

Science Key Knowledge (included on knowledge organisers)



Plants

Year 1	Year 2	Year 3
<p>Plants grow from seeds/bulbs</p> <p>Plants need light and water to grow and survive</p> <p>Plants are important</p> <p>We can eat lots of plants</p>	<p>Plants grow from seeds/bulbs</p> <p>Plants need light, water and warmth to grow and survive</p> <p>Flowers make seeds to make more plants (reproduce)</p> <p>Plants are important</p> <p>We need plants to survive (to clean air, to eat)</p> <p>We can eat different parts of the plants (leaves, stems, roots, seeds, fruit)</p>	<p>Plants are producers, they make their own food.</p> <p>Their leaves absorb sunlight and carbon dioxide</p> <p>Plants have roots, which provide support and draw water from the soil</p> <p>Flowering plants have specific adaptations which help it to carry out pollination, fertilisation and seed production</p> <p>Seed dispersal improves a plants chances of successful reproduction</p> <p>Seeds/bulbs require the right conditions to germinate and grow.</p> <p>Seeds contain enough food for the plant's initial growth</p>

Animals, including Humans

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>There are many different animals with different characteristics.</p>	<p>Animals move in order to survive.</p> <p>Different animals move in different ways</p>	<p>Different animals are adapted to eat different foods.</p>	<p>Animals have teeth to help them eat.</p>	<p>Different animals mature at different rates and live to different ages.</p>	<p>The heart pumps blood around the body.</p>

Science Key Knowledge (included on knowledge organisers)



<p>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.</p>	<p>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 don't grow any larger.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.)</p>
--	---	---	---	---	--

Science Key Knowledge (included on knowledge organisers)



Evolution and Inheritance (Year 6)

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

Living Things & their Habitats

Year 2	Year 4	Year 5	Year 6
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.	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	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	Variation exists within a population (and between offspring of some plants) – <i>NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance.</i> 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.

Science Key Knowledge (included on knowledge organisers)



Environmental change can affect plants and animals that live there.		organism is suited to its environment. Different types of organisms have different lifecycles.	Organisms reproduce and offspring have similar characteristic patterns. Competition exists for resources and mates.
---	--	---	--

Electricity

Year 4	Year 6
<p>A source of electricity (mains or battery) is needed for electrical devices to work.</p> <p>Electricity sources push electricity round a circuit.</p> <p>More batteries will push the electricity round the circuit faster.</p> <p>Devices work harder when more electricity goes through them.</p> <p>A complete circuit is needed for electricity to flow and devices to work.</p> <p>Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators.</p>	<p>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.'</p> <p>The greater the current flowing through a device the harder it works.</p> <p>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.</p>

Forces

Year 2	Year 3 (and magnetism)	Year 5
Pushing and pulling can make things move faster or slower.	Magnets exert attractive and repulsive forces on each other.	Air resistance and water resistance are forces against motion caused by

Science Key Knowledge (included on knowledge organisers)



<p>Pushing and pulling can make things move or stop. Things can move in different ways. Larger masses take bigger pushes and pulls to move or stop them. Pushing and pulling can change the shape of things. Bigger pushes and pulls have bigger effects</p>	<p>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.</p>	<p>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</p>
--	--	---

Earth and Space (Year 5)

<p>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 other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.</p>

Energy

Year 1	Year 3	Year 4	Year 6
<p>Weather can change There are lots of different types of weather: Rain,</p>	<p>There must be light for us to see. Without light it is dark.</p>	<p>Sound travels from its source in all directions and</p>	<p>Animals see light sources when light travels from the source into their eyes.</p>

Science Key Knowledge (included on knowledge organisers)



<p>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</p>	<p>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</p>	<p>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. 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</p>	<p>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 don't see the beam. Light travels in straight lines.</p>
--	--	---	---

Science Key Knowledge (included on knowledge organisers)



Materials

Year 1	Year 2	Year 3	Year 4	Year 5	
<p>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).</p>	<p>Materials can be changed by physical force (twisting, bending, squashing and stretching)</p>	<p>There are different types of rock. 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.</p>	<p>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</p>	<p>Mixtures and separation 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.</p>	<p>Changes 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,</p>

Science Key Knowledge (included on knowledge organisers)



<p>The properties of a material determine whether they are suitable for a purpose.</p>			<p>change state are always the same.</p>		<p>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)</p>
--	--	--	--	--	---