a good way or in a bad way). - There will be more plastic in our oceans than fish by 2050.	**Topic: Materials** - A solid keeps its shape and has a fixed volume. - A liquid has a fixed volume but changes in shape to fit the container. - A gas fills all available space; it has no fixed shape or volume. **Topic: Rocks** - Erosion is when wind, water and ice wear aware the land. - There are different types of rock and name some. - Paleontology is the study of fossils.	**Topic: Plants** - The roots absorb water, nutrients from the soil and anchor the plant to the ground. - A plant has male parts (stamen) and female parts (stigma, style and ovary). - The sepal protects the flower before it opens.	**Topic: Animals, including Humans** - Humans and animals have skeletons to help them move and provide protection and support. - Muscles allow a person and animal to move. - Humans have four types of teeth
	Year 5	**Topic: Materials** - Some materials will dissolve in a liquid and form a solution. - Other materials are insoluble and form sediment. - Mixtures can be separated by filtering, sieving and evaporation. **Topic: Scientists and Inventors** - David Attenborough is a famous naturalist. - He has promoted conservation for animals and habitats. - In 2006, Pluto was reclassified as a dwarf planet.	**Topic: Electricity** - Name some symbols for electrical components - A battery is a collection of cells. - The force that makes the electric current move through the wires. **Topic: Scientists and Inventors** - Name some of Steve Job's inventions. - Name ways technology has changed our lifestyles - Penicillin is an anti-biotic.	**Topic: Animals, including Humans** - Name the main parts of the circulatory system. - The body's circulatory system is responsible for transporting materials throughout the entire body. - Blood collects oxygen from the lungs and takes it to other parts of the body. **Topic: Evolution and Inheritance** - Mary Anning was one of the first fossil hunters and is famous for discovering many rare fossils including a five-metre skeleton of an ancient sea reptile. - The planet Earth is estimated to be 4.54 billion years old and to contain 8.7 million species of living things. - The offspring of animals and plants have slightly different characteristics to their parents. This is called variation.	**Topic: Living Things and their Habitats** - A lifecycle is a journey of change from birth, growing up and reproduction. - Reproduction is the process of living things being made. - Fertilisation is the process of fusing male and female sex cells to develop an egg. **Topic: Forces** - Everything is pulled to the Earth by gravity. - A mechanism is a device that allows a small force to be increased to a larger force. - Pulleys, levers and gears are all mechanisms.	**Topic: Light** - Light travels at 300,000 km/second - Light travels in straight lines. - It takes 8 minutes and 20 seconds for light from the sun to reach the earth. **Topic: Earth and Space** - Earth takes 365 (and one quarter) days to complete its orbit around the Sun. - The Earth rotates (spins) on its axis every 24 hours. - Name the 8 planets in the solar system.	**Topic: Classification** - Living organisms can be grouped according to their characteristics. -A dichotomous key is used to classify living organisms. - Animals can be divided into two main groups: vertebrates (backbone) and invertebrates (no backbone).
	Year 6	**Topic: Materials** - Some changes are reversible and name some. - Some changes are irreversible and name some. Some changes result in the formation of new materials. **Topic: Scientists and Inventors** - Evidence is used to support facts. - Planets are classified into different groups. - Name uses for Kevlar.	**Topic: Electricity** - Adding more bulbs to a circuit will make each bulb less bright - Electricity travels at the speed of light - The human body conducts electricity (nerves in our bodies carry small electrical currents. These electrical currents send messages to different parts of our bodies.) **Topic: Scientists and Inventors** - How penicillin was discovered. - State what the fossils found by Mary Leakey tell us about human evolution - Explain a theory of how a black hole is created.	**Topic: Animals, including Humans** - Explain the benefits that regular exercise has on the body. - Explain the negative impact of drugs and alcohol has on the body. - Across the animal kingdom, heart rate is related to body size: in general, the bigger the animal, the slower its resting heart rate. **Topic: Evolution and Inheritance** - Adaptation is where a characteristic changes overtime to increase a living thing's chance of surviving. - A characteristic is the distinguishing features of a living organism. - Evolution is adaptation over a very long time.	**Topic: Living Things and their Habitats** - Same animals develop and change through metamorphosis - Sexual reproduction is where two parents are needed to make offspring -Asexual reproduction is where one parent is needed to make offspring that are exact copies. **Topic: Forces** - Friction is a force that acts between two surfaces or objects that are moving, or trying to move, across each other. - Other examples of friction are air and water resistance. - Buoyancy and upthrust are forces that act in water.	**Topic: Light** - Refraction is when light bends as it passes from one medium to another. - Name materials that that transparent, translucent and opaque - Light that is visible to the human eye.is made up of a colour spectrum. **Topic: Earth and Space** - The sun appears to move in the sky, but it's actually the Earth's rotation that causes this. - Astronomical objects are shaped like spheres. - A moon is a natural satellite that orbits a planet.	**Topic: Classification** - The Linnean System is used to classify living organisms. - A microorganism is an organism that can only be seen using a microscope. - Living organisms often have two names – a scientific name and an everyday name .