Willingham Primary School Science Intent, Coherence, Scope and Rigor

Substantive and Declarative Knowledge			Disciplinary and Procedural Knowledge	
Biology Pupils will understand: • What it means to be 'living' and how to sustain life. • The physical structure and workings of organisms (plants and animals). • The life cycle of organisms including specific stages and changes during their lifetime. • How sexual reproduction results in variation • The interaction and interdependence of the organisms within ecosystems. • How organisms are classified. • How adaptations to habitats and variations have led to evolution	**Chemistry** Pupils will understand that: • All substances are made of materials which can be grouped in different ways. How to differentiate between chemical and physical changes using the particle model. Materials look continuous on a big scale but are made of small parts. Pupils will be able to describe • Simple separation techniques at a high level based on particle model • The effect temperature has on the state of materials. The water cycle and rock cycle.	**Physics** Pupils will be able to: • Identify forces as (invisible) push and pulls. Pupils will understand: • How changes in forces can cause changes in motion and shape. • That sound requires particles. • That light is a method of transferring energy that does not require particles. • That electricity is a method of transferring energy. • That opposites (north-south, positive-negative) attract and likes repel. Earth's place in the solar system and how it is used as a measure of time.	**Working Scientifically** Pupils will: • recognize the importance of following the scientific method and conducting fair tests. • **Develop experimental skills and strategies**: including suggesting a hypothesis using observations, plan basic **valid** investigations to answer their questions, identify different variables, make and record observations in appropriate formats. • **Be use analysis and evaluation** to translate data from one form to another, present reasoned explanations including relating data to hypothesis • **Use correct terminology including**: accuracy, precision, repeatability, reproducibility, random and systematic error. Recognise and use SI units. • Understand how scientific theories have developed over time (e.g. geocentric model).	**Numeracy and Mathematical Links:** Pupils will be able to: • Present data in tables and diagrams. • Construct and interpret charts (bar, line and pie charts) and histograms. • Translate data from tables into graphs (scatter graphs). • Use measuring tools and scales to accurately record data (distance, mass and volume, temperature). Recognize and use SI units of measure, including Newton

• How to live a healthy lifestyle.				
			Oxford Owl Disciplinary Knowledge Strands **The disciplinary concepts we focus on in KS1 and KS2 are:** **DC1:** Ask relevant questions and use different types of scientific enquiries to answer them. **DC2:** Plan simple scientific enquiries. **DC3:** Use a range of equipment. **DC4:** Make careful observations. **DC5:** Record findings using simple scientific language, drawings, and labelled diagrams. **DC6:** Present data. **DC7:** Use results to draw simple conclusions and make predictions. Report on findings from enquiries, including oral and written explanations. **DC8:** Use models to represent a scientific concept or process.	

Curriculum Map

Year Group	Term	Unit/topic
EYFS	Autumn 1	
	Autumn 2	
	Spring 1	Bears and Owls : Habitats, hibernations, lifecycles, survival, characteristics (e.g. nocturnal, adaptations to catch prey).
	Spring 2	Emergency Services and Doctors/nurses: what it takes to look after the body Understanding our bodies: using agreed words to name external body parts, different between male and female bodies and how their bodies have changed since birth .
	Summer 1	Lifecycles and visit to Wicken Fen Butterfly Lifecycle (linked back to owls and bears and all about us) habitats of minibeasts Keeping healthy / The human body Looking at how heart works and learning correct vocabulary of body parts and organs.
	Summer 2	Importance of maintaining healthy hygiene and diet to support a healthy lifecycle.
From Year 1-6, pupils follow the Oxford Owl Curriculum		

Year Group	Term	Cycle B (2025-26)	Cycle A (2026-27, Y2,4,6 only)	2026-27 (Y1,3,5 only) 2027-28 (all year groups)
Year 1	Autumn 1	Year 1 Unit 3 Amazing Animals **Disciplinary concepts:** DC1, DC4, DC5 **Substantive concepts:** Animals can be grouped into fish, amphibians, reptiles, birds, and mammals by their structural features. Animals can be grouped into carnivores, herbivores, and omnivores by the food they eat. The human body is made of many different parts; each has its own function. Humans have five senses: sight, hearing, touch, taste, and smell. Each sense uses different body parts.		Year 1 Unit 1 Everyday Materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Objects can be made from a variety of materials. Everyday materials include wood, plastic, glass, metal, water, and rock. Different materials have different physical properties.
	Autumn 2	Year 1 Unit 3 Amazing Animals (continued)		Year 1 Unit 2 Autumn and Winter **Disciplinary concepts:** DC1, DC4, DC5, DC6, DC7 **Substantive concepts:** There are four seasons—autumn, winter, spring, and summer. Different types of weather are associated with different seasons. Day length varies in different seasons.
	Spring 1	Year 2 Unit 2 Animals and Survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:**		Year 1 Unit 3 Amazing Animals **Disciplinary concepts:** DC1, DC4, DC5 **Substantive concepts:** Animals can be grouped into fish, amphibians, reptiles,

		Animals, including humans, have offspring which grow into adults. The basic needs of animals, including humans, for survival include water, food, and air. To remain healthy it is important for humans to exercise, eat the right amounts of different types of food, and have good hygiene.		birds, and mammals by their structural features. Animals can be grouped into carnivores, herbivores, and omnivores by the food they eat. The human body is made of many different parts; each has its own function. Humans have five senses: sight, hearing, touch, taste, and smell. Each sense uses different body parts.
	Spring 2	Year 1 Unit 1 Everyday Materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Objects can be made from a variety of materials. Everyday materials include wood, plastic, glass, metal, water, and rock. Different materials have different physical properties.		Year 1 Unit 3 Amazing Animals (continued)
	Summer 1	Year 2 Unit 1 Uses of materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Everyday materials include wood, metal, plastic, glass, brick, rock, paper, and cardboard. The material chosen to make an object or device is based on the suitability of its properties. The shapes of solid objects made from some materials can be changed by squashing,		Year 1 Unit 4 Spring and Summer **Disciplinary concepts:** DC4, DC5, DC6, DC7 **Substantive concepts:** There are four seasons—autumn, winter, spring, and summer. Different types of weather are associated with different seasons. Day length varies in different seasons.

		bending, twisting, and stretching.		
	Summer 2	Year 2 Unit 4 Protecting the environment **Disciplinary concepts:** DC1, DC4, DC5, DC6, DC7 **Substantive concepts:** Humans and their activities pose dangers to wildlife, through housing, traffic, waste, and pollution. Where possible materials should be recycled to reduce landfill and pollution. To ensure a sustainable supply of water and energy, these resources must be used efficiently. Trees are a source of food, fuel, oxygen, and timber. Trees provide a habitat for many animals.		Year 1 Unit 5 Plants **Disciplinary concepts:** DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** A plant is a living thing. The main parts of a plant are the stem, leaves, and roots. Plants can be grown by people or grow in the wild.
Year 2	Autumn 1	Year 1 Unit 3 Amazing Animals **Disciplinary concepts:** DC1, DC4, DC5 **Substantive concepts:** Animals can be grouped into fish, amphibians, reptiles, birds, and mammals by their structural features. Animals can be grouped into carnivores, herbivores, and omnivores by the food they eat. The human body is made of many different parts; each has its own function. Humans have five senses: sight, hearing, touch, taste, and	Year 1 Unit 5 Plants **Disciplinary concepts:** DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** A plant is a living thing. The main parts of a plant are the stem, leaves, and roots. Plants can be grown by people or grow in the wild.	Year 2 Unit 1 Uses of materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Everyday materials include wood, metal, plastic, glass, brick, rock, paper, and cardboard. The material chosen to make an object or device is based on the suitability of its properties. The shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching.

		smell. Each sense uses different body parts.		
	Autumn 2	Year 1 Unit 3 Amazing Animals (continued)	Year 1 Unit 2 Autumn and Winter **Disciplinary concepts:** DC1, DC4, DC5, DC6, DC7 **Substantive concepts:** There are four seasons—autumn, winter, spring, and summer. Different types of weather are associated with different seasons. Day length varies in different seasons.	Year 2 Unit 2 Animals and Survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Animals, including humans, have offspring which grow into adults. The basic needs of animals, including humans, for survival include water, food, and air. To remain healthy it is important for humans to exercise, eat the right amounts of different types of food, and have good hygiene.
	Spring 1	Year 2 Unit 2 Animals and Survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Animals, including humans, have offspring which grow into adults. The basic needs of animals, including humans, for survival include water, food, and air. To remain healthy it is important for humans to exercise, eat the right amounts of different types of food, and have good hygiene.	Year 2 Unit 5 Plants and Growth **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Seeds and bulbs grow into mature plants. Plants need water, light, and a suitable temperature to grow and stay healthy.	Year 2 Unit 3 Habitats **Disciplinary concepts:** DC1, DC4, DC5, DC7, DC8 **Substantive concepts:** Things can be living, dead, or never been alive. Plants and animals live in a variety of habitats, including microhabitats. Most living things live in habitats to which they are suited. Habitats provide for the basic needs of different kinds of animals and plants. The living things in a habitat depend on each other for survival. Animals obtain their food from plants and other animals. This can be shown using a simple food chain.

	Spring 2	Year 1 Unit 1 Everyday Materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Objects can be made from a variety of materials. Everyday materials include wood, plastic, glass, metal, water, and rock. Different materials have different physical properties.	Year 1 Unit 4 Spring and Summer **Disciplinary concepts:** DC4, DC5, DC6, DC7 **Substantive concepts:** There are four seasons—autumn, winter, spring, and summer. Different types of weather are associated with different seasons. Day length varies in different seasons.	Year 2 Unit 3 Habitats (continued)
	Summer 1	Year 2 Unit 1 Uses of materials **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Everyday materials include wood, metal, plastic, glass, brick, rock, paper, and cardboard. The material chosen to make an object or device is based on the suitability of its properties. The shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching.	Year 2 Unit 3 Habitats **Disciplinary concepts:** DC1, DC4, DC5, DC7, DC8 **Substantive concepts:** Things can be living, dead, or never been alive. Plants and animals live in a variety of habitats, including microhabitats. Most living things live in habitats to which they are suited. Habitats provide for the basic needs of different kinds of animals and plants. The living things in a habitat depend on each other for survival. Animals obtain their food from plants and other animals. This can be shown using a simple food chain.	Year 2 Unit 4 Protecting the environment **Disciplinary concepts:** DC1, DC4, DC5, DC6, DC7 **Substantive concepts:** Humans and their activities pose dangers to wildlife, through housing, traffic, waste, and pollution. Where possible materials should be recycled to reduce landfill and pollution. To ensure a sustainable supply of water and energy, these resources must be used efficiently. Trees are a source of food, fuel, oxygen, and timber. Trees provide a habitat for many animals.
	Summer 2	Year 2 Unit 4 Protecting the environment **Disciplinary concepts:** DC1, DC4, DC5, DC6, DC7 **Substantive concepts:**	Year 2 Unit 3 Habitats (continued)	Year 2 Unit 5 Plants and Growth **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:**

		Humans and their activities pose dangers to wildlife, through housing, traffic, waste, and pollution. Where possible materials should be recycled to reduce landfill and pollution. To ensure a sustainable supply of water and energy, these resources must be used efficiently. Trees are a source of food, fuel, oxygen, and timber. Trees provide a habitat for many animals.		Seeds and bulbs grow into mature plants. Plants need water, light, and a suitable temperature to grow and stay healthy.
Year 3	Autumn 1	Year 3 Unit 2 Rocks and Fossils **Disciplinary concepts:** DC3, DC4, DC5, DC7 **Substantive concepts:** Rocks can be grouped by their appearance and simple physical properties. Fossils are formed when things that have lived are trapped within rock. Soils are made from rocks and organic matter.		Y3 Unit 1 Skeletons, muscles and nutrition **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** Animals, including humans, need the right types and amount of nutrition. Animals cannot make their own food; they get nutrition from what they eat. Humans and some other animals have skeletons and muscles for support, protection, and movement.
	Autumn 2	Year 3 Unit 5 Forces and Magnets **Disciplinary concepts:** DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Objects experience different amounts of friction on different surfaces. Some forces need contact between two objects, but		Year 3 Unit 2 Rocks and Fossils **Disciplinary concepts:** DC3, DC4, DC5, DC7 **Substantive concepts:** Rocks can be grouped by their appearance and simple physical properties. Fossils are formed when things that have lived are trapped within rock.

		magnetic forces can act at a distance. Some materials are magnetic, meaning they are attracted to a magnet. Magnets have two poles. Magnets can attract or repel each other, depending on which poles are facing each other.		Soils are made from rocks and organic matter.
	Spring 1	Year 4 Unit 1 Teeth and Digestion **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** The human digestive system contains a number of organs including the mouth, stomach, oesophagus, and intestines. The main types of human teeth are incisors, canines, molars, and premolars. Each type of tooth looks different and has a different function.		Year 3 Unit 3 Light and Shadows **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Light is needed to see things. Darkness is the absence of light. Light is reflected from surfaces. Light from the sun can be dangerous, and eyes should be protected from sunlight. Shadows are formed when the light from a light source is blocked by an opaque object. There are patterns in the way that the size of shadows change.
	Spring 2	Year 3 Unit 3 Light and Shadows **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Light is needed to see things. Darkness is the absence of light. Light is reflected from surfaces. Light from the sun can be dangerous, and eyes should be protected from sunlight.		Year 3 Unit 3 Light and Shadows (continued)

		Shadows are formed when the light from a light source is blocked by an opaque object. There are patterns in the way that the size of shadows change.		
	Summer 1	Year 3 Unit 3 Light and Shadows (continued)		Year 3 Unit 4 Plants – Needs for survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Flowering plants have roots, a stem/trunk, leaves, and flowers. Plants require air, light, water, nutrients from the soil, and room to grow. Water is transported within plants in vessels. Flowers play an important role in the life cycle of flowering plants, including pollination, seed formation, and seed dispersal.
	Summer 2	Year 3 Unit 4 Plants – Needs for survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Flowering plants have roots, a stem/trunk, leaves, and flowers. Plants require air, light, water, nutrients from the soil, and room to grow. Water is transported within plants in vessels. Flowers play an important role in the life cycle of flowering plants, including pollination,		Year 3 Unit 5 Forces and Magnets **Disciplinary concepts:** DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Objects experience different amounts of friction on different surfaces. Some forces need contact between two objects, but magnetic forces can act at a distance. Some materials are magnetic, meaning they are attracted to a magnet. Magnets have two poles.

		seed formation, and seed dispersal.		Magnets can attract or repel each other, depending on which poles are facing each other.
Year 4	Autumn 1	Year 3 Unit 2 Rocks and Fossils **Disciplinary concepts:** DC3, DC4, DC5, DC7 **Substantive concepts:** Rocks can be grouped by their appearance and simple physical properties. Fossils are formed when things that have lived are trapped within rock. Soils are made from rocks and organic matter.	Y3 Unit 1 Skeletons, muscles and nutrition **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** Animals, including humans, need the right types and amount of nutrition. Animals cannot make their own food; they get nutrition from what they eat. Humans and some other animals have skeletons and muscles for support, protection, and movement.	Year 4 Unit 1 Teeth and Digestion **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** The human digestive system contains a number of organs including the mouth, stomach, oesophagus, and intestines. The main types of human teeth are incisors, canines, molars, and premolars. Each type of tooth looks different and has a different function.
	Autumn 2	Year 3 Unit 5 Forces and Magnets **Disciplinary concepts:** DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Objects experience different amounts of friction on different surfaces. Some forces need contact between two objects, but magnetic forces can act at a distance. Some materials are magnetic, meaning they are attracted to a magnet. Magnets have two poles. Magnets can attract or repel each other, depending on which poles are facing each other.	Year 4 Unit 2 States of matter **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Materials can be grouped according to whether they are solids, liquids, or gases. Materials can change state when they are heated or cooled—this happens at different temperatures for different materials. Evaporation and condensation are key processes in the water cycle. Rate of evaporation is affected by temperature.	Year 4 Unit 2 States of matter **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Materials can be grouped according to whether they are solids, liquids, or gases. Materials can change state when they are heated or cooled—this happens at different temperatures for different materials. Evaporation and condensation are key processes in the water cycle. Rate of evaporation is affected by temperature.

	Spring 1	Year 4 Unit 1 Teeth and Digestion **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** The human digestive system contains a number of organs including the mouth, stomach, oesophagus, and intestines. The main types of human teeth are incisors, canines, molars, and premolars. Each type of tooth looks different and has a different function.	Year 4 Unit 5 Electricity **Disciplinary concepts:** DC3, DC4, DC5, DC7 **Substantive concepts:** The brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit. Switches can be used to turn components on and off in a circuit. Circuit symbols are used when representing a simple circuit in a diagram.	Year 4 Unit 3 Living Things and Environments **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** Living things can be grouped in a variety of ways. Classification keys can be used to help group, identify and name living things. Environments can change and this can sometimes pose dangers to living things
	Spring 2	Year 3 Unit 3 Light and Shadows **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Light is needed to see things. Darkness is the absence of light. Light is reflected from surfaces. Light from the sun can be dangerous, and eyes should be protected from sunlight. Shadows are formed when the light from a light source is blocked by an opaque object. There are patterns in the way that the size of shadows change.	Year 4 Unit 3 Living Things and Environments **Disciplinary concepts:** DC1, DC3, DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** Living things can be grouped in a variety of ways. Classification keys can be used to help group, identify and name living things. Environments can change and this can sometimes pose dangers to living things	Year 4 Unit 3 Living Things and Environments (continued)
	Summer 1	Year 3 Unit 3 Light and Shadows (continued)	Year 4 Unit 3 Living Things and Environments (continued)	Year 4 Unit 4 Sound **Disciplinary concepts:** DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Sounds are made when something vibrates.

				Vibrations from sounds travel through a medium to the ear. The pitch of a sound is affected by how quickly an object vibrates. The volume of a sound is determined by the strength of the vibrations that produced it. Sounds get fainter as the distance from the sound source increase.
	Summer 2	Year 3 Unit 4 Plants – Needs for survival **Disciplinary concepts:** DC1, DC4, DC5, DC7 **Substantive concepts:** Flowering plants have roots, a stem/trunk, leaves, and flowers. Plants require air, light, water, nutrients from the soil, and room to grow. Water is transported within plants in vessels. Flowers play an important role in the life cycle of flowering plants, including pollination, seed formation, and seed dispersal.	Year 4 Unit 4 Sound **Disciplinary concepts:** DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Sounds are made when something vibrates. Vibrations from sounds travel through a medium to the ear. The pitch of a sound is affected by how quickly an object vibrates. The volume of a sound is determined by the strength of the vibrations that produced it. Sounds get fainter as the distance from the sound source increase.	Year 4 Unit 5 Electricity **Disciplinary concepts:** DC3, DC4, DC5, DC7 **Substantive concepts:** The brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit. Switches can be used to turn components on and off in a circuit. Circuit symbols are used when representing a simple circuit in a diagram
Year 5	Autumn 1	Year 5 Unit 1 Earth and Space **Disciplinary concepts:** DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** Earth and other planets in the Solar System orbit around the Sun. The Moon orbits round Earth. The Sun, Earth, and the Moon are approximately spherical bodies.		Year 5 Unit 1 Earth and Space **Disciplinary concepts:** DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** Earth and other planets in the Solar System orbit around the Sun. The Moon orbits round Earth. The Sun, Earth, and the Moon are approximately spherical bodies.

		The rotation of Earth results in day and night, and the apparent movement of the Sun across the sky.		The rotation of Earth results in day and night, and the apparent movement of the Sun across the sky.
	Autumn 2	Year 5 Unit 2 Forces **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Unsupported objects fall towards Earth because of the force of gravity acting between Earth and the falling object. Air resistance, water resistance, and friction act between moving surfaces. Some mechanisms including levers, pulleys, and gears allow a smaller force to have a greater effect.		Year 5 Unit 2 Forces **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Unsupported objects fall towards Earth because of the force of gravity acting between Earth and the falling object. Air resistance, water resistance, and friction act between moving surfaces. Some mechanisms including levers, pulleys, and gears allow a smaller force to have a greater effect.
	Spring 1	Year 6 Unit 1 Light **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Light travels in straight lines. Objects are seen because they give out or reflect light into the eye. We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. As light travels in straight lines shadows have the same shape as the objects that cast them.		Year 5 Unit 3 Materials **Disciplinary Concepts:** DC2, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** The properties of materials include their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. The particular uses of everyday materials, including metals, wood, and plastic depend on their properties. Some materials will dissolve in liquid to form a solution. Mixtures can be separated using filtering, sieving, and evaporating.

				Dissolving, mixing, and changes of state are reversible changes. Changes that result in the formation of new materials are not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
	Spring 2	Year 5 Unit 3 Materials **Disciplinary Concepts:** DC2, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** The properties of materials include their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. The particular uses of everyday materials, including metals, wood, and plastic depend on their properties. Some materials will dissolve in liquid to form a solution. Mixtures can be separated using filtering, sieving, and evaporating. Dissolving, mixing, and changes of state are reversible changes. Changes that result in the formation of new materials are not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		Year 5 Unit 3 Materials (continued)
	Summer 1	Year 5 Unit 3 Materials (continued)		Year 5 Unit 4 Life cycles **Disciplinary concepts:** DC1, DC4, DC5

				Substantive concepts: There are differences in the life cycles of mammals, amphibians, insects, and birds. Plants and animals produce offspring by the life process of reproduction.
	Summer 2	Year 5 Unit 4 Life cycles **Disciplinary concepts:** DC1, DC4, DC5 **Substantive concepts:** There are differences in the life cycles of mammals, amphibians, insects, and birds. Plants and animals produce offspring by the life process of reproduction.		Year 5 Unit 5 Growing older **Disciplinary concepts:** DC1, DC5, DC7 **Substantive concepts:** Humans experience a number of changes as they develop to old age.
Year 6	Autumn 1	Year 5 Unit 1 Earth and Space **Disciplinary concepts:** DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** Earth and other planets in the Solar System orbit around the Sun. The Moon orbits round Earth. The Sun, Earth, and the Moon are approximately spherical bodies. The rotation of Earth results in day and night, and the apparent movement of the Sun across the sky.	Year 6 Unit 3 Evolution and Inheritance **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** Living things have changed over time. Fossils provide information about living things that inhabited Earth millions of years ago. Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Year 6 Unit 1 Light **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Light travels in straight lines. Objects are seen because they give out or reflect light into the eye. We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. As light travels in straight lines shadows have the same shape as the objects that cast them.

	Autumn 2	Year 5 Unit 2 Forces **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7, DC8 **Substantive concepts:** Unsupported objects fall towards Earth because of the force of gravity acting between Earth and the falling object. Air resistance, water resistance, and friction act between moving surfaces. Some mechanisms including levers, pulleys, and gears allow a smaller force to have a greater effect.	Year 6 Unit 3 Evolution and Inheritance (continued)	Year 6 Unit 2 Classification **Disciplinary concepts:** DC1, DC4, DC6, DC7 **Substantive concepts:** Living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants, and animals.
	Spring 1	Year 6 Unit 1 Light **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** Light travels in straight lines. Objects are seen because they give out or reflect light into the eye. We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. As light travels in straight lines shadows have the same shape as the objects that cast them.	Year 6 Unit 4 Electricity **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** The brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit. Switches can be used to turn components on and off in a circuit. Circuit symbols are used when representing a simple circuit in a diagram.	Year 6 Unit 3 Evolution and Inheritance **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** Living things have changed over time. Fossils provide information about living things that inhabited Earth millions of years ago. Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
	Spring 2	Year 5 Unit 3 Materials **Disciplinary Concepts:**	Year 6 Unit 2 Classification **Disciplinary concepts:**	Year 6 Unit 3 Evolution and Inheritance (continued)

		DC2, DC3, DC4, DC5, DC6, DC7 **Substantive concepts:** The properties of materials include their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. The particular uses of everyday materials, including metals, wood, and plastic depend on their properties. Some materials will dissolve in liquid to form a solution. Mixtures can be separated using filtering, sieving, and evaporating. Dissolving, mixing, and changes of state are reversible changes. Changes that result in the formation of new materials are not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	DC1, DC4, DC6, DC7 **Substantive concepts:** Living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants, and animals.	
	Summer 1	Year 5 Unit 3 Materials (continued)	Year 6 Unit 5 Circulatory System **Disciplinary concepts:** DC2, DC3, DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** The main parts of the human circulatory system include the heart, blood vessels, and blood. Nutrients and water are transported within animals, including humans, in the blood.	Year 6 Unit 4 Electricity **Disciplinary concepts:** DC1, DC2, DC3, DC4, DC5, DC7 **Substantive concepts:** The brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit. Switches can be used to turn components on and off in a circuit.

			Diet, exercise, drugs, and lifestyle can all affect the way our bodies function.	Circuit symbols are used when representing a simple circuit in a diagram.
	Summer 2	Year 5 Unit 4 Life cycles **Disciplinary concepts:** DC1, DC4, DC5 **Substantive concepts:** There are differences in the life cycles of mammals, amphibians, insects, and birds. Plants and animals produce offspring by the life process of reproduction.	Year 5 Unit 5 Growing older **Disciplinary concepts:** DC1, DC5, DC7 **Substantive concepts:** Humans experience a number of changes as they develop to old age.	Year 6 Unit 5 Circulatory System **Disciplinary concepts:** DC2, DC3, DC4, DC5, DC6, DC7, DC8 **Substantive concepts:** The main parts of the human circulatory system include the heart, blood vessels, and blood. Nutrients and water are transported within animals, including humans, in the blood. Diet, exercise, drugs, and lifestyle can all affect the way our bodies function.

Vocabulary

Below is a table of vocabulary progression through the year groups and the overarching units of work. The words should be taught in the year group that they appear in but should be used and revisited throughout the science curriculum.

		Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6

	Plants	deciduous, evergreen, tree, leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem, oak, holly, willow, birch, chestnut, conker, daisy, buttercup, rose, daffodil, fruit seeds, bulbs, water, light, suitable temperature, grow, healthy, germinate, decompose	air, light, water, nutrients, soil, reproduction, transportation, dispersal, pollination, flower,	
	Animals, including humans	fish, reptiles, mammals, birds, amphibians (+examples of each) herbivore, omnivore, carnivore, leg, arm, elbow, head, ear, nose, back, wings, beak survival, water, air, food, adult, baby, offspring, kitten, calf, puppy, exercise, hygiene	movement, muscles, bones, skull, nutrition, skeletons mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, herbivore, carnivore, canine, incisor, molar	foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty circulatory, heart, blood vessels, veins, arteries, oxygenated, deoxygenated, valve, exercise, respiration
	Living Things and their habitats	living, dead, habitat, energy, food chain, predator, prey, woodland, pond, desert	vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, snails, slugs, worms, spiders, insects, environment, habitats	mammal, reproduction, insect, amphibian, bird, offspring classification, vertebrates, invertebrates, microorganisms, amphibians, reptiles, mammals, insects
	Evolution and Inheritance			fossils, adaptation, evolution, characteristics, reproduction, genetics
Chemistry		Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
	Materials	wood, plastic, glass, paper, water, metal, rock, hard, soft, bendy, rough, smooth hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, opaque, transparent brick, paper, fabrics, squashing, bending, twisting, stretching elastic, foil	solid, liquid, gas, evaporation, condensation, particles, temperature, freezing, heating, precipitation	hardness, solubility, transparent, opaque, translucent, magnetic, filter, evaporation, dissolving, mixing, thermal conductor, thermal insulator, electrical conductor, electrical insulator

	Rocks		fossils, soils, sandstone, granite, marble, pumice, crystals, sedimentary, metamorphic, igneous, absorbent/porous, durable, permeable, impermeable	
Physics		Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
	Seasonal Changes	summer, spring, autumn, winter, sun, day, moon, night, light, dark		
	Light		light, shadows, mirror, reflective, dark, reflection, light source, cast	
	Forces and magnets	magnetic, force, contact, attract, repel, friction, poles, push, pull		air resistance, water resistance, friction, gravity, Newton, gears, pulleys, lever, force, pivot (fulcrum)
	Sound		volume, vibration, wave, pitch, tone, speaker	
	Electricity		cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, brightness	
	Earth and space	Earth, Sun, Moon, axis, rotation, day, night, phases of the moon, star, constellation, waxing, waning, full, new, year, month,		

Working Scientifically	What? How? Why? similar, different, best and worst, change, plan, look, biggest and smallest, compare, sort and group observe, change, slowly, quickly, describe, name, identify, label, record, measure, bigger and smaller, pattern, notice, cycle, predict	gradually, identify, observe, recognise, investigate, record, units, table, fair, evidence, research, length, observations, prediction similarities, differences, research and source, scientists, discovery, process, cycle, measurements, conclude, evaluate, rank, plan, vary, keep the same/constant, bar graph, table, tally	classify, interpret, pattern, relationship, prediction, analyse, interpret, conclude, evaluate, rank, variable, constants, control, repeat, key, relationship, line graph hypothesis, constants, evaluate, conclude, categorise, database, enquiry, support, refute, degree of trust, scatter graph