The National Curriculum states that science teaching should ensure pupils develop:

- their scientific knowledge and conceptual understanding in the specific disciplines of biology, chemistry, and physics
- an understanding of the nature, processes, and methods of science through different types of science enquiries that help them to answer specific questions about the world around them
- a 'toolkit' of the scientific knowledge required to understand the uses and implications of science today and for the future.

The AC+ science curriculum is fully aligned to the National Curriculum. The units of work ensure pupils gain the knowledge they need to discover, understand and begin to explain the world and phenomena around them whilst also ensuring pupils are equipped with the skills and knowledge of processes though which science is achieved and applied. The knowledge builds sequentially in the three disciplines with pupils often revisiting an idea or concept in a later unit. In some units, progression is clear however in others it is within a more complex thread of learning:

Biology	Organisms, ecosystems, and genes
Chemistry	Properties of matter, uses of matter and changing matter
Physics	Forces, energy, and earth physics

The unit order is built in a way which ensures pupils have the knowledge they need to work scientifically in a meaningful way. Rather than pupils learning solely from practical work, they will gain knowledge of the scientific concept first before deepening it through 'working scientifically'. The different types of scientific enquiry have been incorporated across the units and as a result pupils encounter opportunities to take part in: observing over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing and researching using secondary sources.

Pupils are also entitled to understand how science works in their own lives and in the lives of others. Understanding science will support pupils in developing positive attitudes towards the discipline and may mean that pupils are motivated to study science further. Science matters in the world and therefore pupils have the right to be scientifically literate.

ArkCurriculum+

Physics

- **Weather and Seasons**
  Y1 (prior learning)
- **Forces and Magnets**
  Y3, Y5
- **Light**
  Y3, Y6
- **Sound**
  Y4
- **Electricity**
  Y4, Y6
- **Earth and Space**
  Y5

Chemistry

- **Materials**
  Everyday materials - Y1
  Purpose of materials - Y2
  Rocks - Y3
  States of Matter - Y4
  Properties and Changes of Materials - Y5

Please note – yellow is prior KS1 learning

Biology

- **Plants**
  Wild and Garden Plants - Y1
  Bulbs and Growth - Y2
  Basic Needs for Survival - Y3
- **Animals including humans**
  Common Animals - Y1
  Basic Needs for Survival - Y2
  Skeletons and Muscles - Y3
  Digestive System - Y4
  Teeth - Y4
  Growing and Changing - Y5
  Circulatory System - Y6
- **Living Things and their habitats**
  Habitats - Y2
  Conservation - Y2, Y4
  Classification - Y4, Y6
  Life Cycles - Y5
- **Evolution and Inheritance**
  Y6

Year 3, Autumn 1: Skeletons and Muscles *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 3, pupils are taught to identify that animals, including humans, need the right types and amounts of nutrition and that they cannot make their own food. Pupils are also taught to identify that humans and some animals have skeletons and muscles for support, protection and movement. **Sequence:** In Year 1, pupils learnt how to identify a range of different common animals – they should be able to describe the structure of a range of different vertebrate and identify and label basic parts of the human body. Pupils know that animals can be classified as carnivores, herbivores and omnivores. In Year 2 pupils found out that animals obtain their food from plants and other animals – they also looked at and learnt to read simple food chains.	Pupils will acquire the following scientific knowledge throughout this unit of work: • what a human skeleton looks like • what the function of the human skeleton is in terms of movement, support and protection • how bones and muscles work together • the different types of muscle found within our bodies • how skeletons vary between different animals – endoskeletons, exoskeletons and hydrostatic skeletons • what nutrition is and how it is obtained through eating different food groups • how different animals get the nutrition they need
Year 3, Autumn 2: Rocks and Fossils *Strand: Chemistry*	
Rationale	Core Knowledge

Scope: In Year 3, pupils are taught to compare, and group together different kinds of rocks based on their appearance and simple physical properties. Pupils also learn to describe how fossils form and that soils are made from rocks and organic matter.	Pupils will acquire the following scientific knowledge throughout this unit of work: • what rocks are and how they can be classified as either sedimentary, igneous or metamorphic
Sequence: This unit follows on from the Year 1 and Year 2 'Materials' units. Pupils know how to identify, sort and classify materials based on their properties. They also know that the properties of materials are why certain materials are chosen for a specific purpose and that some properties cannot be identified without investigating the material in question. Pupils apply this knowledge to support them in understanding rocks, fossils and soils. This unit is deliberately placed alongside the 'Stone Age' history unit so links can be made between subjects.	• the properties of different types of rocks – in particular, durability and permeability • how different rocks can be used and how those uses are based upon their properties • what fossils are and what they can tell us about the past • who Mary Anning was • the process of fossilisation and the different types of fossil • what soil is, what soil is made from and whether all soils are the same
Year 3, Spring: Light and Shadows *Strand: Physics*	
Rationale	Core Knowledge
Scope: In Year 3, pupils are taught to recognise that they need light to see things and that dark is the absence of light. They are also taught to notice that light is reflected from surfaces, to recognise that light from the sun can be dangerous and that there are ways we can protect our eyes from the sun. In addition, pupils are taught to recognise that shadows are formed when the light from a light source is blocked by an opaque object and to find patterns in the way that shadows change.	Pupils will acquire the following scientific knowledge throughout this unit of work: • there are different sources of light and those sources can be natural or man-made • who Thomas Edison was and why he is considered significant • darkness is the absence of light and light allows us to see things • light is reflected from surfaces

Sequence: This is first time pupils have looked at light since Year 1 and they know that the hours of daylight change throughout the year, depending on the season. Pupils also studied materials in Year 1 and Year 2: the properties and uses of them. Earlier in Year 3, pupils looked at whether certain materials were magnetic and within this unit they will investigate a new property – whether certain materials are transparent, translucent or opaque. This means the knowledge within this unit is also building pupils' knowledge of materials (chemistry).	• some objects are opaque, some are transparent, and some are translucent • shadows are formed when light is blocked by an opaque object • position, shape and size of a shadow can be varied • light is dangerous and we can take steps to protecting our ourselves from the Sun • the different uses of mirrors

Year 3, Summer 1: Plants – Needs for Survival *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 3, pupils should be taught to identify and describe the functions of the different parts of flowering plants and that pupils should be taught to explore the requirements of plants for life and growth and investigate the way in which water is transported in plants. The National Curriculum also states that pupils should explore the part that flowers play in the life cycle of flowering plants.	Pupils will acquire the following scientific knowledge throughout this unit of work: • what a plant needs to grow • the impact of fertiliser on a growing plant • plants have roots to absorb water and nutrients but also to anchor the plant in the ground

Sequence: This unit builds on the previous plant units in Year 1 and Year 2. In Year 1 pupils were taught to identify and name a variety of common wild and garden plants and to identify and describe the basic structure of a variety of common flowering plants. Pupils examined familiar plants, identified them, grouped them and were able to draw diagrams showing the parts of different plants and trees. They know how plants change over time – that leaves fall off trees and buds appear and open. In Year 2, pupils identified a variety of plants in their habitats and described their basic needs. They also found out that plants play an important part in a food chain. Pupils observed and described how seeds and bulbs grow into mature plants and found out that plants need water, light and a suitable temperature to grow healthily. This unit has been deliberately placed alongside the geography 'Biomes and Climate Zones' unit so that links can be made between the subjects.	• plants have a stem as it is needed to support the plant and transport water from the roots • plants have leaves because they play an important part in how a plant produces its own food • that flowering plants produce flowers as an important part of their lifecycle • the stages in the lifecycle of a flowering plant
Year 3, Summer 2: Forces and Magnets *Strand: Physics*	
Rationale	Core Knowledge

Scope: In Year 3, pupils should be taught to compare how things move on different surfaces and notice that some forces need contact between two objects whilst magnetic forces can act at a distance. Pupils also need to observe how magnets attract or repel each other and attract some materials but not others, and describe magnets as having two poles predicting whether two magnets will attract or repel each other depending on which wat the poles are facing. In	Pupils will acquire the following scientific knowledge throughout this unit of work: • what forces are in terms of pushes and pulls • that gravity and friction are forces • how objects move on different surfaces • what a magnet is and what different magnets look like

addition, pupils should be taught to compare and group together a variety of everyday materials based on whether they are attracted to a magnet and to identify some magnetic materials.	• that a magnet has two poles • how magnets react to each other • materials can be magnetic or non-magnetic • how to investigate whether a material is magnetic • how magnets are used in real-life scenarios to make some tasks much easier
Sequence: This is the second physics unit in Year 3 however it is the first time pupils have studied forces and magnets. This unit does not directly build on a previous unit but is expanding pupils' understanding of how objects can be classified in different ways – expanding their vocabulary with the terms magnetic and non-magnetic. Pupils will not study magnets again in depth during Key Stage 2 but will revisit forces and study them in much more depth in Year 5. This unit has been deliberately placed alongside the history 'Ancient Greeks' unit as the Ancient Greeks are credited as discovering magnetite, a naturally occurring magnetic mineral.	

Year 4, Autumn 1: Teeth and Digestion *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 4, pupils should be taught to describe the simple functions of the basic parts of the digestive system in humans and to identify the different types of teeth in humans and their simple functions.	Pupils will acquire the following scientific knowledge throughout this unit of work: • the names of the different types of human teeth and the function of each type

Sequence: In Year 3, pupils learned about the skeleton, muscles and nutrition. This unit adds a further layer to pupils' knowledge of the human body – human teeth and the human digestive system. In addition to this, across a range of biology units, pupils have learnt about the classification of animals into different groups and they also know what carnivores, herbivores and omnivores are. Pupils also add a further layer to their understanding of animal bodies by discovering the different types of teeth animals have.	• the importance of looking after teeth and what can happen if we do not look after our teeth • how eating and drinking can damage teeth over time • that not all animals have the same teeth • the teeth that animals have greatly depend on whether that animal is a carnivore, an omnivore or an herbivore • the different organs that make up the digestive system • how the digestive system functions as a whole system
Year 4, Autumn 2: States of Matter *Strand: Chemistry*	
Rationale	Core Knowledge
Scope: In Year 4, pupils should be taught to compare and group materials together, according to whether they are solids, liquids or gases. Pupils should also observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius. In addition to this, pupils should identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Pupils will acquire the following scientific knowledge throughout this unit of work: • what the three states of matter are and the properties of each one. • the processes of melting and freezing and how these processes affect the properties and state of a substance • some of the conditions that can affect melting and freezing for example temperature • what the processes of evaporation and condensation are • what the water cycle is • where the processes of evaporation and condensation fit into the water cycle • the importance of the water cycle for plants and animals
Sequence: Pupils have classified and sorted materials according to their properties from EYFS, through Key Stage 1 and in Year 3. For example, pupils have been taught that materials can be hard, soft, shiny, dull, waterproof, absorbent, opaque, transparent, translucent, or magnetic. Pupils have also considered and investigated how the properties of different materials mean that those materials have certain	

uses. In Year 3, pupils compared and grouped different kind of rocks based on their appearance and physical properties. Through this unit pupils add the terms solid, liquid and gas to their understanding of how objects can be grouped and classified	

This unit has been placed before the geography unit 'Amazon: Rivers and Rainforests' so that pupils begin that unit with an understanding of the water cycle.	

Year 4, Spring: Classification and Environments *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 4, pupils should be taught to recognise that living things can be grouped in a variety of ways and to explore and use classification keys to help group, identify and name a variety of living things within their local and wider environment. Pupils should also be taught to recognise that environments can change and that this can sometimes pose dangers to living things. Within this unit, a statement from the Year 4 'animals, including humans' thread is taught alongside the classification of animals within habitats. Pupils are also taught to construct and interpret a variety of food chains, identifying producers, predators and prey.	Pupils will acquire the following scientific knowledge throughout this unit of work: • a habitat is the natural home of an organism • all living organisms display the seven characteristics of life • organisms within a habitat or ecosystem are interdependent • the relationships between organisms can be represented by food chains and food webs • the difference between a vertebrate and an invertebrate • vertebrates can be classified into five different groups

Sequence: This is the second biology unit for Year 4. This unit sees pupils revisit habitats and living things. Pupils apply their knowledge of common plants and animals from Year 1, the needs that animals have, food chains and habitats from Year 2 and the needs that plants have and the difference between a vertebrate and an invertebrate from Year 3. Earlier in Year 4, pupils also revisited the idea of carnivores, herbivores, and omnivores. In addition, pupils also bring with them additional knowledge from Year 2: the environment, how environments can change and the ways in which environments can be protected from. This unit has been deliberately placed alongside the 'Amazon: Rivers and Rainforests' unit so that links can be made between the two subjects.	• invertebrates can be classified into seven different groups • characteristics of animals supports us with classification • we can use a key to identify and classify animals • plants can be classified as flowering or non-flowering • non-flowering plants can be classified into three groups • who Libbie Hyman was and why she is considered significant • that environments can change due to natural causes and through the actions of humans and that these changes can be both positive and negative • the organisms and habitats found within their own local environment and how these are changing

Year 4, Summer 1: Sound*Strand: Physics*	
Rationale	Core Knowledge
Scope: In Year 4, pupils should be taught to identify how sounds are made, associating some of them with something vibrating and to recognise that vibrations from sounds travel through a medium to the ear. Pupils should also be taught to find patterns between the pitch of a sound and features of the object that made it in addition to finding patterns between the volume of a sound and the strength of the vibrations that produced it. Pupils should also be taught to	Pupils will acquire the following scientific knowledge throughout this unit of work: • sound is a form of energy which is produced when something vibrates • different instruments make sound in different ways • sound travels in waves • how sound travels through solids, liquids and gases

recognise that sounds get fainter as the distance from the sound source increases.	• what makes up the inside of our ears • how we hear and how we can protect our hearing • volume is the intensity of sound and is determined by the strength of vibrations • pitch is how high or low a sound is and is controlled by the speed of vibrations • the distance we are from a sound impacts the volume at which we hear the sound
Sequence: This is the first time that pupils have studied sound in science and will be the only time they study sound in science in both Key Stage 1 and Key Stage 2. Previous knowledge that this unit builds upon is that of solids, liquids and gases, Pupils discovered the difference between solids, liquids and gases earlier in Year 4 and within this unit, they find out how sound can travel through them. Understanding the formation of matter within each will support pupils in accessing this content. This unit also builds on pupils' knowledge of the human body and how it works – in particular their knowledge of one of the five senses – hearing. In addition, this unit will link to pupils' work within music and from this subject, pupils may bring with them an understanding of the terms pitch and volume as well as an understanding of how instruments produce sounds.	
Year 4, Summer 2: Electricity *Strand: Physics*	
Rationale	Core Knowledge

Scope: In Year 4, pupils should be taught to identify common appliances that run on electricity. It states that they should also be taught to construct a simple series electrical circuit, identifying, and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Pupils should also be able to 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, and to recognise that a switch opens and closes a circuit whilst associating this with whether or not a lamp lights in a simple series circuit. In addition, pupils should be taught to recognise some common conductors and insulators and to associate metals with being good conductors. **Sequence:** This unit is the first time pupils study electricity however, prior to this unit, pupils have studied two other forms of energy: light and sound. This unit therefore adds to their understanding of different forms of energy including how they are formed or produced, how they travel and how they behave. The knowledge in this unit also builds on pupils' understanding of the properties of materials and the different ways that materials can be grouped or classified – adding the terms conductor and insulator to pupils' vocabularies.	Pupils will acquire the following scientific knowledge throughout this unit of work: • electricity is a form of energy which powers many things we use everyday • an electric current is a flowing charge of electricity • there are renewable and non-renewable methods of producing electricity • some appliances use electricity and others do not • it is important to be safe and sensible around electricity • what a circuit is and which components are needed to construct a circuit • the difference between a complete and incomplete circuit • how the brightness of a bulb can change within a circuit • the function of a simple switch within a circuit • which materials are conductors and insulators of electricity and how to investigate this property
Year 5, Autumn 1: Earth and Space *Strand: Physics*	
Rationale	Core Knowledge
Scope: In Year 5, pupils should be taught to describe the movement of the Earth and other planets relative to the sun in the solar system. They should also be taught to describe the movement of the moon relative to the Earth and describe the sun, Earth and	Pupils will acquire the following scientific knowledge throughout this unit of work: • what a sun is, what a solar system is, what a galaxy is and how our own solar system fits in to the wider universe

moon as approximately spherical bodies. In addition, they should be	• which planets make up our own solar system

taught to use the idea of the Earth's rotation to explain why we experience day and night and why the sun appears to move across the sky during the day. **Sequence:** This unit is the only required unit of study focussed on Earth and space in primary school. Pupils may have studied space in EYFS but aside from this, the links to previous learning are in Year 1 when pupils study seasons and in Year 3 pupils study light in science and biomes and climate zones in geography. From Year 1, pupils bring with them an understanding that here in the United Kingdom we experience four different seasons across the year and that the average hours of daylight change across the year. From Year 3, pupils bring with them a simple understanding of why we have night and day and how shadows change across the course of a day. From the geography unit, pupils have an understanding that the same four seasons are not experienced everywhere across the world. The next unit in Year 5 will look at forces and in particular, gravity. This unit will support pupils in accessing that future content.	• knowledge of the inner and outer planets of the solar system including order, size, what the planet consists of, atmosphere, temperature, rotation and orbit • what the relationship is between the Earth and the sun in relation to night and day • what a time zone is and how the different time zones are arranged across the world • what the relationship is between the Earth and the sun in relation to seasons • how daylight hours change across the year in different places across the world • what a moon is and what the phases of our own moon are • the heliocentric and geocentric theories of the solar system • the flat and spherical Earth theories • the views of various astronomers over time: Aristotle, Ptolemy, Alhazen, Tusi, Copernicus and Galileo
Year 5, Autumn 2: Forces *Strand: Physics*	
Rationale	Core Knowledge

Scope: In Year 5, pupils should be taught to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. They should also be taught to identify the effects of air resistance, water resistance and friction, that act between moving surfaces and recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	Pupils will acquire the following scientific knowledge throughout this unit of work: • the names of a range of different forces – gravity, friction, water resistance, air resistance, upthrust and magnetism • which forces are pushes and which are pulls • the difference between contact and non-contact forces • the difference between balanced and unbalanced forces

Sequence: Pupils were first introduced to forces in Year 3 where they learned about forces as pushes and pulls and were introduced to both gravity and friction in the simplest terms. Pupils were also introduced to magnets and magnetism as a force. This unit does not cover magnets in any depth however pupils already know what magnets are, that they have two poles, how they behave towards each other, that magnetism can act without contact and that some materials are magnetic whilst others are not. Pupils also bring to this unit an understanding of the solar system therefore when the solar system, the Earth, the sun, the moon and Jupiter are referred to in this unit, it is expected that pupils will be able to access this content.	• who Isaac Newton was and the role he played in helping us to understand forces • what 'matter' is, the difference between mass and weight and how we measure both • how friction works in the world around us • how air resistance works in the world around us • who Galileo Galilei was and the role he played in helping us to understand air resistance • how upthrust (or buoyancy) and water resistance act in water • what 'density' is and the relationship between density and whether an object is able to float • what levers, pulleys and gears are and what they can do to the strength and size of a force

Year 5, Spring: Properties and Changes of Materials *Strand: Chemistry*	
Rationale	Core Knowledge
Scope: In Year 5, pupils should be taught to compare and group together everyday materials on the basis of their properties. They should also know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from that solution. Pupils should use knowledge of solids, liquids and gases to decide how mixtures might be separated and should be taught to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials. In addition, pupils should 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 usually irreversible. Within this, pupils should understand the changes associated with burning and the action of acid on bicarbonate of soda.	Pupils will acquire the following scientific knowledge throughout this unit of work: • materials can be grouped based on their properties including hardness, solubility, transparency and conductivity • what we mean by 'dissolving' and whether certain substances dissolve in water to form a solution • whether the rate at which a substance dissolves can be altered by heat or stirring • mixtures can be sometimes be separated by sieving, filtering and/or evaporation • the difference between a reversible and an irreversible change • examples of reversible and irreversible changes
Sequence: Pupils studied materials, their properties and their uses in Year 1 and Year 2. In Year 3 they built upon this knowledge through studying the properties of rocks and their uses. In further units of study in Year 3 and Year 4, pupils discovered and investigated the following additional properties of materials: opaque, transparent, translucent, magnetic, non-magnetic, conductor and insulator. In addition, pupils bring an understanding of solids liquids and gases and this knowledge of changing states is key to accessing this unit. This unit has been deliberately placed alongside	• the impact of heating and cooling on a range of different materials • what happens when something burns • how new materials are usually formed after an irreversible change • the chemists and scientists who have created new materials that we use in our everyday lives

the 'Asia: Earthquakes and Volcanoes' unit so that links can be made between the two subjects.	

Year 5, Summer 1: Lifecycles *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 5, pupils should be taught to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. They should also be taught to describe the life process of reproduction in some plants and animals. **Sequence:** Prior to this unit, pupils may have studied simple animal lifecycles in EYFS and will know about the lifecycle of a flowering plant from Year 3. In Year 2 pupils discovered that animals have offspring and in Year 4 pupils discovered that reproduction is one of the seven characteristics of life.	Pupils will acquire the following scientific knowledge throughout this unit of work: • the difference between sexual and asexual reproduction • the process of pollination and the role it plays in the lifecycle of a flowering plant • how plants reproduce both sexually and asexually • how different animals produce offspring • how lifecycles differ between animals • how and why gestation periods differ between animals • what a naturalist is and why both Jane Goodall and David Attenborough are considered significant

Year 5, Summer 2: Growing Old *Strand: Biology*	
Rationale	Core Knowledge

Scope: In Year 5, pupils should be taught to describe the changes as humans develop as they grow old. **Sequence:** This unit builds on pupils' knowledge of the human body and its processes and functions. Prior to this unit, pupils have studied the skeletal, muscular and digestive systems. Pupils also know that humans, like all organisms, have a lifecycle in which growing and reproduction both play an integral part.	Pupils will acquire the following scientific knowledge throughout this unit of work: • humans grow and change throughout the human lifecycle • how to place the stages of the human lifecycle on a timeline • the stages of development in babies and children • an introduction to what puberty is • how humans change from adulthood to old age • the changes experienced in old age

Year 6, Autumn 1: Light and Perception *Strand: Physics*	
Rationale	Core Knowledge
Scope: In Year 6, pupils should be taught to recognise that light appears to travel in straight lines and to use this idea to explain that objects are seen because they give out or reflect light into the eye. They should also be taught to 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 and to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them **Sequence:** This is the second time pupils will have studied light itself. Knowledge from the Year 3 'Light' unit plus knowledge of other types of energy (such as sound from Year 4) will support pupils in accessing the content in this unit. Pupils also studied solids, liquids, and gases in Year 4 and Earth and Space in Year 5, and	Pupils will acquire the following scientific knowledge throughout this unit of work: • that we see when light is reflected from an object into our eyes • light travels (or appears to travel) in straight lines • the parts of the human eye and how the eye works • reflection is when light bounces off a surface and changes the direction of the ray of light • the angle of incidence is always equal to the angle of reflection • how light behaves in water (refraction) • clear white light is made of 7 colours • the colours we see are known as the visible spectrum • light waves can be absorbed, transmitted or reflected to create colour, white or black

the knowledge gained in those units will also support them in their understanding.	• how shadows are formed and that they are the same shape as the object that cast them • what light pollution is and its impact on both humans and animals

Year 6, Autumn 2: Classification of Species *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 6, pupils should be taught to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences. It states that this classification should include micro- organisms, plants and animals and that pupils should give reasons for classifying plants and animals based on specific characteristics.	Pupils will acquire the following scientific knowledge throughout this unit of work: • who Carl Linnaeus was and how his work influenced the classification of living things • how to use the Linnaean System of classification • the six kingdoms used in classification are: kingdom archaea, Kingdom Bacteria, Kingdom Protista, Kingdom Fungi, Kingdom Plantae and Kingdome Animalia • how to classify vertebrates and invertebrates • how to classify plants – beginning with vascular and non-vascular • what microorganisms are and how they can be classified • the positive and negative impacts of microorganisms • how habitats are important for the conservation of species
Sequence: This unit is designed to expand pupil's knowledge of living things and their habitats by exploring classification in detail. Pupils build on their knowledge from Year 4 and will begin the unit by learning about the significance of Carl Linnaeus' pioneering work in classification. This will outline the rest of the unit as the pupils explore vertebrates (fish, amphibians, reptiles, birds and mammals), invertebrates (such as insects, spiders, snails and worms) and plants by classifying them using the Linnaean System. This unit has been deliberately placed alongside the 'Global	

Challenges' unit so that links can be made between the two subjects.	

Year 6, Spring: Evolution and Inheritance *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 6, pupils should be taught to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. They should also be taught to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical	Pupils will acquire the following scientific knowledge throughout this unit of work: • why the information fossils give us is so important • who Mary Anning was and why her findings are significant

to their parents In addition, pupils should be taught to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• living things have adapted or changed over time to be able to survive in their environments • why animals need to adapt to their environments • natural selection is when living things are better adapted to their environments and have a greater chance of survival • evolution takes a very long time and animals do not simply chose to evolve
Sequence: Prior to this unit, pupils studied rocks and fossils in Year 3. Their knowledge of fossils as prehistoric organisms will support them accessing the content in this unit. Pupils also know, from across Key Stage 1 and 2, that reproduction is a characteristic of life and that organisms produce offspring that resemble the parents and then grow into adults.	

	• who Charles Darwin and Alfred Wallace were and why they are considered significant • why living things produce offspring of the same kind • why offspring vary and are not identical to their parents

Year 6, Summer 1: Electricity and Circuits *Strand: Physics*	
Rationale	Core Knowledge
Scope: In Year 6, pupils should be taught to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. They should also be taught to compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches change. In addition, pupils should be taught to use recognised symbols when representing a simple circuit in a diagram.	Pupils will acquire the following scientific knowledge throughout this unit of work: • electricity is a type of energy produced when electrons move around very quickly and create a current • electricity can be produced by generators which can be powered by renewable and non-renewable sources • electrical components in a circuit can be represented by symbols • the symbols for a bulb, cell, battery, buzzer, motor and switch (on and off) • what happens to the components in a circuit if a component is added to the circuit or a component is changed • the difference between a parallel and a series circuit • we measure electricity in volts (V)
Sequence: Prior to this unit, pupils studied electricity in Year 4. Pupils know some of the ways that electricity can be produced and can describe some of the appliances in our homes (and schools) that require electricity to function. Pupils understand the dangers presented by electricity and how we can stay safe. They also know how to construct a simple circuit and have investigated different components.	

Year 6, Summer 2: Circulation and Lifestyle *Strand: Biology*	
Rationale	Core Knowledge
Scope: In Year 6, pupils are taught to identify and name the main parts of the human circulatory system, and to describe the functions of the heart, blood vessels and blood. They are also taught to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function and to describe the ways in which nutrients and water are transported within animals, including humans.	Pupils will acquire the following scientific knowledge throughout this unit of work: • the circulatory system consists of the heat, the lungs and the systemic system • the role the heart play in the circulatory system • the names of the different parts of the human heart • human blood consists of plasma, white blood cells and platelets and red blood cells • the role the lungs play in the circulatory system • how heart rate differs before and after exercise • how nutrients are moved around the body by the circulatory system after they are broken down by the digestive system • how diet, exercise and lifestyle impact the heat and the body • what drugs are (legal and illegal) and the impact of different drugs on the human body
Sequence: This unit builds on pupils' knowledge of the human body and its processes and functions. Prior to this unit, pupils have studied the skeletal, muscular and digestive systems. Pupils know that nutrients from food are absorbed into the bloodstream as part of the digestive process and they also know the importance of a healthy lifestyle for the human body in terms of nutrition, exercise and hygiene.	