Progression of Knowledge and Skills in Science

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Human body	**AOL: World** **Skill** Draw pictures of the human body and name some of the different body parts. **Broad knowledge** The basic body parts are the head, arms, legs, nose, eyes, ears, mouth, hands and feet. Different body parts are used for different things, such as the eyes are used to see.	**Skill** Draw and label the main parts of the human body and say which body part is associated with which sense. **Core knowledge** The basic body parts are the head, arms, legs, nose, eyes, ears, mouth, hands and feet. **Skill** Explore the five senses and the body parts associated with them.	**Skill** Describe the stages of human development (baby, toddler, child, teenager, adult and elderly). **Core knowledge** Humans grow from baby to toddler to child to teenager to adult to elderly.	**Skill** Describe how humans need the skeleton and muscles for support, protection and movement. **Core knowledge** Humans have a skeleton and muscles for movement, support and protecting organs. Muscles are soft tissue made up of many stretchy fibres. Muscles allow us to move, breathe and digest food. The three main types of muscle in the human body are skeletal, cardiac and smooth. A joint is where two or more bones meet and connect. Parts of the human body can bend easily because the skeleton has lots of small bones and joints.	**Skill** Describe the purpose of the digestive system, its main parts and each of their functions. **Core knowledge** The digestive system is responsible for digesting food and absorbing nutrients and water. The mouth, oesophagus, small intestine and large intestine are organs of the digestive system.	**Skill** Describe the process of human reproduction. **Broad knowledge** Humans reproduce sexually, which involves two parents (one female and one male) and produces offspring that are different from the parents.	**Skill** Name and describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood. **Core knowledge** The heart, blood and blood vessels make up the circulatory system. The circulatory system moves blood around the body. The heart is a muscular organ that pumps blood around the body through the blood vessels. Blood vessels are tubes inside the body. The three types of blood vessels are arteries, capillaries and veins. Arteries carry blood from the heart to the rest of the body. Capillaries connect arteries to veins. They allow oxygen and other nutrients to pass

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							from the blood to the tissues, and carbon dioxide and other waste materials to pass from the tissues to the blood. Veins carry blood from around the body back to the heart. Blood is a substance that carries oxygen, other nutrients and hormones around the body. It also carries carbon dioxide and other waste products so they can be excreted. Blood is made up of plasma, platelets, red blood cells and white blood cells. Plasma is a yellowish liquid, mainly water. It carries red blood cells, white blood cells and platelets around the body. Red blood cells carry oxygen and carbon dioxide around the body. White blood cells fight infection and other diseases.

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							Platelets are small cell fragments that clump together to stop bleeding from a cut in a blood vessel.
Staying safe	**AOL: PSED** **Skill** Follow instructions when in different environments and when handling simple equipment, such as scissors. **Broad knowledge** Rules help to keep us safe in different environments and when using certain equipment.	**Skill** Describe ways to stay safe in some familiar situations. **Core knowledge** Ways to stay safe include: using sun cream and wearing and hat in the Sun; stopping, looking and listening when crossing the road; not touching sharp or hot objects; only eating or drinking what you know or have been given by an adult you trust. Using sun cream and wearing a hat helps you to stay safe in the Sun.	**Skill** Describe what humans need to survive. **Core knowledge** Humans need water, food, air and shelter to survive.	**Skill** Explain why light from the Sun can be dangerous. **Core knowledge** Light from the Sun is damaging for vision and the skin. People can protect themselves from the Sun by using sun cream, wearing sun hats and sunglasses and by staying indoors or in the shade.	**Skill** Explain the precautions needed for working safely with electrical circuits. **Core knowledge** Working with electrical circuits can be dangerous.	**Skill** Explain the precautions needed for working safely when heating, burning, cooling and mixing materials. **Core knowledge** Very hot and very cold materials can burn skin.	**Skill** Explain the dangers of using lasers and ways to use them safely. **Core knowledge** Lasers are intense beams of light and they should never be pointed at people's faces or aircraft.
Healthy lifestyle	**AOL: PSED** **Skill** Wash and dry hands regularly and say why this is important. **Core knowledge**	**Skill** Explain why hand washing and cleanliness are important. **Core knowledge**	**Skill** Describe the importance of a healthy lifestyle, including exercise, a balanced diet, good quality sleep and personal hygiene.	**Skill** Explain the importance and characteristics of a healthy, balanced diet. **Core knowledge**	**Skill** Describe what damages teeth and how to look after them. **Core knowledge**	**Skill** Explain why personal hygiene is important during puberty. **Broad knowledge** Good personal hygiene (washing,	**Skill** Explain the impact of positive and negative lifestyle choices on the body. **Core knowledge**

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	It is important to wash our hands to stop the spread of germs.	Hand washing and good hygiene prevent the spread of germs.	**Core knowledge** A healthy lifestyle includes exercise, a balanced diet, good quality sleep and personal hygiene. Risks associated with an unhealthy lifestyle include illness, obesity, tooth decay and mental health problems. Germs are microorganisms that can cause illness in humans. Germs get into the body through the eyes, nose or mouth. Washing hands with soap and clean running water helps humans avoid getting ill and spreading germs to others.	Humans get nutrition from what they eat. It is important to have a balanced diet made up of the main food groups, including: proteins, carbohydrates, fruit and vegetables, dairy products and alternatives, and fats and spreads. Humans stay hydrated by drinking water.	Regular teeth brushing, limiting sugary foods and visiting the dentist are important for good oral hygiene.	wearing clean clothes and brushing teeth) can prevent disease or illness. Puberty is the period during which adolescents reach sexual maturity and become capable of reproduction. It causes physical and emotional changes.	Exercise benefits your heart by lowering blood pressure, reducing weight, strengthening muscles and lowering stress. The Eatwell guide presents the foods and drinks that contribute to a healthy balanced diet. The five food groups are: fruit and vegetables, carbohydrates, dairy and alternatives, proteins and oils and spreads. Some foods, especially highly processed ones, are high in sugar, salt and fat are not necessary for a healthy, balanced diet. Eating more than the recommended daily amounts of saturated fat, sugar and salt can have a harmful effect on the circulatory system, such as causing high blood pressure and an increased risk of heart disease.

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							Nutrition labels on pre-packaged food help us to know what is in the food we eat. Nutrition labels are often displayed using a traffic light system, so consumers can easily see whether the food contains high (red), medium (orange) or low (green) amounts of sugar, salt and saturated fat. Smoking, drugs and alcohol can have a negative impact on the circulatory system. Smoking can result in cancer and heart disease. Alcohol can cause high blood pressure and increased stroke risk. Drugs can cause collapsed veins and cardiac arrest.
Pattern seeking	**AOL: World** **Skill** Notice and begin to describe patterns of	**Skill** Observe changes across the four seasons. **Core knowledge**	**Skill** Describe typical UK seasonal weather patterns. **Core knowledge**	**Skill** Find patterns in the way shadows change during the day. **Core knowledge**		**Skill** Use the idea of Earth's rotation to explain day and night, and the Sun's apparent	**Skill** Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how

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	weather in summer and winter. **Core knowledge** The weather and environment changes with the seasons.	The four seasons are spring, summer, autumn and winter. Certain events and weather patterns happen in different seasons.	The UK has typical weather in each of the seasons. For example, winter is cold and sometimes frosty, whereas summer is warm and sometimes sunny. Many animals behave differently in different seasons in the UK. These different behaviours, such as migration and hibernation, are linked to their life cycles, with spring often being the time for new offspring.	Shadows change shape and size when the light source moves. The higher the light source the shorter the shadow. The lower the light source the longer the shadow.		movement across the sky. **Core knowledge** As Earth orbits the Sun, it also spins on its axis. It takes Earth a day (24 hours) to complete a full spin. During the day, the Sun appears to move through the sky. The Sun is not moving the Earth is rotating. Earth rotates to the east or, if viewed from above the North Pole, it rotates anti-clockwise, which means the Sun rises in the east and sets in the west. As Earth rotates, different parts of it face the Sun, which brings what we call daytime. The part facing away is in shadow, which is night time. Sundials block sunlight to cast a shadow. As the Earth rotates, the angle of the sunlight upon the sundial changes, and the shadow	shadows can be changed. **Core knowledge** When a light source is close to an object, the shadow is large because the object is blocking more of the light coming from the source. As a light source moves further away from an object, the shadow gets smaller because the object blocks less light coming from the source.

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						changes length and direction.	
Changes	**AOL: World** **Skill** Notice and talk about the differences in day length between the seasons. **Broad knowledge** The number of daylight hours varies throughout the year, according to the season. The days are longer in summer and shorter in winter.	**Skill** Observe and describe how day length changes across the year. **Core knowledge** Day length is the number of hours of daylight. Day length is longer in the summer months and shorter in the winter months in the UK.	**Skill** Describe how some objects and materials can be changed and how these changes can be desirable or undesirable. **Core knowledge** Some objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay.	**Skill** Describe simply how fossils are formed, using words, pictures or a model. **Core knowledge** Fossils form over millions of years and are the remains of a once-living organism, preserved as rock. Scientists can use fossils to find out what life on Earth was like in prehistoric times.	**Skill** Observe and explain that some materials change state when they are heated or cooled and measure or research the temperature in degrees Celsius (˚C) at which materials change state. **Core knowledge** Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible. Melting is the process of a solid changing into a liquid. Freezing is the process of a liquid changing into a solid. Evaporation is the process of a liquid changing into a gas. Condensation is the process of a gas changing into a liquid. Temperature is a measure of how hot	**Skill** Identify, demonstrate and compare reversible and irreversible changes. **Core knowledge** Reversible changes include heating, cooling, melting, dissolving and evaporating. Irreversible changes include burning, rusting, decaying and chemical reactions. Irreversible changes are usually accompanied by one or more of these signs: a gas is produced; light is produced; a smell is produced or the smell changes; the colour changes; sound is produced, or the temperature changes.	**Skill** Describe some significant changes that have happened on Earth and the evidence, such as fossils, that support this.

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					or cold something is. It is measured in degrees (°) using an instrument called a thermometer. The three different scales temperature can be measured in are Celsius (°C), Fahrenheit (°F) and Kelvin (K). We use the Celsius scale in the UK. When solid water (ice) is heated to 0°C, it begins to melt. This is called its melting point. When liquid water is cooled to 0°C, it begins to freeze. This called its freezing point. When liquid water is heated to 100°C, it begins to evaporate. This is called its boiling point. When gaseous water (water vapour) is cooled to 100°C, it begins to condense. This is called its condensing point. On Earth, temperatures range from around -80°C at their lowest to around 50°C at their highest.		

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					Materials exist as solids, liquids or gases. A material's state on Earth depends on Earth's temperature because materials have different melting and boiling point.		
Earth	**AOL: World** **Skill** Describe simply how weather changes as the seasons change. **Core knowledge** The weather and local environment changes with the seasons. Spring weather is changeable. It can be warm, cold, sunny, rainy and even snowy.	**Skill** Observe and describe different types of weather. **Core knowledge** Wind strength is measured by the Beaufort Scale. Different types of weather include sunshine, rain, hail, wind, snow, fog, lightning, storm and cloud. The weather can change daily and some weather types are more common in certain seasons, such as snow in winter.	**Skill** Describe features of Earth using words and pictures. **Broad knowledge** The Earth is spherical and is covered in water and land. When it is daytime in one location, it is night time on the other side of the world.	**Skill** Investigate soils from the local environment, making comparisons and identifying features. **Core knowledge** Soils are made from tiny pieces of eroded rock, air and organic matter. Soil is one of the world's most important natural resources supporting a wide range of food chains. Soil holds water and nutrients and provides anchorage for roots.	**Skill** Describe the water cycle using words or diagrams and explain the part played by evaporation and condensation. **Core knowledge** The water cycle has four stages: evaporation, condensation, precipitation (rain) and collection. Evaporation and condensation are caused by temperature changes.	**Skill** Describe or model the movement of the planets in our Solar System, including Earth, relative to the Sun. **Core knowledge** The Solar System is made up of the Sun and everything that orbits around it. The Sun is a huge, hot ball of gas and is the only source of heat and light in the Solar System. The Sun's force of gravity, created by its huge mass, keeps the planets in orbit. The eight planets in our Solar System are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.	**Skill** Identify that light travels in straight lines. **Core knowledge** Light waves travel faster than sound waves. Light speed is nearly 300 million metres per second, the fastest thing in the universe. The light waves travels in a straight line from the light source to an object. Reflected light bounces off in a straight line at an angle equal to the angle of impact. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. **Skill**

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						The tilt of the Earth's axis as it orbits the Sun changes the length of daytime and night time and creates different seasons. When the Northern or Southern Hemisphere tilts away from the Sun, it is winter. It gets less direct sunlight, the weather is colder, the daytime is shorter and the night time is longer. When the Northern or Southern Hemisphere tilts towards the Sun, it is summer. It gets plenty of direct sunlight, the weather is warmer, the daytime is longer and the night time is shorter. When it is winter in the Northern Hemisphere it summer in the Southern Hemisphere. Water and oxygen are important to all life on Earth. Earth orbits around the Sun. The length of time it takes for Earth to complete a full	Explain that, due to how light travels, we can see things because they give out or reflect light into the eye. **Broad knowledge** Light sources give out light. They can be natural or artificial. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Vertebrates, such as mammals, birds and reptiles, have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina. Once light reaches the retina, it is transmitted to the brain via the optic nerve.

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						orbit is 365.25 days, one year. The Earth completes one rotation on its axis in 24 hours, one day. **Skill** Describe or model the movement of the Moon relative to Earth. **Core knowledge** The Moon is Earth's only natural satellite. The Moon is about 385,000km from the Earth. The Moon is not a natural light source. We can only see it because it reflects the Sun's light. The Moon orbits the Earth once every 27.3 days and also rotates on its axis once every 27.3 days. A solar eclipse happens a few times a year when the Moon passes directly between the Earth and the Sun, blocking our view of the Sun	

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						and casting a shadow on the Earth. A lunar eclipse happens a few times a year when the Earth is in line between the Moon and the Sun, casting a shadow on the Moon.	
Phenomena	**AOL: World** **Skill** Name and describe natural phenomena, such as the size of shadows, the colours of a rainbow, the speed of clouds moving across the sky and the strength of a wave. **Broad knowledge** Natural phenomena include weather, shadows, rainbows, clouds, flooding and waves.	**Skill** Explain in simple terms how shadows are formed. **Broad knowledge** A shadow is formed when light from a light source, such as the Sun, is blocked by an opaque object, but not by transparent objects.	**Skill** Explain in simple terms how sounds are made. **Broad knowledge** When an instrument is played by plucking, striking or blowing, the air around or inside it vibrates. These vibrations travel as a sound wave to the ear.	**Skill** Describe the differences between dark and light and how we need light to be able to see. **Core knowledge** A light source is something that produces light. A reflector is something that reflects light. Light is a form of energy that travels in straight lines from a light source. Dark is the absence of light and we need light to be able to see. The main natural light source on Earth is the Sun.	**Skill** Explain how sounds are made and heard using diagrams, models, written methods or verbally. **Core knowledge** Sound waves travel through a medium, such as air or water, to the ear. A sound source is something that vibrates and creates a sound, such as human vocal cords, part of a musical instrument or a piece of machinery. Volume is a measure, in decibels, how loud or quiet sound is. Applying more force to a sound source adds more energy	**Skill** Describe the Sun, Earth and Moon as approximately spherical bodies and use this knowledge to understand the phases of the Moon and eclipses. **Core knowledge** All planets are spherical because their mass is so large that they have their own force of gravity. This force of gravity pulls all of a planet's material towards its centre, which compresses it into the most compact shape – a sphere.	**Skill** Describe, using scientific language, phenomena associated with refraction of light. **Core knowledge** Refraction is the bending of light as it passes from one transparent material to another. Refracted light creates a visible spectrum when white light shines through a prism or raindrops. Shadows are formed when an object blocks the passage of light, leaving an area of darkness (the absence of light).

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				Skill Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object. **Core knowledge** Opaque objects cast dark shadows. Translucent objects cast lighter, blurry shadows. Transparent objects allow light to pass through them and do not create shadows. Shadows change when the light source or the object moves. The lower the light source the longer the shadow. A shadow is an area of darkness made when an object blocks light. A shadow is the same shape as the object that casts it because light travels in straight lines. Shadows always appear on the	and results in a louder sound. Pitch is how high or low a sound is. Generally, the longer, looser, bigger and thicker the sound source is the lower the pitch. Generally, the shorter, tighter, smaller and thinner the sound source is the higher the pitch. Distant and direction of sound can be judged. When energy is put into a sound source it starts to vibrate. These vibrations disturb tiny particles of air. They vibrate and collide with each other, creating sound waves. When the sound waves enter the ear, the eardrum vibrates. These vibrations pass through small bones, called ossicles, and are turned into electrical signals in the cochlea. They travel to the brain		Shadows move and change shape during the day as Earth rotates and the Sun appears in different positions in the sky. **Skill** Revise the understanding of light, reflection and daylight from previous years. **Core knowledge** Light is a form of energy that travels as waves in straight lines. There are natural and artificial light sources. Light rays bounce off a reflector's surface, making it appear to light up. The Sun is the natural source of light and heat for Earth. Sunlight contains harmful ultraviolet (UV) rays. UVA rays age our skin and UVB rays cause sunburn. UV rays

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				opposite side of the light source.	and are interpreted as sounds. A sound wave diagram can be drawn as a wavy line with peaks and troughs. The distance between two peaks or troughs is called a wavelength. The shorter the wavelength the higher the pitch of a sound. The longer the wavelength the lower the pitch of the sound. The smaller the peaks and troughs the quieter the sound. The larger the peaks and troughs the louder the sound		increase the risk of skin cancer. The Earth rotates on its axis once every 24 hours. When a part of the Earth rotates to face the Sun, the light creates daytime. When it rotates away from the Sun, the absence of light creates night time.
Forces	**AOL: World** **Skill** Describe, predict and sort things that float and sink and talk about the forces that they can feel. **Broad knowledge** Some objects float and others sink.	**Skill** Investigate weather using toys, models or simple equipment. **Core knowledge** Simple equipment can be used for measuring weather including windsocks, thermometers and rain guages.	**Skill** Sort and group objects that float and sink. **Core knowledge** Some objects float and others sink.	**Skill** Explain that an object will not move unless a push or pull force is applied, describing forces in action and whether the force requires direct contact or whether the force can act at a	**Skill** Predict and describe whether a circuit will work based on whether or not the circuit is a complete loop and has a battery or cell. **Core knowledge** A series circuit must be a complete loop	**Skill** Explain that objects fall to Earth due to the force of gravity. **Core knowledge** Gravitational force, or gravity, is a non-contact, pulling force between objects that have mass.	**Skill** Explain how the brightness of a lamp or volume of a buzzer is affected by the number and voltage of cells used in a circuit. **Core knowledge** Voltage is measured in volts (V).

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	When an object sinks it falls through water to the bottom of the vessel. An object that floats stays at the water's surface.			distance (magnetic force). **Core knowledge** Forces cause objects to move, change speed or change shape. Some push and pull forces require direct contact. Friction is a force between two surfaces as they move across each other. Friction slows down a moving object. Friction produces heat, which can be a problem.	to work and have a source of power from a battery or cell.	Gravitational force increases as the mass of an object increases. The mass of the Earth is very large so it exerts a gravitational force large enough for its effects to be seen.	The bigger the voltage, the more electrons are pushed through the circuit. The more voltage flowing through a lamp, buzzer or motor, the brighter the lamp, the louder the buzzer and the faster the motor.
Modelling	**AOL: World** **Skill** Explore and describe electrical and non-electrical light sources. **Core knowledge** Batteries power some devices, such as torches and toys.	**Skill** Describe, following exploration, what simple electrical circuits can do. **Broad knowledge** Electrical circuits can light lamps or sound a buzzer. A switch turns an electrical circuit off and on.	**Skill** Make models with moving parts. **Core knowledge** Models can have moving parts that use levers, sliders, wheels and axles.	**Skill** Make working models with simple mechanisms or electrical circuits.	**Skill** Construct operational simple series circuits using a range of components and switches for control. **Core knowledge** A circuit is a collection of components connected by wires through which an	**Skill** Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects. **Core knowledge** A lever is a simple machine that provides a mechanical advantage to make	**Skill** Create circuits using a range of components and record diagrammatically using the recognised symbols for electrical components. **Core knowledge** Electrical symbols represent electrical components such as

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	A battery is a store of electric power.				electric current can flow. A circuit must be a complete loop to work. A series circuit has a single path for an electric current to flow through.	it easier to lift a heavy load. A lever consists of a lever arm, a fulcrum, a load and effort. As the distance between the fulcrum and the effort increases, the effort needed to lift a load decreases. A pulley is a simple machine that provides a mechanical advantage to make it easier to lift a heavy load. A pulley consists of one or more grooved wheels and a rope. As the number of wheels, and the number of pieces of rope supporting the pulleys, increases, the effort needed to lift an object decreases, but the distance the rope has to be pulled increases. Gears are toothed, interlocking wheels that can be place together to make a mechanism that provides a	a switch, buzzer or lamp. Electricity is a form of energy that makes things work. Circuit components include cells, buzzers, switches, wires, lamps and motors. A collection of components connected by wires in a loop is called a series circuit.

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						mechanical advantage. Linking different sized gears creates a mechanical advantage. Smaller gears rotate more quickly and are easier to turn but do not provide much force. Larger gears rotate more slowly and are harder to turn but provide more force. Mechanisms, such as levers, pulleys and gears, give us a mechanical advantage. The bigger the mechanical advantage, the less force we need to apply.	
Report and conclude	**AOL: World** **Skill** Represent scientific observations by mark making, drawing or creating simple charts and tables. Offer explanations for why things	**Skill** Talk about what they have done and say, with help, what they think they have found out. **Core knowledge** Results are information that has been found out from an investigation.	**Skill** Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language. **Core knowledge** Results from an investigation can be	**Skill** Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify	**Skill** Use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple conclusions and identify next steps, improvements and further questions. **Core knowledge**	**Skill** Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.	**Skill** Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make

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	happen, making use of vocabulary, such as, because, then and next. **Core knowledge** Plants need water, sunlight, air and warmth to grow.		used to answer a question.	next steps or improvements. **Broad knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	A conclusion is the answer to a question that uses the evidence collected.	**Core knowledge** A conclusion is an explanation of what has been discovered using evidence collected.	predictions for what they might observe. **Core knowledge** A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence. Electric current is measured using an ammeter. The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter. A multimeter measures both electric current and voltage.
Gather and record data	**AOL: Maths** **Skill** Record data in simple tables and pictograms. **Broad knowledge** Data can be recorded in tables and pictograms.	**Skill** With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams). **Broad knowledge** Data can be recorded and displayed in different ways, including	**Skill** Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy. **Core knowledge** A timeline is a linear diagram.	**Skill** Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy. **Core knowledge** Data can be used to provide	**Skill** Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs). **Core knowledge**	**Skill** Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models). **Core knowledge**	**Skill** Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to

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		tables, pictograms and drawings.	A life cycle is a circular diagram.	evidence to answer questions.	A line graph is a way of displaying data that might show a relationship between two things (variables). Many show changes over the time. A flat line means that there was no change over time. A line with a shallow curve means there was a gradual change over time. A line with a steep curve means there was a quick change over time. Classification keys are created by devising a set of yes or no questions that separate a group into two groups until objects end up on their own.	Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.	mathematical knowledge. **Core knowledge** Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams. Bar charts can be used to display for discontinuous variation when there is a set number of outcomes, such as eye colour and blood groups. Line graphs can be used to display continuous variation when there is a range of values, such as the height or mass of different individuals of the same species. Scatter graphs can be used when looking for a correlation between two data sets.
Questioning	**AOL: CL** **Skill** Ask a relevant scientific question	**Skill** Ask simple scientific questions. **Core knowledge**	**Skill** Ask and answer scientific questions	**Skill** Ask questions about the world around them and explain that they can be	**Skill** Ask relevant scientific questions, independently, about the world around	**Skill** Ask a wide range of relevant scientific questions that broaden their	**Skill** Ask and answer deeper and broader scientific questions about the local and

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	to find out more, explain how things work and why they might happen. **Core knowledge** Sound is created when something vibrates. Bird eggs are laid by female birds. Birds eggs are surrounded by a shell. Animals including birds, fish, frogs and some reptiles lay eggs.	Question words include what, why, how, when, who and which.	about the world around them. **Core knowledge** Questions can help us find out about the world.	answered in different ways. **Core knowledge** Questions can help us find out about the world and can be answered in different ways.	them and begin to identify how they can answer them. **Core knowledge** Questions can help us find out about the world and can be answered using scientific enquiry.	understanding of the world around them and identify how they can answer them. **Core knowledge** Questions can help us find out about the world and can be answered using a range of scientific enquiries.	wider world that build on and extend their own and others' experiences and knowledge. **Core knowledge** Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.
Measurement	**AOL: World** **Skill** With support, use simple equipment, such as timers, rulers and containers, to measure length, height, capacity and time. **Broad knowledge** Simple equipment can be used to measure distance, height, weight and time.	**Skill** With support, use simple equipment to measure and make observations. **Broad knowledge** Simple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses.	**Skill** Use simple equipment to measure and make observations. **Broad knowledge** Simple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	**Skill** Take measurements in standard units, using a range of simple equipment. **Broad knowledge** Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and	**Skill** Take accurate measurements in standard units, using a range of equipment. **Broad knowledge** Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels	**Skill** Take increasingly accurate measurements in standard units, using a range of chosen equipment. **Core knowledge** A force meter can be used to measure an object's mass in grams (g) or kilograms (kg) and its weight in newtons (N). Many people commonly mix up	**Skill** Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment. **Core knowledge** Resting heart rate is the number of times a heart beats per minute when a person is at rest. Heart rate increases during exercise because the body

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				metres). Taking repeat readings can increase the accuracy of the measurement.	(millimetres, centimetres, metres).	and misuse the words mass and weight. Mass is the amount of matter that an object or substance contains. Weight is a measure of gravitational force which is different on for example Earth and the Moon.	requires more oxygen to meet its needs. Heart rate can be measured by recording the pulse at different points of the body. A heart rate monitor can also be used to measure the pulse. Specialised equipment is used to take accurate measurements in standard units including light sensors measuring light intensity (lux).
Investigation	**AOL: Exp A&D** **Skill** Observe how activities are going and adapt their ideas if necessary. **Broad knowledge** When we try things out to see if they work, it is	**Skill** With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen. **Core knowledge** Simple tests can be carried out by following a set of instructions.	**Skill** Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions. **Core knowledge** Tests can be carried out by following a set of instructions. A prediction is a best guess at what might	**Skill** Set up and carry out some simple, comparative and fair tests, making predictions for what might happen. **Core knowledge** A prediction is a best guess for what might happen in an investigation based on some prior knowledge.	**Skill** Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately. **Core knowledge** Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about	**Skill** Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding. **Broad knowledge** A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen	**Skill** Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding. **Broad knowledge** A method is a set of clear instructions for how to carry out a scientific

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			happen in an investigation. Tests can be carried out by following a set of instructions. *A prediction is a best guess at what might happen in an investigation.		what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant.	in an investigation based on some prior knowledge or understanding.	investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.
Observation	**AOL: World** **Skill** With support, observe, record and talk about materials and living things. **Core knowledge** Materials have different textures they can feel soft, hard, rough, smooth, wet, sticky or dry. We use our senses to explore the world. Some plants produce seeds so	**Skill** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features. **Broad knowledge** Objects, materials and living things can be looked at and compared.	**Skill** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning. **Broad knowledge** Objects, materials and living things can be looked at, compared and grouped according to their features.	**Skill** Make increasingly careful observations, identifying similarities, differences and changes and making simple connections. **Broad knowledge** An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features.	**Skill** Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections. **Core knowledge** Observations can be made regularly to identify changes over time. Classification is the arrangement of living and non-living things into groups or categories. Single-stage classification involves separating a	**Skill** Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect. **Core knowledge** Accurate observations can be made repeatedly or at regular intervals to identify changes over time.	**Skill** Independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect. **Core knowledge** Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.

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	that they can grow new plants. Different types of animals grow to different lengths and heights. Molluscs such as snails, clams and muscles have shells to protect them. Animals live in different habitats. Rock pools are habitats for many animals, such as starfish, crabs, anemones, mussels, barnacles and periwinkles. Birds are animals that have beaks and feathers and lay eggs.				large group of objects into smaller groups based on a single property.		
Identification and classification	**AOL: World** **Skill** Name and sort everyday items into groups of the same material. **Core knowledge** Soft materials bend easily. They are not	**Skill** Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock. **Core knowledge** A material is what an object is made from.	**Skill** Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations. **Broad knowledge**	**Skill** Group and sort materials as being reflective or non-reflective. **Core knowledge** Light can be reflected from different surfaces.	**Skill** Group and sort materials into solids, liquids or gases. **Core knowledge** Materials can be grouped according to whether they are solids, liquids or gases. Solids stay in one place and can be	**Skill** Compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. **Core knowledge**	**Skill** Investigate and identify good thermal insulators, describing their common features. **Broad knowledge** Heat energy is transferred in three different ways: conduction, convection and

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	hard or rough to touch. Hard materials are difficult to bend break and cut.	Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.	Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled.	Reflective materials are light in colour, shiny and smooth. Less reflective and non-reflective materials are dark in colour, dull and rough.	held. Some solids can be squashed, bent, twisted and stretched. Examples of solids include wood, metal, plastic and clay. Liquids move around (flow) easily and are difficult to hold. Liquids take the shape of the container in which they are held. Examples of liquids include water, juice and milk. Gases spread out to fill the available space and cannot be held. Air is a mixture of gases. Some materials have properties of more than one state including: gels, powders and foams.	erials can be ɹped according to r basic physical ɔerties. ɔerties of materials ɹde: hardness, bility, transparency, ductivity (electrical thermal) and gnetism. Thermal conductors, such as metals, are materials that allow the transfer of heat. Thermal conductors are useful for quickly heating things up. Thermal insulators, such as wood, glass and plastic, are materials that do not transfer heat effectively. Thermal insulators are useful for keeping things at the same temperature. **Skill** Explain, following observation, that some substances (solutes) will dissolve in liquid (solvents) to form a solution and the solute can be recovered by	radiation. A material that allows heat energy to travel through it is a thermal conductor. Poor thermal conductors are known as thermal insulators. Insulation is important for the survival of many animals. Blubber is a layer of fat that acts as an insulator under the skin of some animals, such as walruses and whales. It is an adaptation that is essential for their survival. Animals with fur, such as polar bears and Arctic foxes, trap a layer of air close to their skin to insulate them from the cold.

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						evaporating off the solvent. **Core knowledge** Dissolving is when a solute (material) becomes incorporated into a solvent (liquid) and can no longer be seen. Solubility is a measure of a material's ability to dissolve in a solvent.	
Properties and uses	**AOL: World** **Skill** Identify that materials have different properties and explore and sort magnetic and non-magnetic materials through play and exploration. **Core knowledge** Some materials are magnetic, which means that they are attracted to (pull towards) a magnet. Some metals are magnetic. Other materials are non-	**Skill** Investigate and describe the simple physical properties of some everyday materials, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid and waterproof or not waterproof. **Core knowledge** Materials have different properties, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy	**Skill** Compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard . **Core knowledge** A material's physical properties make it suitable for particular purposes, such as glass for windows and brick for building walls. Objects can be made from one material, more than one material or different	**Skill** Compare and group rocks based on their appearance, properties or uses. **Core knowledge** Sedimentary, igneous and metamorphic are the three different rock types. Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. Igneous rocks are made from cooled magma or lava.	**Skill** Describe materials as electrical conductors or insulators. **Core knowledge** Electrical conductivity is a measure of a material's ability to allow an electric current to pass through it. Electrical conductors, like metals, have low resistence and allow electricity to flow through them. Non-conductive materials, like plastics, are often known as electrical insulators they do not let	**Skill** Separate mixtures by filtering, sieving and evaporating. **Core knowledge** A mixture is a combination of two or more substances that aren't chemically joined and can be separated back into their individual substances. Heterogeneous mixtures consist of distinctly different substances and are easy to separate by classifying and	**Skill** Describe, using diagrams, how light behaves when reflected off a mirror (plane, convex or concave) and when passing through a lens (concave or convex). **Core knowledge** Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards. Plane mirror reflections are the same size, and the right way up but they are reversed. Concave mirrors enlarge the image

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	magnetic, such as wood, dough and glass.	or rigid; waterproof or not waterproof.	materials with similar properties.	Metamorphic rocks are formed when existing rocks are heated by the magma under the Earth's crust or squashed by the movement of the Earth's tectonic plates. **Skill** Compare and group materials based on their magnetic properties. **Core knowledge** Magnetic materials are attracted to magnets. Iron, cobalt, nickel and steel are magnetic metals. Other metals and materials such as plastic, paper, glass and wood are not magnetic.	electricity through, they have high resistance.	grouping or sieving or filtering. Substances in homogeneous mixtures are evenly distributed and you cannot see the different parts. Homogeneous substances are difficult to separate. Sieving can be used to separate large solids from liquids and some solids from other solids. Filtering can be used to separate small solids from liquids. Evaporating can be used to separate dissolved solids from liquids. **Skill** Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass. **Core knowledge** A material's properties dictate	and concentrate the rays of light into a focal point. Convex mirrors make images smaller and disperse light which reflects a wider view.

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						what it can be used for.	
Identification and classification	**AOL: World** **Skill** Begin to name and group plants and trees according to their observable features. **Broad knowledge** Plants and trees are living things. They can be identified according to their features, such as leaves, seeds and flowers. **AOL: World** **Skill** Match animals to their young. **Core knowledge** Animal babies are known by different names than adult animals, such as cow and calf or sheep and lamb. Not all animal babies have the same features as	**Skill** Identify, compare, group and sort a variety of common wild and garden plants, including deciduous and evergreen trees, based on observable features. **Core knowledge** Plants are living things. Trees are large, woody plants and are either evergreen or deciduous. Trees that lose their leaves in the autumn are called deciduous trees. Plants are important because they provide food, shelter and materials for animals, including humans. The leaves of most deciduous trees are wide and flat. The leaves of most evergreen trees are thin and pointed.	**Skill** Identify and name a variety of plants and animals in a range of habitats and microhabitats. **Core knowledge** A habitat is a place where plants and animals live. A microhabitat is a very small habitat. Invertebrates are animals without a backbone. Invertebrates include worms, molluscs, crustaceans, insects, arachnids and myriapods. **Skill** Revise the Identification of a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features. **Skill**	**Skill** Describe how animals are grouped and what they need to survive. **Skill** ıtify and group nals that have no eton, an internal eton (endoskeleton) an external skeleton oskeleton). **Core knowledge** Vertebrates are animals with a spine. Invertebrates are animals without a spine. All vertebrates have an endoskeleton meaning their skeleton is found inside their body. Invertebrates have an exoskeleton or no skeleton.	**Skill** Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour. **Core knowledge** Scientists classify living things according to shared characteristics. A classification key is a set of questions that helps us identify a living thing or decide which group it belongs to. The animal kingdom is divided into vertebrates and invertebrates. A vertebrate is an animal with a backbone. An invertebrate is an animal without a backbone. Invertebrates usually have soft bodies or a hard outer shell or	**Skill** Group and sort plants by how they reproduce. **Core knowledge** Flowering plants reproduce sexually. The flower is essential for sexual reproduction. Other plants reproduce asexually. Asexual reproduction involves one parent and produces offspring that is identical to the parent.	**Skill** Use and construct classification systems to identify animals and plants from a range of habitats. **Core knowledge** Classification keys help us identify living things based on their physical characteristics. **Skill** Classify living things, including microorganisms, animals and plants, into groups according to common observable characteristics and based on similarities and differences. **Core knowledge** The first and widest level in the biological classification system is called a kingdom, the second a phylum, then class, order, family, genus and species.

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	their parents when they are born.	**Skill** Identify, compare, group and sort a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features. **Core knowledge** Humans are living things. They belong to a group of animals called mammals. Humans normally have the same body parts. Humans look different from each other. Animals are living things. Fish, amphibians, reptiles, birds, invertebrates and mammals are groups of animals.	Describe the basic life cycles of some familiar animals (egg, caterpillar, pupa, butterfly; egg, chick, chicken; spawn, tadpole, froglet, frog). **Core knowledge** Animals are born or hatch from eggs. The young grow and change until they become adults that can reproduce. A life cycle can be drawn as a circular diagram.		covering called an exoskeleton. The plant kingdom is divided into vascular and non-vascular plants. Vascular plants have tiny tubes or vessels that carry water, nutrients and provide structure. Plants with seeds and plants with spores are the two main types of vascular plants. Flowering and cone-bearing plants are the two groups of plants with seeds. Vertebrates are covered with skin, feathers, scales, fur or hair. They give birth to live young or lay eggs. Vertebrates can be cold blooded or warm blooded.		There are five kingdoms: animals, plants, fungi, protists and monerans. Members of each kingdom have features in common.
Parts and functions	**AOL: World** **Skill** Name and describe basic	**Skill** Label and describe the basic structure of a variety of common plants.	**Skill** Describe how plants need water, light and a suitable	**Skill** Name and describe the functions of the different parts of flowering plants	**Skill** Identify the four different types of teeth in humans and other animals, and	**Skill** Label and draw the parts of a flower involved in sexual reproduction in plants (stamen, filament,	**Skill** Identify that living things produce offspring of the same kind, although the offspring are not

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	features of plants and trees. **Core knowledge** Seeds need water, air and warmth to begin to grow. **AOL: World** **Skill** Identify common features for different groups of animals, including wild and domestic animals. **Core knowledge** There are many different species of animals . Reptiles are animals that have dry, scaly skin and lay eggs. Birds are animals that have beaks and feathers and lay eggs. Insects have six legs, three body parts, antennae and most have one or two pairs of wings. Crabs have five pairs of legs. The	**Core knowledge** The basic plant parts include root, stem, leaf, flower, petal and fruit. Plants grow from seeds or bulbs. **Skill** Label and describe the basic structures of a variety of common animals, including fish, amphibians, reptiles, birds and mammals. **Core knowledge** Different animal groups have some common body parts.	temperature to grow and stay healthy. **Core knowledge** Plants need water, light and a suitable temperature to grow and stay healthy. Many plants grow from seeds or bulbs. Plants have roots, stems, leaves, flowers and fruit. A bulb contains a tiny plant and all the food needed to grow.	(roots, stem, leaves and flowers). **Core knowledge** Many plants grow from seeds or bulbs. Plants have roots, stems, leaves, flowers and fruit. Roots anchor the plant in the ground and transport water and minerals from the ground to the plant. The stem (or trunk) support the plant above the ground. Leaves collect energy from the Sun and make food for the plant. Flowers make seeds to produce new plants. Parts of a flower include the sepal, petal, stamen and carpel. **Skill** Investigate how water is transported within plants. **Core knowledge**	describe their functions. **Core knowledge** A baby grows 20 primary teeth that start to fall out when a child is six years old. They are replaced by 32 adult teeth. The four different types of teeth are incisors, canines, premolars and molars. Incisors have sharp, straight edges for slicing and cutting food. Canines are pointed for gripping and tearing chewy food such as meat. Pre-molars and molars are wide and have cusps, for crushing and grinding up food so it is small enough to swallow.	anther, pollen, carpel, stigma, style, ovary, ovule and sepal). **Core knowledge** Parts of a flower include the stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal.	identical to either parent. **Core knowledge** Inheritance is when living things pass on characteristics following sexual reproduction, such as height, skin colour and eye colour. Variation is the natural differences in characteristics between individuals of the same species. Continuous variation contains a range of values, such as the height or mass of different individuals of the same species. Discontinuous variation has a certain number of outcomes, such as eye colour and blood groups. **Skill** Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding). **Core knowledge**

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	first pair of legs has pincers. Fish use gills to breathe. They use their tails to swim and have fins to keep them upright. Animals live in different habitats. The seashore is a habitat for many animals such as sea birds, crabs, fish and starfish.			Water is transported in plants from the roots, through the stem to the leaves.			Animals and plants can be bred to produce offspring with specific and desired characteristics. This is called selective breeding.
Nutrition	**AOL: World** **Skill** Match animals to the foods that they eat. **Core knowledge** Animals eat different kinds of food, including other animals, plants or both animals and plants.	**Skill** Group and sort a variety of common animals based on the foods they eat. **Core knowledge** Carnivores eat other animals (meat), herbivores eat plants and omnivores eat other animals and plants.	**Skill** Interpret and construct simple food chains to describe how living things depend on each other as a source of food. **Core knowledge** Food chains show how living things depend on one another for food. Plants always start a food chain because they are producers that make their own food using sunlight. Prey animals have different ways to	**Skill** Compare and contrast the diets of different animals. **Core knowledge** Nutrition is the life process of making or finding food to eat. Humans must eat food and drink water to gain the nutrients they need to survive. Humans are omnivores, so they can eat both plant parts and animals. In the wild, animals' diets change over the year as the seasons change due	**Skill** Construct and interpret a variety of food chains and webs to show interdependence and how energy is passed on over time. **Core knowledge** All the different food chains in a specific ecosystem can be linked together. These connected food chains are called a food web. Food chains start with a plant (producer), show what animals eat within a habitat	**Skill** Describe, using their knowledge of food chains and webs, what could happen if a habitat had a living thing removed or introduced. **Core knowledge** Population changes in a habitat can have significant consequences for food chains and webs.	**Skill** Explain that the circulatory system in animals transports oxygen, water and nutrients around the body. **Core knowledge** The human body has different systems that support the seven life processes. The skeletal system supports movement, gives the body shape and protects the organs. The skeletal muscular system supports movement.

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			avoid capture by predators. Plants have adaptations that protect them from being eaten by animals.	to certain foods becoming available or unavailable. Carnivores only eat meat. Herbivores only eat plants. Omnivores eat meat and plants.	and how energy is passed on over time. A producer is a living thing that makes its own food for energy. Almost all producers are plants. Producers make their own food through the process of photosynthesis. Grass and seaweed are examples of producers. A consumer is a living thing that feeds on other living things. Most consumers are animals. Wolves and penguins are examples of consumers. A predator is a consumer that hunts, kills and eats other animals for food. An animal is called prey if it is killed by a predator for food.		The endocrine system supports growth. The nervous system supports sensation and movement as it controls almost everything the body does. The digestive system supports nutrition by breaking down food so the body can absorb nutrients. The excretory system supports excretion (getting rid of waste). The reproductive system supports reproduction. The respiratory system supports respiration by taking in oxygen when we breathe in and removing carbon dioxide when we breathe out. The circulatory system supports the transport of oxygen, water and nutrients around the body.
Survival	**AOL: World** **Skill** Describe some ways that plants or	**Skill** Describe how to care for plants and	**Skill** Explain how animals, including humans,	**Skill** Describe the requirements of plants for life and	**Skill** Explain how adaptations help	**Skill** Describe the life process of	**Skill** Identify how animals and plants are adapted to suit their

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	animals should be cared for in order for them to survive. **Core knowledge** Many plants grow from seeds. Plants need water, sunlight, air and warmth to grow. Pets need food, water, sleep, exercise and play to keep them happy and healthy.	animals, including pets. **Core knowledge** Living things need to be cared for in order for them to survive. Living things need water, food, warmth and shelter.	need water, food, air and shelter to survive. **Core knowledge** An animal's habitat must provide water, food, air and shelter for the animal to survive. Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals (meat). Carnivores eat other animals (meat).	growth (air, light, water, nutrients and room to grow) and how they vary from plant to plant. **Core knowledge** Plants are living things because they grow, take in water and nutrients and reproduce. Plants need air, light, water, nutrients and room to grow, in order to survive.	living things to survive in their habitat. **Broad knowledge** An adaptation helps an animal or plant survive in its habitat. If living things are unable to adapt to changes within their habitat, they are at risk of becoming extinct.	reproduction in some plants and animals. **Core knowledge** Sexual reproduction is the process of producing offspring and is essential for the continued survival of a species. Asexual reproduction involves one parent and produces offspring that is identical to the parent.	environment, such as giraffes having long necks for feeding, and that adaptations may lead to evolution. **Core knowledge** An adaptation is a physical or behavioural trait that allows a living thing to survive and fill an ecological niche. Natural selection is also known as 'survival of the fittest' because favourable traits help an organism survive and pass on their genes through reproduction. The three different types of plant adaptations are structural, behavioural and chemical. Structural adaptations include modified leaves, roots and trunks. Behavioural adaptations include movement towards the Sun and regulated growth.

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							Chemical adaptations include the presence of stings and poisons
Habitats	**AOL: World** **Skill** Observe and describe living things and their habitats within the local environment. **Core knowledge** Different animals live in different places. A farm is an area of land and its buildings used for growing crops and rearing animals. Animals such as snails, spiders and insects live in gardens, fields, parks and woodlands. Animals live in different habitats. Rock pools are habitats for many animals, such as starfish, crabs, anemones, mussels, barnacles and periwinkles.	**Skill** Observe the local environment throughout the year and ask and answer questions about living things and seasonal change. **Core knowledge** The local environment is a habitat for living things and can change during the seasons.	**Skill** Describe a range of local habitats and habitats beyond their locality (beaches, rainforests, deserts, oceans and mountains) and what all habitats provide for the things that live there. **Core knowledge** A habitat is a place where plants and animals live. Local habitats include parks, woodland and gardens. Habitats beyond the locality include beaches, rainforests, deserts, oceans and mountains. A habitat provides food, water, shelter and space. Humans can damage or destroy habitats. Their actions can harm and even kill living things.	**Skill** Describe how environments can change due to natural influences and how living things need to be able to adapt to these changes. **Broad knowledge** Environments are constantly changing due to natural influences, such as seasons, extreme weather, population changes and availability of food. Living things must adapt to these changes in order to survive.	**Skill** Describe how environments can change due to human and natural influences and the impact this can have on living things. **Core knowledge** Humans can affect habitats in negative or positive ways.	**Skill** Research and describe different farming practices in the UK and how these can have positive and negative effects on natural habitats. **Core knowledge** Arable (growing crops), pastoral (raising livestock), mixed (arable and pastoral) are the three main types fo farming in the UK. Intensive farming in the past has resulted in the loss of habitats.	**Skill** Research unfamiliar animals and plants from a range of habitats, deciding upon and explaining where they belong in the classification system. **Core knowledge** Living things are classified into groups, according to common observable characteristics and based on similarities and differences. Microorganisms are microscopic living things found in the fungus, protista and monera kingdoms. Microorganisms and can be helpful or harmful to other living things. Viruses are not included in the kingdoms as they are not living and need a host to survive and reproduce.

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Animals live in different habitats. The ocean is the habitat for many animals, such as fish, dolphins, whales, sharks and turtles.		Humans can help habitats. They can create new habitats, make habitats safer or provide food and shelter for living things.				
Physical things	**AOL: World** **Skill** Compare and group objects and materials according to simple given criteria. **Core knowledge** Buildings are made from different materials, including brick, wood, glass, wood, plastic and metal. Materials have special properties, which make them useful for different jobs.	**Skill** Compare and group materials in a variety of ways, such as based on their physical properties; being natural or human-made and being recyclable or non-recyclable. **Core knowledge** A property is a quality a material has. Materials with different properties have different uses.	**Skill** Compare and group things that are living, dead or have never been alive. **Core knowledge** Living things are those that are alive. Dead things are those that were once living but are no longer. Some things have never been alive. The seven life processesof living things are moving, breathing, using their senses, feeding, getting rid of waste, having offspring and growing.	**Skill** Investigate and compare a range of magnets (bar, horseshoe and floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other. **Core knowledge** Magnetism is a non-contact force. Magnets have two poles (north and south). Opposite poles (north and south) attract each other. Like poles (north and north, or south and south) repel each other.	**Skill** Compare common household equipment and appliances that are and are not powered by electricity. **Core knowledge** Electricity is a type of energy. It is used to power many everyday items. Electricity comes from two sources, mains and batteries.	**Skill** Compare the life cycles of animals, including a mammal, an amphibian, an insect and a bird. **Core knowledge** Embryo, juvenile, adolescent and adult are stages of a mammal's life cycle. Egg, larva (tadpole), adolescent and adult are stages of an amphibian's life cycle.. Egg, larva, pupa and adult are the stages of some insects including butterflies, beetles and bees. Egg, baby, adolescent and adult are stages of a bird's life cycle.	**Skill** Compare the living things in two contrasting areas of a habitat (top vs bottom of a hill, full sun vs shade, exposed location vs sheltered location or well-trodden path vs unused area). **Broad knowledge** Environmental factors can affect the distribution of living things within a habitat. These factors include light (intensity and duration), weather, altitude, soil type and humans, such as when we mow or trample grass.

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				There are different types of magnets including bar magnets, horseshoe magnets and floating magnets. Magnets have different strengths.			
Phenomena	**AOL: World** **Skill** Make a shadow bigger or smaller using toys, play equipment and a light source. **Core knowledge** A shadow is a dark shape on a floor or wall. A shadow is made when a solid object blocks light.	**Skill** Compare shadows made by different objects and materials. **Broad knowledge** Shadows are normally the same shape as the object that cast them. Shadows change during the day as the Sun appears to change position in the sky. Shadows occur where light is blocked by an opaque object.	**Skill** Compare the volume and pitch of sounds made by instruments, their voices or other objects. **Broad knowledge** Volume is how loud or quiet a sound is. Pitch is how high or low a sound is.	**Skill** Compare how objects move over surfaces made from different materials. **Core knowledge** Friction is a force between two surfaces as they move over each other. Smooth surfaces usually generate less friction than rough surfaces. Friction slows down a moving object.		**Skill** Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction. **Core knowledge** Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects. Lubricants reduce the contact between two surfaces and therefore reduce frictional forces. Liquids, such as water and oil, are used as lubricants. Heat caused by friction can damage moving parts and	**Skill** Compare and give reasons for variations in how components in electrical circuits function (brightness of lamps; volume of buzzers and function of on or off switches). **Core knowledge** A circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals. An electric current is the flow of electric charge around a circuit. The electric current flows from the cell through all the components and back to the cell. When a switch is open, it creates a gap and the current

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						stop machines from working. Friction can be reduced through streamlining or the use of lubricants and ball bearings between surfaces or using materials with different properties. The larger the surface area of an object the greater the resistance, air or water, it will have when it moves. This will slow it down. Designing objects to have a smaller surface area and streamlined shape decreases resistance, air or water, and allows them to move more quickly through the air. Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects	cannot travel around the circuit. When a switch is closed, it completes the circuit and allows a current to flow all the way around it.
Living things	**AOL: World** **Skill** Explore the natural world around them	**Skill** Describe, following observation, how	**Skill** Observe and describe how seeds and bulbs change over time as	**Skill** Draw and label the life cycle of a flowering plant.		**Skill** Describe the changes as humans	**Skill** Explain that living things have changed over time, using

Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	and give simple descriptions, following observation, of changes. **Core knowledge** Frogs lay frogspawn in ponds. Tadpoles hatchout of the frogspawn and grow into frogs.	plants and animals change over time. **Core knowledge** Deciduous trees change across the four seasons. Changes happen to animals across the four seasons. Changes happen to plants across the four seasons. Changes happen to plants as they grow and mature. Changes happen to flowers over time.	they grow into mature plants. **Core knowledge** A seed is a small object made by a plant that can grow into a new plant. Seeds need water and warmth to start growing (germinate). As the plant grows bigger, it develops leaves and flowers. The flowers of plants produce seeds. The flowers on some plants develop into fruit that contains seeds. Seeds also form inside cones.	**Core knowledge** stages of a plant's life le include: mination, flower duction, pollination, lisation, seed nation and seed ersal. Pollination is the process where pollen is transferred from the male stamen to the female carpel of another flower of the same type. Seeds can be dispersed by wind, animals, explosion and water.		develop from birth to old age. **Broad knowledge** Humans go through characteristic stages as they develop towards old age. These stages include baby, infant, toddler, child, adolescent, young adult, adult and senior citizen. Puberty is the transition between childhood and adulthood.	specific examples and evidence. **Core knowledge** The theory of evolution was developed in the 19th century by the naturalists Charles Darwin and Alfred Russel Wallace. The theory states that: all life on Earth has evolved from simple life forms to more complex ones over time; all life on Earth has common ancestors and is therefore related, and; living things with characteristics most suited to their environment are more likely to survive and reproduce. The fossil record and the DNA of living and extinct things provide evidence of evolution.