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Science Curriculum

Intent: Science at St Mary's holds a central role in our whole school curriculum. We believe Science is a lens through which children can explore, question and understand the world around them. Our science curriculum sparks pupil curiosity and a desire to understand the science behind their lived experience. At St Mary's we endeavour to give pupils the freedom to pose their own questions about the world around them, and we give pupils the agency to decide how best they can investigate answers to their enquiries. They will learn to gather, interpret and present data to draw conclusions, which they will present using appropriate scientific vocabulary. Throughout their time at St Mary's pupils will develop a deep understanding of a wide range of scientific topics, helping them to better understand the world around them and their own relationship to it.

Big idea	Concept/ Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Humankind	**Human body**	**Skill** Draw and label the main parts of the human body and say which body part is associated with which sense.	**Skill** Describe the stages of human development (baby, toddler, child, teenager, adult and elderly).	**Skill** Describe how humans need the skeleton and muscles for support, protection and movement.	**Skill** Describe the purpose of the digestive system, its main parts and each of their functions.	**Skill** Describe the process of human reproduction.	**Skill** Name and describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood.
		Core Knowledge The basic body parts are the head, arms, legs, nose, eyes, ears, mouth, hands and feet. **Covered x 2** Human Senses x2 - Sci	**Core Knowledge** Humans grow from baby to toddler to child to teenager to adult to elderly. **Covered x 3** Human Survival x3 - Sci	**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. **Covered x 3** Animal Nutrition and the Skeletal and System x3 - Sci	**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. **Covered x 1** Food and the Digestive System x1 - Sci	**Core Knowledge** Humans reproduce sexually when a female egg is fertilised by a male sperm producing offspring that are different from the parents. **Covered x 1** Human Reproduction and Ageing x1 - Sci	**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 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. **Covered x 4** Circulatory System x4 - Sci
	Staying safe	**Skill** Describe ways to stay safe in some familiar situations.	**Skill** Describe what humans need to survive.	**Skill** Explain why light from the Sun can be dangerous.	**Skill** Explain the precautions needed for working safely with electrical circuits.	**Skill** Explain the precautions needed for working safely when heating, burning, cooling and mixing materials.	**Skill** Explain the dangers of using lasers and ways to use them safely.
		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. **Covered x 2** Human Senses x1 - Sci Seasonal Changes x1 - Sci	**Core Knowledge** Humans need water, food, air and shelter to survive. **Covered x 1** Human Survival x1 - Sci	**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. **Covered x 2** Light and Shadows x2 - Sci	**Core Knowledge** Working with electrical circuits can be dangerous. **Covered x 1** Electrical Circuits and Conductors x1 - Sci	**Core Knowledge** Very hot and very cold materials can burn skin. **Covered x 1** Properties and Changes of Materials x1 - Sci	**Core Knowledge** Lasers are intense beams of light and they should never be pointed at people's faces or aircraft. **Covered x 1** Light Theory x1 - Sci
	Healthy lifestyle	**Skill** Explain why hand washing and cleanliness are important.	**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.	**Skill** Describe what damages teeth and how to look after them.	**Skill** Explain why personal hygiene is important during puberty.	**Skill** Explain the impact of positive and negative lifestyle choices on the body.
		Core Knowledge Hand washing and good hygiene prevent the spread of germs. **Covered x 2** Chop, Slice and Mash x1 - DT Amazing Bodies - Unit 5 x1 - PHSE	**Core Knowledge** A healthy lifestyle includes exercise, a balanced diet, good quality sleep and personal hygiene. Germs spread from person to person through direct or indirect contact. 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. **Covered x 1** Human Survival x9 - Sci Staying Safe and Healthy - Unit 5 x1 - Sci	**Core Knowledge** 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. **Covered x 3** Animal Nutrition and the Skeletal and System x1 - Sci Cook Well, Eatwell x1 - DT Sleep, Food and Hygiene- Unit 5 x1 - PHSE	**Core Knowledge** Regular teeth brushing, limiting sugary foods and visiting the dentist are important for good oral hygiene. **Covered x 2** Food and the Digestive System x1 - Sci Influence and Personal Choices - Unit 5 x1 - PHSE	**Core Knowledge** Good personal hygiene (washing, wearing clean clothes and brushing teeth) can prevent disease or illness. **Covered x 3** Human Reproduction and Ageing x1 - Sci Valuing Our Bodies and Minds - Unit 5 x1 - PHSE Puberty and Emotions - Unit 5 x1 - PHSE	**Core Knowledge** 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. Nutrition labels on pre-packaged food

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							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. **Covered x 5** Circulatory System x3 - Sci Responsible Behaviour – Unit 3 x1 - PHSE Online Bullying – Unit 2 - x1 - OS
Processes	**Pattern seeking**	**Skill** Observe changes across the four seasons.	**Skill** Describe typical UK seasonal weather patterns.	**Skill** Find patterns in the way shadows change during the day.	**Skill** a) Compare and find patterns in the pitch of a sound, using a range of equipment, such as musical instruments. b) Compare and find patterns in the volume of a sound, using a range of equipment, such as musical instruments.	**Skill** Use the idea of Earth's rotation to explain day and night, and the Sun's apparent movement across the sky.	**Skill** Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how shadows can be changed.
		Core Knowledge The four seasons are spring, summer, autumn and winter. Certain events and weather patterns happen in different seasons. **Covered x 5** Seasonal Changes x5 - Sci	**Core Knowledge** 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. **Covered x 1** Animal Survival x1 - Sci	**Core Knowledge** 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. **Covered x 1** Light and Shadows x1 - Sci	**Core Knowledge** a) Pitch is how high or low a sound is. a) Generally, the longer, looser, bigger and thicker the sound source is the lower the pitch. a) Generally, the shorter, tighter, smaller and thinner the sound source is the higher the pitch. **Covered x 1** Sound x1 - Sci b) Sounds are louder when more energy is put into a sound source because the vibrations and sound waves are larger. b) The volume of sound is measured in decibels (dB). **Covered x 1** Sound x1 - Sci	**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 changes length and direction. **Covered x 3** Earth and Space x3 - Sci	**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. **Covered x 1** Light Theory x1 - Sci

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	Changes	**Skill** Observe and describe how day length changes across the year.	**Skill** Describe how some objects and materials can be changed and how these changes can be desirable or undesirable.	**Skill** Describe simply how fossils are formed, using words, pictures or a model.	**Skill** Observe and explain that some materials change state when they are heated or cooled and measure or research the temperature in degrees Celsius (℃) at which materials change state.	**Skill** Identify, demonstrate and compare reversible and irreversible changes.	**Skill** Describe some significant changes that have happened on Earth and the evidence, such as fossils, that support this.
		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. **Covered x 1** Seasonal Changes x1 - Sci	**Core Knowledge** Some objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay. **Covered x 1** Uses of Materials x1 - Sci	**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. **Covered x 1** Rocks, Relics and Rumbles x1 - Geog	**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 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. Materials exist as solids, liquids or gases. A material's state on Earth depends on Earth's temperature because materials	**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. **Covered x 5** Properties and Changes of Materials x5 - Sci	**Covered x 1** Evolution and Inheritance x1 - Sci

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					have different melting and boiling point. **Covered x 3** States of Matter x3 - Sci		
Processes	**Earth**	**Skill** Observe and describe different types of weather.		**Skill** Investigate soils from the local environment, making comparisons and identifying features.	**Skill** Describe the water cycle using words or diagrams and explain the part played by evaporation and condensation.	**Skill** a) Describe or model the movement of the planets in our Solar System, including Earth, relative to the Sun. b) Describe or model the movement of the Moon relative to Earth.	**Skill** a) Identify that light travels in straight lines. b) Explain that, due to how light travels, we can see things because they give out or reflect light into the eye.
		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. **Covered x 2** Seasonal Changes x2 - Sci		**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. **Covered x 1** Rocks, Relics and Rumbles x1 - Geog	**Core Knowledge** The water cycle has four stages: evaporation, condensation, precipitation (rain) and collection. Evaporation and condensation are caused by temperature changes. **Covered x 1** Misty Mountain, Winding River x1 - Geog	**Core Knowledge** a) The Solar System is made up of the Sun and everything that orbits around it. a) The Sun is a huge, hot ball of gas and is the only source of heat and light in the Solar System. a) The Sun's force of gravity, created by its huge mass, keeps the planets in orbit. a) The eight planets in our Solar System are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. a) The tilt of the Earth's axis as it orbits the Sun changes the length of daytime and night time and creates different seasons. a) 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. a) 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. a) When it is winter in the Northern Hemisphere it summer in the Southern Hemisphere. a) Water and oxygen are important to all life on Earth. a) Earth orbits around the Sun. The length of time it takes for Earth to complete a full orbit is 365.25 days, one year. a) The Earth completes one rotation on its axis in 24 hours, one day.	**Core Knowledge** a) Light waves travel faster than sound waves. a) Light speed is nearly 300 million metres per second, the fastest thing in the universe. a) 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. a) Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. a) When light hits an object, it is absorbed, scattered, reflected or a combination of all three. a) Light from a source or reflected light enter the eye. a) Visible light is made up of a continuous spectrum of coloured light from violet to red. When these colours mix together they create white light. a) When all the colours in visible light are reflected equally by an object, we see it as white. a) When only red light is reflected by an object, and all the other colours are absorbed, we see it as red. a) When all the colours in visible light are absorbed by an object, no light is reflected into our eyes so we see the object as black. *Broad Knowledge*

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						b) The Moon is Earth's only natural satellite. b) The Moon is about 385,000km from the Earth. b) The Moon is not a natural light source. We can only see it because it reflects the Sun's light. b) The Moon orbits the Earth once every 27.3 days and also rotates on its axis once every 27.3 days. b) 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 and casting a shadow on the Earth. b) 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. **Covered x 10** Earth and Space x10 - Sci	b) 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. **Covered x 3** Light Theory x3 - Sci
Processes	**Phenomena**			**Skill** a) Describe the differences between dark and light and how we need light to be able to see. b) Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object.	**Skill** Explain how sounds are made and heard using diagrams, models, written methods or verbally.	**Skill** Describe the Sun, Earth and Moon as approximately spherical bodies and use this knowledge to understand the phases of the Moon and eclipses.	**Skill** a) Describe, using scientific language, phenomena associated with refraction of light. b) Revise the understanding of light, reflection and daylight from previous years.
				Core Knowledge a) A light source is something that produces light. a) A reflector is something that reflects light. a) Light is a form of energy that travels in straight lines from a light source. a) Dark is the absence of light and we need light to be able to see. a) The main natural light source on Earth is the Sun. **Covered x 2** Light and Shadows x2 – Sci b) Opaque objects cast dark shadows.	**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 and results in a louder sound. Pitch is how high or low a sound is.	**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. **Covered x 3** Earth and Space x3 - Sci	**Core Knowledge** a) Refraction is the bending of light as it passes from one transparent material to another. a) Refracted light creates a visible spectrum when white light shines through a prism or raindrops. a) Shadows are formed when an object blocks the passage of light, leaving an area of darkness (the absence of light). a) Shadows move and change shape during the day as Earth rotates and the Sun appears in different positions in the sky. **Covered x 2**

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				b) Translucent objects cast lighter, blurry shadows. b) Transparent objects allow light to pass through them and do not create shadows. b) Shadows change when the light source or the object moves. The lower the light source the longer the shadow. b) A shadow is an area of darkness made when an object blocks light. b) A shadow is the same shape as the object that casts it because light travels in straight lines. b) Shadows always appear on the opposite side of the light source. **Covered x 4** Light and Shadows x4 - Sci	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 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. Sounds are louder closer to the sound source and fainter as the distance from the sound source increases. **Covered x 4** Sound x4 - Sci		Light Theory x2 - Sci b) Light is a form of energy that travels as waves in straight lines. b) There are natural and artificial light sources. b) Light rays bounce off a reflector's surface, making it appear to light up. b) The Sun is the natural source of light and heat for Earth. b) Sunlight contains harmful ultraviolet (UV) rays. UVA rays age our skin and UVB rays cause sunburn. UV rays increase the risk of skin cancer. b) 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. **Covered x 2** Light Theory x2 - Sci
Processes	**Forces**	**Skill** Investigate weather using toys, models or simple equipment.	**Skill** Sort and group objects that float and 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 distance (magnetic force).	**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.	**Skill** Explain that objects fall to Earth due to the force of gravity.	**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 Simple equipment can be used for measuring weather including windsocks,	**Core Knowledge** Some objects float and others sink. **Covered x 1**	**Core Knowledge** Forces cause objects to move, change speed or change shape.	**Core Knowledge** A series circuit must be a complete loop to work and have a source of power from a	**Core Knowledge** Gravitational force, or gravity, is a non-contact, pulling force between objects	**Core Knowledge** Voltage is measured in volts (V).

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		thermometers and rain gauges. **Covered x 4** Seasonal Changes x4 - Sci	Coastline x1 - Geog	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. **Covered x 3** Forces and Magnets x3 - Sci	battery or cell. **Covered x 1** Electrical Circuits and Conductors x1 - Sci	that have mass. 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. **Covered x 1** Forces and Mechanisms x1 - Sci	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. **Covered x 1** Electrical Circuits and Components x1 - Sci
	Modelling		**Skill** Make models with moving parts.	**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.	**Skill** Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects.	**Skill** Create circuits using a range of components and record diagrammatically using the recognised symbols for electrical components.
			Core Knowledge Models can have moving parts that use levers, sliders, wheels and axles. **Covered x 2** Push and Pull x2 - DT	**Covered x 2** Making It Move x2 - DT	**Core Knowledge** A circuit is a collection of components connected by wires through which an 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. **Covered x 3** Electrical Circuits and Conductors x3 - Sci	**Core Knowledge** A lever is a simple machine that provides a mechanical advantage to make 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 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	**Core Knowledge** Electrical symbols represent electrical components such as 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. **Covered x 3** Electrical Circuits and Components x3 - Sci

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						gears, give us a mechanical advantage. The bigger the mechanical advantage, the less force we need to apply. **Covered x 5** Forces and Mechanisms x5 - Sci	
Creativity	**Report and conclude**	**Skill** Talk about what they have done and say, with help, what they think they have found out.	**Skill** Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.	**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 next steps or improvements.	**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.	**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 predictions for what they might observe.
		Core Knowledge Results are information that has been found out from an investigation. **Covered x 17** Everyday Materials x2 - Sci Human Senses x9 - Sci Seasonal Changes x4 - Sci Animal Parts x1 - Sci Plant Parts x1 - Sci	**Core Knowledge** Results from an investigation can be used to answer a question. **Covered x 10** Human Survival x3 - Sci Uses of Materials x3 - Sci Plant Survival x3 - Sci Animal Survival x1 - Sci	*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. **Covered x 8** Animal Nutrition and the Skeletal and System x1 - Sci Forces and Magnets x3 - Sci Plant Nutrition and Reproduction x2 - Sci Light and Shadows x2 - Sci	**Core Knowledge** A conclusion is the answer to a question that uses the evidence collected. **Covered x 11** Food and the Digestive System x2 - Sci Sound x1 - Sci States of Matter x2 - Sci Grouping and Classifying x4 - Sci Electrical Circuits and Conductors x2 - Sci	**Core Knowledge** A conclusion is an explanation of what has been discovered using evidence collected. Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18. **Covered x 9** Forces and Mechanisms x2 - Sci Earth and Space x1 - Sci Human Reproduction and Ageing x2 - Sci Properties and Changes of Materials x4 - Sci	**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. **Covered x 9** Circulatory System x1 - Sci Electrical Circuits and Components x1 - Sci Light Theory x3 - Sci Evolution and Inheritance x4 - Sci
	Gather and record data	**Skill** With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).	**Skill** Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.	**Skill** Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.	**Skill** Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).	**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).	**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 mathematical knowledge.
		Broad Knowledge Data can be recorded and displayed in different ways, including tables, pictograms and drawings. **Covered x 11** Everyday Materials x3 - Sci Human Senses x2 - Sci Seasonal Changes x2 - Sci Animal Parts x3 - Sci Plant Parts x1 - Sci	**Core Knowledge** A timeline is a linear diagram. A life cycle is a circular diagram. **Covered x 12** Human Survival x4 - Sci Habitats x1 - Sci Uses of Materials x2 - Sci Plant Survival x2 - Sci Animal Survival x3 - Sci	**Core Knowledge** Data can be used to provide evidence to answer questions. **Covered x 8** Animal Nutrition and the Skeletal and System x2 - Sci Forces and Magnets x2 - Sci Plant Nutrition and Reproduction x2 - Sci Light and Shadows x2 - Sci	**Core Knowledge** 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	**Core Knowledge** Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams. **Covered x 9** Forces and Mechanisms x1 - Sci Human Reproduction and Ageing x4 - Sci Properties and Changes of Materials x4 - Sci	**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

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					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. **Covered x 9** Food and the Digestive System x2 - Sci Sound x1 - Sci States of Matter x3 - Sci Grouping and Classifying x2 - Sci Electrical Circuits and Conductors x1 - Sci		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. **Covered x 7** Circulatory System x2 - Sci Electrical Circuits and Components x1 - Sci Light Theory x2 - Sci Evolution and Inheritance x2 - Sci
Investigation	**Questioning**	**Skill** Ask simple scientific questions.	**Skill** Ask and answer scientific questions about the world around them.	**Skill** Ask questions about the world around them and explain that they can be answered in different ways.	**Skill** Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.	**Skill** Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.	**Skill** Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
		Core Knowledge Question words include what, why, how, when, who and which. **Covered x 8** Everyday Materials x1 - Sci Human Senses x2 - Sci Seasonal Changes x2 - Sci Animal Parts x1 - Sci Plant Parts x2 - Sci	**Core Knowledge** Questions can help us find out about the world. **Covered x 7** Human Survival x1 - Sci Habitats x1 - Sci Uses of Materials x3 - Sci Plant Survival x1 - Sci Animal Survival x1 - Sci	**Core Knowledge** Questions can help us find out about the world and can be answered in different ways. **Covered x 6** Animal Nutrition and the Skeletal and System x2 - Sci Forces and Magnets x1 - Sci Plant Nutrition and Reproduction x2 - Sci Light and Shadows x1 - Sci	**Core Knowledge** Questions can help us find out about the world and can be answered using scientific enquiry. **Covered x 6** Food and the Digestive System x1 - Sci Sound x2 - Sci Grouping and Classifying x2 - Sci Electrical Circuits and Conductors x1 - Sci	**Core Knowledge** Questions can help us find out about the world and can be answered using a range of scientific enquiries. **Covered x 7** Forces and Mechanisms x3 - Sci Earth and Space x1 - Sci Human Reproduction and Ageing x1 - Sci Properties and Changes of Materials x2 - Sci	**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. **Covered x 7** Circulatory System x1 - Sci Electrical Circuits and Components x1 - Sci Light Theory x2 - Sci Evolution and Inheritance x2 – Sci Frozen Kingdoms x1 - Geog
	Measurement	**Skill** With support, use simple equipment to measure and make observations.	**Skill** Use simple equipment to measure and make observations.	**Skill** Take measurements in standard units, using a range of simple equipment.	**Skill** Take accurate measurements in standard units, using a range of equipment.	**Skill** Take increasingly accurate measurements in standard units, using a range of chosen equipment.	**Skill** Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.
		Broad Knowledge Simple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses. **Covered x 9** Everyday Materials x1 - Sci Human Senses x1 - Sci Seasonal Changes x3 - Sci Animal Parts x2 - Sci Plant Parts x2 - Sci	*Broad Knowledge* Simple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels. **Covered x 4** Human Survival x2 - Sci Uses of Materials x1 - Sci Plant Survival x1 - Sci	*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 metres). Taking repeat readings can increase the accuracy of the measurement. **Covered x 4** Animal Nutrition and the Skeletal and System x1 - Sci Forces and Magnets x1 - Sci Plant Nutrition and Reproduction x2 - Sci	*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 (millimetres, centimetres, metres). **Covered x 3** Food and the Digestive System x1 - Sci States of Matter x2 - Sci	**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 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. **Covered x 6** Forces and Mechanisms x2 - Sci Human Reproduction and Ageing x1 - Sci Properties and Changes of Materials x3 - Sci	**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 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). **Covered x 7**

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							Circulatory System x2 - Sci Electrical Circuits and Components x1 - Sci Light Theory x2 - Sci Evolution and Inheritance x2 - Sci
	Investigation	**Skill** With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.	**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.	**Skill** Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.	**Skill** Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.	**Skill** Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.	**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.
		Core Knowledge Simple tests can be carried out by following a set of instructions. **Covered x 13** Everyday Materials x5 - Sci Human Senses x4 - Sci Seasonal Changes x2 - Sci Animal Parts x2 - Sci	**Core Knowledge** Tests can be carried out by following a set of instructions. A prediction is a best guess at what might 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. **Covered x 8** Human Survival x3 - Sci Habitats x1 - Sci Uses of Materials x2 - Sci Plant Survival x2 - Sci	**Core Knowledge** A prediction is a best guess for what might happen in an investigation based on some prior knowledge. **Covered x 1** Animal Nutrition and the Skeletal and System x3 - Sci Forces and Magnets x2 - Sci Plant Nutrition and Reproduction x3 - Sci Light and Shadows x3 - Sci	**Core Knowledge** Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about 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. **Covered x 7** Food and the Digestive System x1 - Sci Sound x3 - Sci States of Matter x2 - Sci Electrical Circuits and Conductors x1 - Sci	*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 in an investigation based on some prior knowledge or understanding. **Covered x 11** Forces and Mechanisms x3 - Sci Human Reproduction and Ageing x3 - Sci Properties and Changes of Materials x4 – Sci Sow, Grow and Farm x1 - Geog	*Broad Knowledge* A method is a set of clear instructions for how to carry out a scientific 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. **Covered x 8** Circulatory System x2 - Sci Electrical Circuits and Components x1 - Sci Light Theory x3 - Sci Evolution and Inheritance x1 – Sci Frozen Kingdoms x1 - Geog
	Observation	**Skill** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.	**Skill** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.	**Skill** Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.	**Skill** Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.	**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.	**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.
		Broad Knowledge Objects, materials and living things can be looked at and compared. **Covered x 10** Everyday Materials x3 - Sci Human Senses x3 - Sci Seasonal Changes x1 - Sci Animal Parts x1 - Sci Plant Parts x1 - Sci Bright Lights, Big City x1 - Geog	*Broad Knowledge* Objects, materials and living things can be looked at, compared and grouped according to their features. **Covered x 7** Human Survival x1 - Sci Habitats x2 - Sci Uses of Materials x3 - Sci Plant Survival x1 - Sci	*Broad Knowledge* An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. **Covered x 10** Animal Nutrition and the Skeletal and System x1 - Sci Forces and Magnets x2 - Sci Plant Nutrition and Reproduction x4 - Sci Light and Shadows x3 - Sci	**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 large group of objects into smaller groups based on a single property. **Covered x 5** Food and the Digestive System x1 - Sci States of Matter x2 - Sci Grouping and Classifying x1 - Sci Electrical Circuits and Conductors x1 - Sci	**Core Knowledge** Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons. **Covered x 4** Forces and Mechanisms x1 - Sci Human Reproduction and Ageing x1 - Sci Properties and Changes of Materials x2 - Sci	**Core Knowledge** Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons. **Covered x 6** Circulatory System x3 - Sci Electrical Circuits and Components x1 - Sci Light Theory x2 - Sci

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Materials	**Identification and classification**	**Skill** Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.	**Skill** Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.	**Skill** Group and sort materials as being reflective or non-reflective.	**Skill** Group and sort materials into solids, liquids or gases.	**Skill** a) Compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. b) Explain, following observation, that some substances (solutes) will dissolve in liquid (solvents) to form a solution and the solute can be recovered by evaporating off the solvent.	
		Core Knowledge A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric. **Covered x 4** Everyday Materials x3 - Sci Shade and Shelter x1 - DT	*Broad Knowledge* Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled. **Covered x 1** Remarkable Recipes x1 - DT	**Core Knowledge** Light can be reflected from different surfaces. Reflective materials are light in colour, shiny and smooth. Less reflective and non-reflective materials are dark in colour, dull and rough. **Covered x 1** Light and Shadows x1 - Sci	**Core Knowledge** Materials can be grouped according to whether they are solids, liquids or gases. Solids stay in one place and can be 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. Solids keep their shape and cannot flow as the particles cannot move. Liquids flow and take the shape of their container as the particles can move around each other. Gases have no fixed shape and can be compressed into a smaller space. **Covered x 2** States of Matter x2 - Sci	**Core Knowledge** a) Materials can be grouped according to their basic physical properties. a) Properties of materials include: hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. a) Thermal conductors, such as metals, are materials that allow the transfer of heat. a) Thermal conductors are useful for quickly heating things up. a) Thermal insulators, such as wood, glass and plastic, are materials that do not transfer heat effectively. a) Thermal insulators are useful for keeping things at the same temperature. **Covered x 2** Properties and Changes of Materials x2 - Sci b) Dissolving is when a solute (material) becomes incorporated into a solvent (liquid) and can no longer be seen. b) Solubility is a measure of a material's ability to dissolve in a solvent. **Covered x 1** Properties and Changes of Materials x1 - Sci	
	Properties and uses	**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.	**Skill** Compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard.	**Skill** a) Compare and group rocks based on their appearance, properties or uses. b) Compare and group materials based on their magnetic properties.	**Skill** Describe materials as electrical conductors or insulators.	**Skill** a) Separate mixtures by filtering, sieving and evaporating. b) Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass.	**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).

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		Core Knowledge Materials have different properties, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or not waterproof. **Covered x 3** Everyday Materials x3 - Sci	**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 materials with similar properties. **Covered x 5** Uses of Materials x3 - Sci Animal Survival x2 - Sci	**Core Knowledge** a) Sedimentary, igneous and metamorphic are the three different rock types. a) Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. a) Igneous rocks are made from cooled magma or lava. a) 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. **Covered x 1** Rocks, Relics and Rumbles x1 - Sci b) Magnetic materials are attracted to magnets. b) Iron, cobalt, nickel and steel are magnetic metals. Other metals and materials such as plastic, paper, glass and wood are not magnetic. **Covered x 1** Forces and Magnets x1 - Sci	**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 resistance and allow electricity to flow through them. Non-conductive materials, like plastics, are often known as electrical insulators they do not let electricity through, they have high resistance. **Covered x 2** Electrical Circuits and Conductors x2 - Sci	**Core Knowledge** a) A mixture is a combination of two or more substances that aren't chemically joined and can be separated back into their individual substances. a) Heterogeneous mixtures consist of distinctly different substances and are easy to separate by classifying and grouping or sieving or filtering. a) Substances in homogeneous mixtures are evenly distributed and you cannot see the different parts. Homogeneous substances are difficult to separate. a) Sieving can be used to separate large solids from liquids and some solids from other solids. a) Filtering can be used to separate small solids from liquids. a) Evaporating can be used to separate dissolved solids from liquids. **Covered x 4** Properties and Changes of Materials x4 - Sci b) A material's properties dictate what it can be used for. **Covered x 2** Properties and Changes of Materials x2 - Sci	**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 and concentrate the rays of light into a focal point. Convex mirrors make images smaller and disperse light which reflects a wider view. **Covered x 1** Light Theory x1 - Sci
Nature	**Identification and classification**	**Skill** a) Identify, compare, group and sort a variety of common wild and garden plants, including deciduous and evergreen trees, based on observable features. b) Identify, compare, group and sort a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features.	**Skill** a) Identify and name a variety of plants and animals in a range of habitats and microhabitats. b) Describe the basic life cycles of some familiar animals (egg, caterpillar, pupa, butterfly; egg, chick, chicken; spawn, tadpole, froglet, frog).	**Skill** Identify and group animals that have no skeleton, an internal skeleton (endoskeleton) and an external skeleton (exoskeleton).	**Skill** Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour.	**Skill** Group and sort plants by how they reproduce.	**Skill** a) Use and construct classification systems to identify animals and plants from a range of habitats. b) Classify living things, including microorganisms, animals and plants, into groups according to common observable characteristics and based on similarities and differences.
		Core Knowledge a) Plants are living things. a) Trees are large, woody plants and are either evergreen or deciduous. Trees that lose their leaves in the autumn are called deciduous trees. a) Plants are important because they provide food, shelter and materials for animals, including humans. a) The leaves of most deciduous trees are wide and flat.	**Core Knowledge** a) A habitat is a place where plants and animals live. a) A microhabitat is a very small habitat. a) Invertebrates are animals without a backbone. a) Invertebrates include worms, molluscs, crustaceans, insects, arachnids and myriapods. **Covered x 11** Habitats x6 - Sci Plant Survival x2 - Sci	**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. **Covered x 1** Animal Nutrition and the Skeletal and System x1 - Sci	**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.	**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. **Covered x 1** Sow, Grow and Farm x1 - Geog	**Core Knowledge** a) Classification keys help us identify living things based on their physical characteristics. **Covered x 2** Frozen Kingdoms x2 – Geog b) 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. b) There are five kingdoms: animals,

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		a) The leaves of most evergreen trees are thin and pointed. **Covered x 8** Seasonal Changes x1 - Sci Plant Parts x7- Sci b) Humans are living things. They belong to a group of animals called mammals. b) Humans normally have the same body parts. b) Humans look different from each other. b) Animals are living things. b) Fish, amphibians, reptiles, birds, invertebrates and mammals are groups of animals. **Covered x 5** Human Senses x1 - Sci Plant Parts x4 - Sci	Animal Survival x3 - Sci b) Animals are born or hatch from eggs. The young grow and change until they become adults that can reproduce. b) A life cycle can be drawn as a circular diagram. **Covered x 5** Animal Survival x5 - Sci		Invertebrates usually have soft bodies or a hard outer shell or 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. **Covered x 8** Grouping and Classifying x8 - Sci		plants, fungi, protists and monerans. b) Members of each kingdom have features in common. **Covered x 3** Frozen Kingdoms x1 - Geog Evolution and Inheritance x2 - Sci
	Parts and functions	**Skill** a) Label and describe the basic structure of a variety of common plants. b) Label and describe the basic structures of a variety of common animals, including fish, amphibians, reptiles, birds and mammals.	**Skill** Describe how plants need water, light and a suitable temperature to grow and stay healthy.	**Skill** a) Name and describe the functions of the different parts of flowering plants (roots, stem, leaves and flowers). b) Investigate how water is transported within plants.	**Skill** Identify the four different types of teeth in humans and other animals, and describe their functions.	**Skill** Label and draw the parts of a flower involved in sexual reproduction in plants (stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal).	**Skill** a) Identify that living things produce offspring of the same kind, although the offspring are not identical to either parent. b) Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding).
		Core Knowledge a) The basic plant parts include root, stem, leaf, flower, petal and fruit. a) Trees have a woody stem called a trunk. a) Plants grow from seeds or bulbs. **Covered x 3** Human Senses x1 – Sci Plant Parts x2 - Sci b) Different animal groups have some common body parts. **Covered x 2** Plant Parts x1 - Sci Animal Parts x1 - Sci	**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. **Covered x 7** Plant Survival x7 - Sci	**Core Knowledge** a) Many plants grow from seeds or bulbs. a) Plants have roots, stems, leaves, flowers and fruit. a) Roots anchor the plant in the ground and transport water and minerals from the ground to the plant. a) The stem (or trunk) support the plant above the ground. a) Leaves collect energy from the Sun and make food for the plant. a) Flowers make seeds to produce new plants. a) Parts of a flower include the sepal, petal, stamen and carpel. **Covered x 4** Animal Nutrition and the Skeletal and System x1 - Sci Plant Nutrition and Reproduction x3 - Sci	**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. **Covered x 1** Food and the Digestive System x1 - Sci	**Core Knowledge** Parts of a flower include the stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal. **Covered x 1** Sow, Grow and Farm x1 - Geog	**Core Knowledge** a) Inheritance is when living things pass on characteristics following sexual reproduction, such as height, skin colour and eye colour. a) Variation is the natural differences in characteristics between individuals of the same species. a) Continuous variation contains a range of values, such as the height or mass of different individuals of the same species. a) Discontinuous variation has a certain number of outcomes, such as eye colour and blood groups. **Covered x 2** Evolution and Inheritance x2 – Sci b) Animals and plants can be bred to produce offspring with specific and desired characteristics. This is called

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				b) Water is transported in plants from the roots, through the stem to the leaves. **Covered x 2** Plant Nutrition and Reproduction x2 - Sci			selective breeding. **Covered x 1** Evolution and Inheritance x1 - Sci
	Nutrition	**Skill** Group and sort a variety of common animals based on the foods they eat.	**Skill** Interpret and construct simple food chains to describe how living things depend on each other as a source of food.	**Skill** Compare and contrast the diets of different animals.	**Skill** Construct and interpret a variety of food chains and webs to show interdependence and how energy is passed on over time.	**Skill** Describe, using their knowledge of food chains and webs, what could happen if a habitat had a living thing removed or introduced.	**Skill** Explain that the circulatory system in animals transports oxygen, water and nutrients around the body.
		Core Knowledge Carnivores eat other animals (meat), herbivores eat plants and omnivores eat other animals and plants. **Covered x 2** Animal Parts x2 - Sci	**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 avoid capture by predators. Plants have adaptations that protect them from being eaten by animals. **Covered x 9** Habitats x7 - Sci Animal Survival x2 - Sci	**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 to certain foods becoming available or unavailable. Carnivores only eat meat. Herbivores only eat plants. Omnivores eat meat and plants. **Covered x 3** Animal Nutrition and the Skeletal and System x3 - Sci	**Core Knowledge** Food chains start with a plant (producer), show what animals eat within a habitat 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. All the different food chains in a specific ecosystem can be linked together. These connected food chains are called a food web. An ecosystem is a community of living organisms and their environments that are interdependent. Ecosystems have biotic, or living, features including plants, animals and microorganisms. They also have abiotic, or non-living, features including sunlight, water, air, soil and temperature. **Covered x 2** Food and the Digestive System x2 - Sci	**Core Knowledge** Population changes in a habitat can have significant consequences for food chains and webs. **Covered x 1** Sow, Grow and Farm x1 - Geog	**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. 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. **Covered x 1** Circulatory System x1 - Sci
	Survival	**Skill** Describe how to care for plants and animals, including pets.	**Skill** Explain how animals, including humans, need water, food, air and shelter to survive.	**Skill** Describe the requirements of plants for life and growth (air, light, water, nutrients and room to grow) and how they vary from plant		**Skill** Describe the life process of reproduction in some plants and animals.	**Skill** Identify how animals and plants are adapted to suit their environment, such as giraffes having long necks for feeding, and

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				to plant.			that adaptations may lead to evolution.
		Core Knowledge Living things need to be cared for in order for them to survive. Living things need water, food, warmth and shelter. **Covered x 4** Animal Parts x1 - Sci Plant Parts x3 - Sci	**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). **Covered x 9** Habitats x5 - Sci Animal Survival x4 - Sci	**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. **Covered x 2** Animal Nutrition and the Skeletal and System x1 - Sci Plant Nutrition and Reproduction x1 - Sci		**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. **Covered x 2** Human Reproduction and Ageing x1 - Sci Sow, Grow and Farm x1 - Geog	**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. Chemical adaptations include the presence of stings and poisons. **Covered x 4** Frozen Kingdoms x2 - Geog Evolution and Inheritance x2 - Sci
Place and space	**Habitats**	**Skill** Observe the local environment throughout the year and ask and answer questions about living things and seasonal change.	**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.		**Skill** Describe how environments can change due to human and natural influences and the impact this can have on living things	**Skill** Research and describe different farming practices in the UK and how these can have positive and negative effects on natural 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 The local environment is a habitat for living things and can change during the seasons. **Covered x 2** Seasonal Changes x1 - Sci Plant Parts x1 - Sci	**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. Humans can help habitats. They can create new habitats, make habitats safer or provide food and shelter for living things.		**Core Knowledge** Humans can affect habitats in negative or positive ways. **Covered x 2** Misty Mountain, Winding River x2 - Geog	**Core Knowledge** Arable (growing crops), pastoral (raising livestock), mixed (arable and pastoral) are the three main types of farming in the UK. Intensive farming in the past has resulted in the loss of habitats. **Covered x 2** Sow, Grow and Farm x2 - Geog	**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. **Covered x 3** Frozen Kingdoms x1 - Geog Evolution and Inheritance x2 - Sci

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			Covered x 8 Habitats x5 - Sci Plant Survival x1 - Sci Animal Survival x2 - Sci				
Comparison	**Physical things**	**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.	**Skill** Compare and group things that are living, dead or have never been alive.	**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.	**Skill** Compare common household equipment and appliances that are and are not powered by electricity.	**Skill** Compare the life cycles of animals, including a mammal, an amphibian, an insect and a bird.	
		Core Knowledge A property is a quality a material has. Materials with different properties have different uses. **Covered x 3** Everyday Materials x3 - Sci	**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 processes of living things are moving, breathing, using their senses, feeding, getting rid of waste, having offspring and growing. **Covered x 2** Habitats x2 - Sci	**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. There are different types of magnets including bar magnets, horseshoe magnets and floating magnets. Magnets have different strengths. **Covered x 3** Forces and Magnets x3 - Sci	**Core Knowledge** Electricity is a type of energy. It is used to power many everyday items. Electricity comes from two sources, mains and batteries. **Covered x 1** Electrical Circuits and Conductors x1 - Sci	**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. A life cycle is the series of changes in the life of a living thing and includes these basic stages: birth, growth, reproduction and death. A mammal is a vertebrate, which means it has a backbone. Producing milk to feed their young, being warm blooded, giving birth to live young, having fur or hair and breathing air with lungs are the five key characteristics of mammals. All mammalian life cycles have the same processes of birth, growth, puberty and reproduction as well as the same stages. The duration of each life cycle stage is different for different mammals. **Covered x 5** Human Reproduction and Ageing x4 - Sci Sow, Grow and Farm x1 - Geog	
	Phenomena			**Skill** Compare how objects move over surfaces made from different materials.	**Skill** Compare how the volume of a sound changes at different distances from the source.	**Skill** Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction.	**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

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							switches).
		Covered x 1 Everyday Materials x1 - Sci Human Senses x1 - Sci Seasonal Changes x1 - Sci Animal Parts x1 - Sci Plant Parts x1 - Sci	**Covered x 1** Human Survival x1 - Sci Habitats x1 - Sci Uses of Materials x1 - Sci Plant Survival x1 - Sci Animal Survival x1 - Sci	**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. **Covered x 1** Forces and Magnets x1 - Sci	**Core Knowledge** Sounds are louder closer to the sound source and fainter as the distance from the sound source increases. **Covered x 1** Sound x1 - Sci	**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 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. **Covered x 4** Forces and Mechanisms x4 - Sci	**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 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. **Covered x 1** Electrical Circuits and Components x1 - Sci
Change	**Living things**	**Skill** Describe, following observation, how plants and animals change over time.	**Skill** Observe and describe how seeds and bulbs change over time as they grow into mature plants.	**Skill** Draw and label the life cycle of a flowering plant.	**Skill** Explain how unfamiliar habitats, such as a mountain or ocean, can change over time and what influences these changes.	**Skill** Describe the changes as humans develop from birth to old age.	**Skill** Explain that living things have changed over time, using specific examples and evidence.
		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.	**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.	**Core Knowledge** The stages of a plant's life cycle include: germination, flower production, pollination, fertilisation, seed formation and seed dispersal. 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,	**Core Knowledge** Habitats change over time, either due to natural or human influences. All living things depend on the biotic and abiotic features of their ecosystems to survive; therefore, any change to one part will affect all the other parts. **Covered x 1** Food and the Digestive System x1 - Sci	**Core Knowledge** The human gestation period is around 40 weeks. During this time, the organs, limbs and senses develop, and the foetus grows until it is ready to be born. Humans go through characteristic stages as they develop towards old age. Puberty is the transition between childhood and adulthood.	**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

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		Changes happen to flowers over time. **Covered x 5** Seasonal Changes x2 - Sci Plant Parts x3 - Sci	Seeds also form inside cones. **Covered x 3** Plant Survival x3 - Sci	explosion and water. **Covered x 3** Plant Nutrition and Reproduction x3 - Sci		As humans age, many of the body's systems gradually decline, leading to the changes seen in older people. The gestation period is the time between conception and birth. In general mammals with a smaller mass have a shorter gestation period than mammals with a larger mass. Humans are mammals and have a mammalian life cycle. **Covered x 7** Human Reproduction and Ageing x5 – Sci Puberty and Emotions – Unit 5 x2 - PHSE	and reproduce. The fossil record and the DNA of living and extinct things provide evidence of evolution. **Covered x 2** Evolution and Inheritance x2 - Sci
Vocabulary	absorbent, bendy, brick, ceramic, clay, concrete, cotton, fabric, glass, hard, human-made, leather, material, metal, natural, oil, opaque, paper, plastic, property, rough, rubber, sand, shiny, silk, smooth, soft, stone, stretchy, transparent, water, waterproof, wood, wool, compare, describe, equipment, investigation, observe, question, record, results, Venn diagram animal, ankle, arm, calf, chest, chin, ear, elbow, eye, finger, foot, forearm, forehead, hair, hand, head, hearing, human, knee, leg, limb, mammal, mouth, neck, nose, sense, shoulder, sight, skin, smell, taste, thigh, toe, tongue, touch, unique, wrist compare, data, diagram, equipment, investigation, observe, prediction, question, record, research, results, table, test, Venn diagram anemometer, animal, autumn, Beaufort Scale, blossom, breeze, bud, cloud, dark, daytime, deciduous, Earth, evergreen, fog, fruit, gale, grow, hail, hibernate, hurricane, leaf, light, meteorologist, migrate, night, Northern Hemisphere,	adult, air, balancing exercise, balanced diet, birth, bone, carbohydrates, dairy and alternatives, energy, exercise, fat, food, food group, fruit and vegetables, germ, growth, healthy, heart, human, hydrate, hygiene, life cycle, love, lungs, muscle, omnivore, proteins, reproduction, shelter, space, strengthening exercise, stretching exercise, sugar, survive, sweat, vegetarian diet, water compare, conclusion, data, investigation, method, observe, prediction, question, record, research, results air, amphibian, animal, bird, camouflage, carnivore, fish, food, food chain, growth, habitat, herbivore, invertebrate, living, mammal, movement, non-living, nutrient, offspring, omnivore, plant, predator, prey, reproduction, reptile, shelter, soil, space, temperature, water, woodland block graph, compare, data, describe, diagram, equipment, investigation, observe, prediction, question, record, results absorbency, absorbent, bend, bendy, cardboard, clay, fabric, glass, hard, material, metal, natural, object, paper, plastic, pollution, property, recycle, rock, rough, rubbish, shape, smooth, soft, squash, strength, stretch, stretchy, strong, texture, twist, waterproof, wood	ball and socket joint, biceps, carbohydrates, cardiac muscle, carnivore, contract, cranium, dairy and alternatives, diet, endoskeleton, exoskeleton, femur, fibre, fibula, fruit and vegetables, hamstrings, herbivore, hinge joint, humerus, invertebrate, joint, ligament, limb, malnutrition, mandible, mineral, muscle, nutrient, nutrition, oils and spreads, omnivore, patella, pectorals, pelvis, pivot joint, predator, prey, proteins, radius, relax, rib, ribcage, seasonal, skeletal muscle, skeleton, smooth muscle, spine, sternum, synovial fluid, tendon, tibia, triceps, ulna, vertebrae, vertebrate, vitamin compare, data, diagram, equipment, fair test, investigation, method, observe, prediction, question, record, research, results, table, test alloy, atmosphere, attract/attraction, cobalt, compass, contact force, ferrofluid, ferrous, force, force meter, friction, iron, lubricant, magnet, magnetic field, magnetic force, magnetise, magnetite, newton, nickel, non-contact force, north pole, outer core, pull, push, repel/repulsion, south pole, steel, surface, tread pattern bar chart, compare, conclusion, data, describe, diagram, equipment, investigation, measurement, method, observe, prediction, record, research, results, table anchor, anther, blade, bud, carbon dioxide, carpel, fibrous root system, filament, flower, fruit, germination, growth, lateral root, leaf,	abiotic, apex predator, bacteria, biotic, canine, carbohydrate, carnivore, consumer, digestion, digestive acid, digestive enzyme, digestive organ, digestive system, ecosystem, fluoride, food chain, food energy, food web, herbivore, incisor, interdependence, large intestine, microorganism, molar, mouth, nutrient, oesophagus, omnivore, oral hygiene, organism, permanent teeth, photosynthesis, plaque, predator, premolar, prey, primary consumer, primary teeth, producer, protein, root canal, saliva, secondary consumer, stomach, small intestine, tertiary consumer, tongue, tooth, tooth enamel, vitamin compare, conclusion, data, describe, diagram, equipment, evidence, fair test, findings, investigation, method, observe, prediction, question, record, research, results, table, variable air, brass instrument, nerve, decibel (dB), ear, ear canal, eardrum, gas, hearing, hertz (Hz), inner ear, medium, muffle, musical instrument, liquid, particle, percussion, pitch, solid, sound, sound source, sound wave, stringed instrument, vibrate, volume, wavelength, instrument compare, conclusion, control, data, diagram, equipment, fair test,	aerodynamic, air resistance, contact force, drag, force, force meter, friction, fulcrum, gear, gravitational force/gravity, lever, lubricant, machine, magnetism, mass, mechanical advantage, mechanism, newton, non-contact force, particle, pull, pulley, push, streamline, surface area, water resistance, weight compare, control, equipment, kilograms, line graph, method, observe, prediction, record, research, Venn diagram atmosphere, axis, constellation, daytime, Earth, first quarter Moon, full Moon, galaxy, gas giant, gravitational force, horizon, last quarter Moon, lunar, lunar eclipse, mass, matter, moon, new Moon, night time, Northern Hemisphere, orbit, partial lunar eclipse, partial solar eclipse, phases of the Moon, planet, rotate, satellite, season, shadow, solar, solar eclipse, Southern Hemisphere, space, spacecraft, star, Sun, sundial, sunrise, sunset, the Solar System, total lunar eclipse, total solar eclipse, universe, waning crescent Moon, waning gibbous Moon, wane, waxing crescent Moon, waxing gibbous Moon, wax, year data, describe, diagram, equipment, findings, investigation, method, model, observe, question, record, research, table	aerobic exercise, aorta, artery, atrium, blood, blood pressure, blood vessel, bone marrow, capillary, carbohydrate, carbon dioxide, cell, cholesterol, circulatory system, clot, deoxygenate, digestive system, excretion, excretory system, haemoglobin, heart, heart rate, hormone, immune system, immunity, muscular system, nervous system, nutrient, organ, oxygen, oxygenate, oxygenated, plasma, platelet, processed food, protein, pulmonary artery, pulmonary vein, pulse rate, red blood cell, reproductive system, respiratory system, resting heart rate, saturated fat, skeletal system, tissue, unsaturated fat, valve, vein, vena cava, ventricle, white blood cell compare, conclusion, correlation, data, diagram, hypothesis, investigation, measure, observe, prediction, question, scatter graph, variable appliance, battery, buzzer, cell, circuit, circuit diagram, coding, component, conductor, crocodile clip, data logger, electric current, electricity, environmental variable, insulator, lamp, light-emitting diode (LED), light meter, mains, micro:bit, motor, multimeter, sensor, series circuit, source, switch, symbol, terminal, volt, voltage, voltmeter, wire compare, conclusion, data, diagram, equipment, fair test, investigation,

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	precipitation, rain, rainfall, rain gauge, rays, season, seasonal change, sleet, snow, spring, storm, summer, Sun, sun cream, sunglasses, sunrise, sunset, thermometer, weather, weather forecast, wind, windsock, winter bar chart, compare, data, degrees Celsius (°C), describe, equipment, investigation, measurement, millimetre (mm), observe, prediction, question, record, research, results, temperature, unit, volume bark, blade, blossom, branch, bud, bulb, deciduous, evergreen, flower, fruit, garden, hedgerow, leaf, margin, meadow, petal, plant, root, season, seed, shelter, soil, stalk, stem, tree, trunk, woodland compare, different, data, describe, diagram, equipment, observe, question, record, research amphibian, animal, antenna, beak, bird, camouflage, carnivore, claw, ear, eye, fin, fish, fur, gill, group, hearing, herbivore, human, hunt, invertebrate, limb, mammal, mouth, nose, offspring, omnivore, pet, reptile, scale, sense, shell, sight, skin, smell, tail, teeth, tongue, touch, wild animal, wing block graph, Carroll diagram, instructions, investigation, observe, record, research, test, Venn diagram	compare, data, describe, diagram, equipment, investigation, method, observe, prediction, question, record, research, results air, branch, bulb, deciduous, embryo, evergreen, flower, flower bud, fruit, germinate/germination, habitat, leaf, nutrient, plant, root, season, seed, seed coat, shade, soil, stem, sunlight, survive, temperature, tree, trunk, warmth, water compare, conclusion, data, equipment, investigation, observe, method, prediction, question, record, research, results adult, air, amphibian, arachnid, bird, birth, carnivore, consumer, crustacean, egg, embryo, fish, food, food chain, grow/growth, habitat, hatch/hatching, herbivore, hibernation, insect, invertebrate, life cycle, mammal, microhabitat, mollusc, myriapod, offspring, omnivore, producer, reproduce/reproduction, reptile, season, shelter, space, survive, water, worm, block graph, compare, data, describe, diagram, equipment, investigation, observe, prediction, question, record, results	life cycle, nectar, nutrient, offspring, petal, phloem, photosynthesis, pollen, pollination, pollinator, pore, reproduction, root, seed, seed dispersal, seedling, sepal, stalk, stamen, stem, taproot, system, transpiration, vascular plant, vein, vessel, xylem compare, conclusion, control, data, describe, diagram, equipment, fair test, investigation, measurement, method, observe, prediction, question, record, research, results, table, variable artificial, block, darkness, light, light source, mirror, Moon, natural, opaque, ray, reflect, reflective, reflector, shadow, shiny, Sun, sun cream, sun protection factor (SPF), translucent, transparent, ultraviolet (UV) light data, diagram, equipment, investigation, method, observe, prediction, record, research	investigation, measurement, method, observe, prediction, record, research, results, variable boiling point, compress, condense/condensation, condensing point, cool, evaporate/evaporation, foam, freeze/freezing, freezing point, gas, gel, heat, ice, liquid, material, matter, melt/melting, melting point, particle, powder, process, property, reversible, solid, state of matter, steam, temperature, volume, water vapour compare, conclusion, data, describe, diagram, equipment, estimate, interval, investigation, line graph, measurement, method, observe, prediction, question, record, research, results, table, thermometer, unit, variable amphibian, animal kingdom, arachnid, arthropod, bird, classification, classification key, common name, cone-bearing plant (gymnosperm), evolution, exoskeleton, fish, flowering plant (angiosperm), insect, invertebrate, mammal, non-vascular plant, feature, plant kingdom, reptile, seed, segmented, shell, species, spore, spore-producing plant, vascular plant, vertebrate classify, compare, describe, diagram, observe, question, record, research 3-core flexible cable, appliance, battery, battery holder, brass, buzzer, cartridge fuse, cell, circuit, coding, complete circuit, component, conductive, conductor, copper, core, crocodile clip, earth wire, electrical conductivity, electric current, electric shock, electricity, light bulb, incomplete circuit, insulator, lamp, light bulb, light-emitting diode (LED), live wire, mains electricity, material, micro:bit, motor, neutral wire, non-conductive, power station, programmable, push-to-break switch, pylon, rechargeable, reed switch, resistance, rocker switch, sensor, series circuit, socket, source, switch, three-pin plug, toggle switch, wire bar chart, compare, conclusion, data, diagram, equipment, fair test, findings, investigation, method, observe, prediction, question, record, research, results, table, variable	acne, adolescent, adult, ageing, amphibian, bird, birth, breasts, cell, development, egg, embryo, emotion, female, fertilisation, fish, gestation, growth, growth spurt, hormone, infant, insect, juvenile, larva, life cycle, lifespan, male, mammal, metamorphosis, mood swing, offspring, ovary, penis, period, process, puberty, pubic hair, pupa, reaction time, reproduction, reproductive organ, reproductive system, reptile, self-esteem, semen, sexual reproduction, sperm, stage, sweat, testicle, umbilical cord, uterus, vagina, vertebrate, warm blooded conclusion, compare, correlation, data, describe, diagram, equipment, evidence, findings, investigation, line graph, method, negative correlation, no correlation, observe, positive correlation, prediction, question, record, research, results, review, scatter graph, spreadsheet, table, variable, Venn diagram *absorbent, bendy, chemical change, condense, conductor, dissolve, electrically conductive, evaporate, filter, filtration, freeze, gas, hard, homogeneous mixture, innovative material, insoluble, insulator, irreversible change, liquid, magnetic, material, melt, mixture, particle, physical change, property, reflective, rough, saturated solution, sieve, sieving, solid, solubility, soluble, solute, solution, solvent strong, temperature, thermally conductive, transparent, waterproof* control, diagram, equation, equipment, fair test, investigation, line graph, observe, record, separate, thermometer, variable, Venn diagram	measurement, method, observe, prediction, question, record, research, results, table, variable absorb, beam, concave, cone, convex, cornea, darkness, electromagnetic spectrum, iris, lens, light meter, light source, light wave, lux, opaque, optical fibre, optic nerve, pupil, ray, reflect, reflector, refract, retina, rod, scatter, shadow, spectrum, translucent, transparent, ultraviolet (UV) light, visible light, wavelength, white light conclusion, data, demonstration, diagram, equipment, fair test, graph, investigation, method, observe, question, record, research, results, table, variable adaptation, ancestor, animal kingdom, artificial selection, asexual reproduction, bacteria, characteristic, classification, deoxyribonucleic acid (DNA), dinosaur, evolution, evolve, extinct, fossil, fungus kingdom, gene, genetics, inheritance, kingdom, microorganism, multicellular, natural selection, naturalist, origin, palaeontologist, pathogen, plant kingdom, sexual reproduction, species, unicellular, variation, virus bar chart, bias, classify, compare, conclusion, continuous data, data, diagram, discontinuous data, equipment, fair test, hypothesis, investigation, line graph, measurement, method, observe, prediction, question, record, research, results, scatter graph, table, theory, variable

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Significant people	Francis Beaufort, Irish meteorologist (Y1 Seasonal Changes) Robert Fitzroy, British meteorologist (Y1 Seasonal Changes)			**Anders Celsius, Swedish physicist (Y4 States of Matter, Y5 Properties and Changes of Materials)** Carl Linnaeus, Swedish biologist (Y4 Grouping and Classifying, Y6 Evolution and Inheritance) Thomas Edison, American inventor (Y4 Electrical Circuits and Conductors)	Albert Einstein, German physicist (Y5 Forces and Mechanisms) Alhazen, Arabian physicist, astronomer and mathematician (Y5 Earth and Space) Anaximander, ancient Greek philosopher and astronomer (Y5 Earth and Space) Anders Celsius, Swedish physicist (Y4 States of Matter, Y5 Properties and Changes of Materials) **Aristotle, ancient Greek philosopher and scientist (Y5 Forces and Mechanisms, Y5 Earth and Space) – History?** Claudius Ptolemy, ancient Greek mathematician and astronomer (Y5 Earth and Space) Ferdinand Magellan, Portuguese explorer and navigator (Y5 Earth and Space) **Galileo Galilei, Italian physicist (Y5 Forces and Mechanisms, Y5 Earth and Space)** **Isaac Newton, British scientist (Y5 Forces and Mechanisms, Y5 Earth and Space)** Johannes Kepler, German astronomer (Y5 Forces and Mechanisms) Juan Sebastián Elcano, Spanish navigator (Y5 Earth and Space) Nicolaus Copernicus, Polish astronomer and mathematician (Y5 Earth and Space) Pliny the Elder, Roman naturalist, philosopher and author (Y5 Earth and Space) **Pythagoras, ancient Greek philosopher and mathematician (Y5 Earth and Space) – History?** Thales, ancient Greek philosopher and astronomer (Y5 Earth and Space)	Alfred Russel Wallace, British naturalist (Y6 Evolution and Inheritance) Carl Linnaeus, Swedish biologist (Y4 Grouping and Classifying, Y6 Evolution and Inheritance) Charles Darwin, British naturalist (Y6 Evolution and Inheritance) Gregor Mendel, Austrian botanist (Y6 Evolution and Inheritance) Mary Anning, British palaeontologist (Y6 Evolution and Inheritance)
By the end of the Year, children will be able to:	Ask simple questions and recognise that they can be answered in different ways. Use simple equipment to observe closely Perform simple tests Identify and classify Use his/her observations and ideas to suggest answers to questions	Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum. Use simple equipment to observe closely including changes over time. Communicate his/her ideas, what he/she does and what he/she finds out in a variety of ways. Perform simple comparative tests.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Year 5 focus). Record data and results of increasing	Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing

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	Gather and record data to help in answering questions Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Group animals according to what they eat. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	Identify, group and classify. Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns. Gather and record data to help in answering questions including from secondary sources of information. Understand that animals, including humans, have offspring which grow into adults. Describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Observe and describe how seeds and bulbs grow into mature plants.	data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support his/her findings. Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans, and some other animals, have skeletons and muscles for support, protection and movement. Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which	and data loggers etc. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support his/her findings. Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey. Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors	complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments. Describe the changes as humans develop to old age. Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments. Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Group and classify things and recognise patterns. Find things out using a wide range of secondary sources of information Use appropriate scientific language and ideas from the national curriculum to explain, evaluate and communicate his/her methods and findings. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans. Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of

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		Describe how plants need water, light and a suitable temperature to grow and stay healthy, and describe the impact of changing these.	poles are facing. Recognise that he/she needs light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the size of shadows change. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore and describe the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter	and insulators, and associate metals with being good conductors. Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey. Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things.	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Recognise that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. (Living things and their habitats