WESTON ST MARY C OF E PRIMARY SCHOOL

SCIENCE CURRICULUM OVERVIEW 2023-24 CYCLE B

	AUTUMN A	AUTUMN B	SPRING A	SPRING B	SUMMER A	SUMMER B	EARLY LEARNING GOAL
Reception	**The Natural World**						
	Begin to comment and asks questions about aspects of their familiar world such as the place where they live or the natural world Begin to understand the effect their behaviour can have on the environment	Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world Begin to understand the effect their behaviour can have on the environment Talks about the features of their own immediate environment and how environments might vary from one another	Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. Developing an understanding of growth, decay and changes over time Shows care and concern for living things and the environment Looks closely at similarities, differences, patterns and change in nature Makes observations of animals and plants and explains why some things occur, and talks about changes Use all their senses in hands-on exploration of natural materials. Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants.	Knows about similarities and differences in relation to places, objects, materials and living things	Talks about the features of their own immediate environment and how environments might vary from one another Makes observations of animals and plants and explains why some things occur, and talks about changes Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Begin to understand the need to respect and care for the natural environment and all living things. Draw information from a simple map.	Understand the effect their behaviour can have on the environment Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Understand the key features of the life cycle of a plant and an animal. Draw information from a simple map.	**<u>The natural world</u>** Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Year 1/2	AUTUMN A	AUTUMN B	SPRING A	SPRING B	SUMMER A	SUMMER B
	The Human Body	**Living Things in their Environments**	**Electricity**	**Plants**	**Materials and Matter**	**Astronomy**
Overview	1. The skeletal and muscular systems, exercise 2. Digestive system and healthy eating 3. Circulatory system, preventing illness 4. germs and disease, 5. Animals and their offspring	1. Habitats: rainforest, desert, meadow and underground habitats. 2. Food chains 3. Oceans and undersea habitats 4. Deep ocean habitats 5. Habitat destruction and damage.	1. Circuits 2. Conductive and non-conductive materials 3. Safety rules.	1. Seeds and bulbs 2. Plants and water 3. Light 4. Temperature 5. Healthy plants	1. Comparing materials 2. Changing materials 3. Concepts of atoms 4. Matter, solids, liquids, gases, measurements	1. Our solar system 2. Orbit and rotation 3. Sun, moon, planets, stars 4. Constellations
Working Scientifically Criteria	• Asking simple questions asking simple questions and recognising that they can be answered in different ways • Identifying and classifying • Using their observations and ideas to suggest answers to questions • Gathering and recording data to answer questions	• Using their observations and ideas to suggest answers to questions • Identifying and classifying • Gathering and recording data to help in answering questions • Observing closely, using simple equipment • Asking simple questions and recognising that they can be answered in different ways	• Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Identifying and classifying • using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions	• Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Identifying and classifying • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions	• Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Identifying and classifying • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions	• Asking simple questions and recognising that they can be answered in different ways • Identifying and classifying • Using their observations and ideas to suggest answers to questions
Vocabulary	Skeleton Joint Muscles Digest Red blood cell Arteries Veins Germs Edward Jenner Louis Pasteur	Alive Dead Habitat Microhabitat Adaptation Food chain Producer Consumer	Electricity Electrical current Electrical shock Circuit Battery Light bulb Switch Wire Conductor Insulator	Plant Root Stem Leaves Seeds Seedling Bulb Germinate Crops	Matter Solid Liquid Atoms Materials Properties Transparent Opaque	Solar system Planets Orbit Rotate Moon Reflect Waxing Waning Constellation
Why this, why now?	Building on their understanding of the human body and senses from cycle A, this year children will look at some systems that operate within our bodies, including the skeletal system, the muscular system, the digestive system and the circulatory system. In this unit, children will have their first look at our digestive system, something they will return to in greater detail in Year 3/4.	Living things and their environments builds on the Year 1/2 cycle A unit, Animals and their Needs. Here, children studied animals and learned that they cannot create their own food, like plants, and must eat other animals or plants to survive. Children are introduced to the disciplinary concept of interdependence; a concept that will be returned to throughout the curriculum as children build their	This unit is a non-statutory unit that we have included in our curriculum in order to teach knowledge that pupils will build upon when they study electricity in Year 3/4. We felt that following the National Curriculum and not teaching electricity until Year 3/4 would miss an opportunity to build some understanding in Key Stage One. We also feel that doing this will avoid cognitive overload when pupils come to	This unit builds directly from the Year 1/2 cycle A unit 'Plants'. Children will look again at what plants are and what they need to grow. In this unit, children will look in more detail at seeds and bulbs. They will learn that germination is the process where a seed begins to grow and changes into a seedling. Children will spend some time comparing plants that receive light and water and those that don't. They will understand that healthy	This unit builds on directly from Year 1/2 Cycle A – Materials and Magnets. Here, pupils learned about the names of everyday materials. They began to consider simple properties of everyday materials and learned about John Dunlop and his work on developing a suitable material for wheels. This unit offers another opportunity to reinforce the names and uses of every day materials, developing the conceptual understanding that all materials are used for a	This unit has been included in our curriculum in addition to the National Curriculum content. It gives pupils an introduction to this fascinating branch of science, before they are required to do so by the National Curriculum in Year 5/6. This unit builds important understanding that scientists learn from each other to make new discoveries. This avoids pupils building a

		understanding over time. Children will learn how habitats provide for basic needs of animals and how the living things within a habitat depend on each other. Simple food chains are introduced in this unit and this knowledge will be built upon later in Year 4 – Ecology.	study this area of science in KS2. This unit introduces electricity, what we use it for, how it behaves and how we must use it safely. Pupils will understand that scientists use symbols to represent components of a circuit. This links to their understanding of using symbols on a map in geography.	plants need light and water to grow. In this unit children will build on their understanding of plants as food from cycle A and will look at how farmers grow plants as crops, which are then harvested and transported to shops. They will consider where the food we eat comes from. Finally, children will show what they have learned by explaining how bulbs and seeds work, using scientific drawing and/or diagrams in their writing to support their answer. This unit will provide foundational prior learning for the Year 3/4 Unit Plants.	purpose based on their properties.	misconception that scientists discover things in a vacuum, just one day stumbling upon new knowledge, and reinforces the idea that scientists are experts who have studied the work of people who came before them. This important disciplinary knowledge will help pupils to recognise the discipline of science and the many branches that lie within it. Pupils will be introduced to the planets of our solar system and will begin to understand orbit and rotation. They will begin to understand why there is life on earth, but not similar life on other planets. Teachers will demonstrate how light from the sun gives us day, and how the rotation of the earth gives us night. Pupils will revisit this later in Year 5/6. They will then study the phases of the moon, recognising that although our view of the moon changes throughout the phases, the moon itself does not change shape.
Key End Points	• Animals need water, food and air to survive. • Our skeleton is made up of bones. • Our muscles help us to move. • Digestion means breaking down the food we eat. • Our bodies take things (nutrients) we need out of the food we eat. • The heart is a muscle inside the body. • The heart pumps blood around the body. • Blood circulates (goes around and around) the body.	• Things can be living, dead or never been alive. • Living things move, grow, need air and reproduce. • Dead things were once alive but are no longer alive. • A habitat is the name given to a place where animals or plants live. • Rainforests are hot and moist. • Deserts are dry and hot or cold. • Some animals live in underground habitats and are adapted to living underground.	• Identify things that use electricity. • A battery is a store of electrical energy. • Electricity is energy that we store and use to make things work. • Electricity can be dangerous. • An electrical circuit is a loop that allows electricity to travel around it. • An electrical circuit must have wires and a battery. • If a circuit is broken, electricity will not be able to flow around it.	• Know there are many different types of plants. • Seeds and bulbs grow into mature plants. • A seed can grow into a flowering plant. • When a seed germinates, it changes from a seed to a seedling. • Some plants create bulbs that live underground, and their leaves grow up through the soil. • Plants need light and water to grow. • Plants often grow well in the Spring when the temperatures get warmer and there is often rain.	• Everyday materials include wood, metal, plastic, glass, brick, rock, paper and cardboard. • Every material has its own properties – these can include being hard, soft, opaque, shiny, bendy. • Materials are used for a purpose depending on their properties. Inventors need to think about the best materials to use for their inventions. • Scientists use a microscope to look closely at very small things. Sometimes,	• The Sun is a star at the centre of our solar system. • There are eight planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. • Planets travel around the Sun. We call this journey an orbit. • As the planets orbit the Sun, they also spin around. We call this rotation. • Night and day occur due to the Earth rotating.

	• Germs can make us unwell. • We take care of our bodies through exercising, eating a healthy diet, keeping clean and resting.	• A food chain describe 'who eats what' within a habitat. • A food chain can consist of producers, consumers and predators.	• Materials that allow electricity to pass through them are conductors. • Materials that do not allow electricity to pass through them are insulators. • Many, but not all, metals conduct electricity.	• Some plants (crops) are grown for food. • Crops are harvested, packaged and transported for people to buy and eat.	materials look very different when we look at using a microscope. • Everything around us is made from tiny building blocks we cannot see called particles. Solids have a definite shape. • The shape of some solids can be changed by squashing, bending, twisting and stretching. • The particles in a solid are tightly packed together and have a strong bond. • Liquids can be poured. • The shape of a liquid depends on the container it is being held in. Water can be a solid and can also be a liquid.	• The Moon orbits the Earth. • The Moon reflects the light of the Sun. • As the Moon's position changes, we can see different parts of it. • A constellation is a group of stars that, when seen from Earth, form a pattern. • People have given constellations names and have told stories that imagine how the constellations were formed. • Astronomers have studied the stars for many years, learning from each other and making new discoveries. • Scientists, including astronomers, study space to find out more about what lies beyond our planet. • The International Space Station orbits earth and allows scientists to find out more about space. • Scientists have sent a rover to Mars to look for signs of life long ago.

Year 3/4	AUTUMN A	AUTUMN B	SPRING A	SPRING B	SUMMER A	SUMMER B
	The Human Body	**Cycles in Nature**	**Light**	**Plants**	**Rocks**	**Forces and Magnets**
Overview	1. The muscular system 2. The skeletal system 3. The nervous system 4. The digestive system 5. Teeth	1. Seasonal cycles and plants 2. Animal migration 3. Life cycles of plants 4. Life cycle of a frog	1. How light travels 2. Shadows 3. Transparent and opaque objects 4. Reflection 5. Mirrors: plane, concave, convex 6. How shadows change throughout the day	1. Functions of plants: roots, stem/trunk, leaves and flowers 2. Life and growth 3. Variety of plants 4. Water transportation 5. Seed formation and dispersal	1. Sorting rocks 2. How rocks are formed 3. Hardness and permeability 4. Fossils 5. Soil	1. Forces 2. Friction 3. Magnets 4. Magnetic poles and fields 5. Law of magnetic attraction 6. Compasses
Working Scientifically Criteria	• Identifying differences, similarities or changes related to simple scientific ideas and processes. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions, • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	• Asking relevant questions and using different types of scientific enquiries to answer them. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using straightforward scientific evidence to answer questions or to support their findings. • Identifying differences, similarities or changes related to simple scientific ideas and processes • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Using results to draw simple conclusions, make predictions for	• Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	• Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.	• Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identifying differences, similarities or changes related to simple	• Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions,

		new values, suggest improvements and raise further questions. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	• Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.		scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.	make predictions for new values, suggest improvements and raise further questions. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.
Vocabulary	Digestion Salivary glands Oesophagus Stomach Small intestine Large intestine Peristalsis Urethra Vitamin Incisor Canine	Cycle Seasonal cycle Deciduous Evergreen Dormant Nutrients Decay Metamorphosis Frogspawn Tadpole Pollen	Light Dark Light source Transparent Opaque Reflect Shadow	Flowers Nutrients Absorb Pollination Dispersal	Geology Permeable Impermeable Fossils Soil Sediment	Force Contact force Magnets Magnetism Magnetic field Magnetic poles Lodestone
Why this, why now?	Using prior knowledge as a springboard to understand, children will return to the knowledge that some aspects of life on earth are too small to see. Building on their disciplinary knowledge, children will learn that some scientists study things under a microscope to see things in more detail than our eyes can see. This unit introduces cells as the building blocks that all living things are made of. Children will learn that cells inside our bodies make up tissue (e.g. muscle), which make up organs, which function in systems within our bodies. This unit explains digestion in much more detail than previously learned, but holds the understanding of cells alongside this, so that children can begin to	Building on their understanding of the environment, plants and animals from previous units, children will learn about cycles in nature. Children will understand that the tilt of the earth creates our seasons. This knowledge will be built upon in the Year 5/6 unit on Astronomy. Building on knowledge from Year 1/2 children will look again at deciduous and evergreen trees. Building on knowledge from Year 1/2 Geography, children will recognise how the seasons and animal migration patterns are interconnected. Children will identify the function of different parts of flowering plants and will explore the part that flowers play in the reproduction of flowering plants. This knowledge will be	In this unit children will learn that light is an energy that enables us to see, and interact with, the world around us. They will learn there are many different sources of light and the light of the sun is vital for life on earth. There are frequent opportunities for observing and investigating how light behaves and how materials interact with light during this unit. Going beyond the requirements of the National Curriculum at this stage, children will have the opportunity to investigate mirrors and how light reflects from plane, concave and convex mirrors. Children should understand that the Earth is rotating on an axis, the sun is not orbiting the earth as it may appear from the sun seeming to move across our sky.	This unit builds on directly from Year 1/2 Plants where pupils learned how to observe and describe seeds and bulbs, found out what plants need to grow and also learned how plants are grown by farmers as crops for people to eat. In this unit, pupils will look more closely at flowering plants, their features and the functions of their features. They will look at specific species including hydrangea and cacti and there is scope for including flowering plants that grow in the local area if relevant. Pupils will learn that the scientific study of plants is called botany and that what we understand about plants comes from contributions from many botanists over the years (disciplinary knowledge). In the first lesson, children will learn about Joseph Banks, the famous	This unit introduces key knowledge of rocks including their appearance and simple physical properties. It introduces key substantive knowledge, particularly recognising different types of rock. The unit also introduces disciplinary geology knowledge and how geologists work to find out more about rocks on earth and beyond. One of the properties pupils will study closely is permeability. They will recognise that understanding the permeability of a particular rock is useful for geologists to make decisions about what that rock should be used for. This thinking draws on understanding from Year 1/2 Materials, where pupils considered the properties of materials and their purpose. For example, slate is a fine grained, metamorphic rock that does not	This unit introduces pupils to simple forces, including magnetism. In Year 1/2, pupils began learning about magnets in the unit 'Materials and Magnets'. They began to learn that magnets attract certain metals, but that not all materials are attracted to magnets. This unit will build substantive science knowledge about how forces, such as gravity and magnetism behave. Moving through the unit, pupils then build on their prior knowledge of magnets from Year 1/2. They will observe how magnets attract or repel each other and attract some materials and not others. They will compare and group materials on the basis of whether they are

	understand there is much going on at microscopic level. The concept of nutrients within foods will be better understood when children know that there are very tiny things we cannot see around us.	revisited in more detail in a later unit studying plants.	Children will understand that the sun's position in our sky determines the shape and size of our shadows. Children will see a time-lapse video of a sundial and will learn that this way of measuring time was used thousands of years ago. (Links to Ancient Greece in History.)	botanist who gathered over 30,000 plant specimens on his travels around the world with Captain Cook (pupils will learn about Captain Cook in Year 5/6 Geography when they Study Australia and New Zealand) and Agnes Arber, who was one of the first women to be recognised for her contribution to botany.	allow water to pass through it, so it is often used for roof tiles.	attracted to a magnet and will identify magnetic Unit Rationale Forces and Magnets (Physics) Year ¾ materials. Pupils then learn about the poles of a magnet and will think about whether two magnets will attract or repel each other, depending on which poles are facing.
Key End Points	• All living things are made up of cells. • Our body requires nutrients to keep healthy. • Nutrients are found in the food we eat. • There are four types of teeth: incisors, canines, pre-molars and molars. • Each tooth type has a function. • The function of body parts in the digestive system. • A balanced diet keeps us healthy. • Essential vitamins and minerals are needed in our body	• The natural environment changes as the seasons change. • We have four seasons: spring, summer, autumn and winter. • We have seasons because the Earth is titled as it makes its journey around the sun. • Plants can change through the seasons with different life cycle stages for each season. • Plants grow, live and reproduce. • Flowering plants produce pollen. • When fertilised, pollen can join with the ovule to grow into a seed and then eventually a new plant. • Some animals migrate when the seasons change. • The life cycle of a frog.	• Light enables us to see things. • Darkness it the absence of light. • The sun is an important source of light for life on earth. • Light travels in straight lines. • Transparent material allows light to pass through it. • Opaque material blocks light from passing through it. • Mirrors reflect light. • Mirrors of different shapes reflect light differently. • A shadow is created when an object blocks the path of light. • The sun appears to move across the sky as our planet revolves on its axis. • Shadows change in size and shape throughout the day.	• Flowering plants all have roots, a stem or trunk, leaves and flowers, but do not all look the same. • A botanist is a scientist who studies plants. • Plants need air, light, water, nutrients from soil and room to grow. • Plants need differing amounts of things in order to thrive. • Water moves from the roots of a plant upwards via the stem. • Plants absorb water from the soil to help them live and grow. • Plants with larger root systems can take more water from the soil. • Pollination is needed for flowering plants to reproduce. • Flowering plants can only produce seeds if pollen is transferred from the anther to the stigma. • Insects are essential for pollination. • Plants spread their seeds in different ways (wind, animals, gravity).	• Rocks have different names and can be sorted into groups according to their properties • There are three main groups of rock called sedimentary, igneous and metamorphic. • Sedimentary rocks are formed by layers of sediment under the sea. • Metamorphic rocks are formed under immense heat and pressure. • Igneous rocks are formed by volcanoes. • Rocks can have small air spaces in them allowing water to pass through them. • If a rock allows water to pass through, it is called permeable rock. • If a rock doesn't allow water to pass through, it is called impermeable rock. • Fossils are formed when rock forms around things that once lived. • Fossils are rare and take thousands of years to form. • Scientists who study fossils are called palaeontologists. • Soil is made from rocks and organic matter. • Organic matter is made from the decaying remains of living things.	• A force is a push or a pull. • Gravity is a force that makes objects fall to the ground. • The effect of a force is to make something move, or change speed, direction or shape. • We can change the amount of force we use when we push and pull things. • Friction is the force between two surfaces. • Rough surfaces create greater friction. • Smooth surfaces create less friction. • Magnetic force is an invisible push or pull force. • When a magnet pushes an object away, we say it repels it. If a magnet pulls an object towards it, we say it attracts it. • A lodestone is a naturally occurring rock that has magnetic properties. • A magnet has two opposite poles: the north and south pole. • A magnetic field is the space around a magnet where the

						magnetic force can be felt. • Larger magnets are often, but not always, the strongest. • Magnetic strength can be weakened over time.

Year 5/6	AUTUMN A	AUTUMN B	SPRING A	SPRING B	SUMMER A	SUMMER B
	The Human Body	**Classification of Living Things**	**Electricity**	**Light**	**Reproduction**	**Evolution**
Overview	1. The heart: circulation of the blood 2. Blood vessels and transport 3. Blood pressure and heart rate 4. Changes to humans as we get older	1. Classifying organisms 2. Cells: Plant and Animal cells 3. Taxonomy 4. Vertebrates 5. Invertebrates	1. Simple series circuits 2. Parallel circuits 3. Voltage 4. Switches 5. Investigation	1. How light travels 2. How we see 3. Shadows and their shapes 4. The colour of light 5. Periscopes	1. Asexual reproduction 2. Sexual reproduction in non-flowering plants 3. Sexual reproduction in flowering plants 4. Reproduction in animals 5. Growth stages	1. Fossils and evolution 2. Inheritance 3. Adaption 4. Charles Darwin 5. Alfred Wallace 6. Mary Anning
Working Scientifically Criteria	• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Identifying scientific evidence that has been used to support or refute ideas or arguments. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and	• Identifying scientific evidence that has been used to support or refute ideas or arguments. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Using test results to make predictions to set up further comparative and fair tests. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graph. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.	• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.

	written forms such as displays and other presentations.		explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.			
Vocabulary	Circulatory system Transport Atria Ventricles Valves Aorta Arteries Veins Capillaries Pulse rate	Classification Organism Animal Plant Taxonomy	No new introduction of vocabulary, reinforcement of vocabulary previously taught: Electrical current Electrical shock Circuit Battery Light bulb Switch Wire Conductor Insulator	Speed of light Mirror Shade Reflection Prism		Palaeontologist Anthropologist Adaptation Variation Evolution Inheritance Natural selection Species Extinct Wallace line Theory
Why this, why now?	During this unit children will build on their knowledge of the circulatory system from Year 1/2. They will learn that William Harvey was a doctor who suggested the heart was at the centre of a circulatory system that moved blood around the body. They will learn that now; scientists and doctors know that the heart and blood vessels are parts of our circulatory system and that our circulatory and respiratory systems keep us alive. We know that our heart is divided into four chambers and blood enters and exits the heart. As the heart beats, it pumps the blood out to the lungs for a new supply of oxygen. Blood vessels, called arteries, carry oxygen-rich blood away from the heart. Blood vessels, called veins, carry blood back to your heart to be pumped to the lungs for more oxygen. Children will learn the importance of each part of the circulatory system including	Building on prior knowledge of classification from Year ½ and Year 3/4, children will study classification in more detail and will understand that scientists look closely at the features of living things when considering their classification. Previously, children have studied vertebrate and invertebrate animals. They have also looked at flowering and non-flowering plants. Within this unit, they will look further at the work of Carl Linnaeus and how he classified plants and animals. They will look at Latin names for plants and animals and will reflect upon the features of living things that led to their classification.	This unit builds on content from Year 1/2 Electricity (non-statutory) and from Year 3/4 Electricity. In the previous two units, children have worked scientifically to make simple circuits and to investigate how electricity behaves within a circuit. Children will have experienced using batteries, wires and bulbs. They will build on their learning in this unit, recapping that electricity carried energy that can be converted into hear, light and energy in our homes, schools and places of work. Children will develop this knowledge to understand that electricity can only travel if there is a complete circuit.	This unit builds on directly from Year 3/4 Light. Going beyond the national curriculum requirements, pupils will also look at prisms and how they split white light into its constituent colours. This will give pupils some prior knowledge when they come to study the different frequencies of light and prisms in KS3 Physics.	This unit covers content which is additional to the National Curriculum. It builds on understanding of how plants and animals reproduce from previous years.	In this unit, children will be introduced to concept of evolution: the process by which living organisms (plants and mammals) develop and change, over time. The substantive concepts of this unit are inheritance, variation, adaptation and evolution by natural selection. Declarative knowledge (knowledge which manifests from the central principle), such as knowledge of biomes, habitats and reproduction, will also be built upon in this unit. The disciplinary knowledge gained in this unit will allow the children to think more like palaeontologists, naturalists, biologist and anthropologists (all types of scientists), by using data and diagrams to deduce and draw logical conclusions. The study of evolution is complex, and it is connected

	arteries, veins and capillaries. Building on the understanding that some parts of our body are too small to see, children will learn that blood is made up of different components. They will learn that the main liquid in our blood is called plasma. Red blood cells contain a substance called haemoglobin which carries the oxygen and carbon dioxide. White blood cells attack and destroy bacteria. Platelets are responsible for clotting the blood. Children will learn about the important role the lungs play in oxygenating blood, a process that is vital for life.					to many elements of science, geography and history. Therefore, we have developed this unit so that children first understand that fossils are evidence of evolution (a change over time), then ensuring the children understand the concepts of inheritance and adaptation, before progressing onto teaching the concept of evolution by natural selection. Cognitive science tells us that starting with concrete understanding will help support more abstract concepts.
Key End Points	• The heart pumps blood around the body. • The left atrium and left ventricle carry oxygenated blood which is pumped around the body. • The right atrium and right ventricle carry deoxygenated blood which is pumped out to the lungs. • All cells in our body need oxygen. • Arteries carry oxygenated blood from the heart to cells. • Veins carry deoxygenated blood from the cells back to the heart. • Heart rate increases when you exercise as cells use more oxygen. • Drugs and poor health can affect how well the heart works.	• Living things are classified into five main kingdoms. • Members of each kingdom share features unique to that group. • The five kingdoms are plants, animals, fungus, protist and prokaryote. • Cells are tiny building blocks that make up all living things. • There are two main types of cell: animal and plant. • Taxonomy is a way of grouping organisms. • Organisms are divided into kingdoms and then further divided into smaller groups. • Organisms are divided into kingdoms, phylum, class, order, family, genus, species. • Vertebrates are classified into five groups: fish, amphibians, reptiles, birds and mammals. • Invertebrates are classified into groups, which include insects, arachnids and molluscs.	• We can control the flow of electricity in a circuit. • Circuit components need electricity to work. • Circuits components turn electrical energy into different energy forms. • Voltage is the pressure from a battery that pushes electricity around a circuit. • The voltage of a battery or the number of batteries can change the brightness/volume of components. • Switches control the flow of electricity in a circuit. • A switch creates makes a circuit complete or incomplete. • Making a gap in a circuit prevents electricity from flowing.	• Light enables us to see by entering our eyes. • Light travels in straight lines. • Some light sources are natural, and some are artificial. • The iris helps the pupil to open and close. • Inside the retina, light rays become electrical signals which are sent to the brain. • Shadows are always the same shape as the object that made the. • The size of shadows can change but the outline shape stays the same as the object, • Light from the sun is made up of the colours of the rainbow, • When light travels through a prism, the glass slows it down and changes its course. • Different colours are slowed down different amounts when going through a prism. • A periscope uses reflects an image out of sight using light and mirrors.	• • Asexual reproduction does not require a male and female and doesn't alter genetic information. • Asexual reproduction is when an organism simply copies itself. • Some plants and some simple animals reproduce asexually. • Most flowering plants reproduce by combining a male and female gamete (pollen and ovule) to make a fertilised egg that grows into an embryo. • The embryo or baby plant is protected inside a seed. • Most flowering plants clothe their seeds with fruit. • Fruit protect and keep seeds moist. • Fruits help with seed dispersal. • Animals can have male cells (sperm produced in testes) or female cells (eggs produced by ovaries). • When an egg is fertilised by sperm it is called a zygote. • The zygote develops into an embryo and then a foetus. • When a foetus can live outside the	• Fossils are the remains of organisms. • A small percentage of life on earth is preserved as a fossil, most organisms decompose. • Fossils provide evidence for evolution. • Inheritance is passing on characteristics from a parent to their offspring. • There are differences in characteristics within an individual species, known as variation. • Evolution is the change in inherited traits. • Animals and plants that adapt well to an environment have more chance of surviving. • Adaptation plays an important part in evolution as species change over time. • Charles Darwin spent years observing, comparing and

					mother, it is born. • Gestation is the period of time that a living thing develops before it is born. • Different animals have different gestation periods. • Different species of animal have different ways of looking after their young.	analysing many specimens of plants and animals. • Animals and plants that adapt well to an environment have more chance of surviving, this is called natural selection. • Alfred Wallace explored the Amazon, collecting species of beetles, butterflies and birds. • He created an imaginary line, known as the Wallace Line.