Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores

Statutory requirements

- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

7 / 7 ~ [14] [12]	Year 1	Summer 2	Animals	Animal Parts
E1 / 1	Identifying animal parts	B	F	Different animal groups have some common body parts.
E2 / 2	Grouping animals	B	D	Fish, amphibians, reptiles, birds, invertebrates and mammals are groups of animals.
E3 / 3	Sorting and pattern seeking	D	F	
D1 / 4	Our pets	D	E	Living things need to be cared for in order for them to survive.
				Living things need water, food, warmth and shelter.
D2 / 5	Carnivore, herbivore, omnivore	B	D	Carnivores eat other animals (meat), herbivores eat plants and omnivores eat other animals and plants.
		F		
D3 / 6	Class pet	A	B	Question words include what, why, how, when, who and which.
		E		Living things need to be cared for in order for them to survive.
				Living things need water, food, warmth and shelter.
				Note: Could link to aspects of 'Innovate' (earthworm investigation)
D4 / 7	Observation and simple tests	B	C	Simple tests can be carried out by following a set of instructions.
		F		
IS1 / 8		D		* Identification & classification focus
IS2 / 9		D		* Identification & classification focus
IS3 / 10		C		* Investigation
IS4 / 11		F		* Gather & record data focus
IS5 / 12		E		* Report and conclude focus

Plants

Statutory requirements

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees.

5 ~ [5]	Year 1	Summer 1	Plants	Plant Parts
E1 / 1	Changes in plants	B	F	Changes happen to plants across the four seasons.
				The local environment is a habitat for living things and can change during the seasons.
E2 / 2	Identifying plants	D		
E2 / 3	Plant parts & diagrams	B	F	The basic plant parts include root, stem, leaf, flower, petal and fruit.
D1-2 / 4	Seeds and bulbs	B	C	With support, use simple equipment to measure and make observations.
	Investigating leaves	E		
D3-4 / 5	Importance of plants	A		Question words include what, why, how, when, who and which.
	My plant	B	E	Talk about what they have done and say, with help, what they think they have found out.

Everyday materials

Statutory requirements

Pupils should be taught to:

7 ~ [7]	Year 1	Autumn	Materials	Everyday Materials
E1 / 1	Introducing natural materials	B	D	A material is what an object is made from.
				Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.

6 / 6 ~ [12] [12]	Year 1	Spring	Weather	Seasonal Changes
E1 / 1	Experiencing the season	B	E	The four seasons are spring, summer, autumn and winter.
				Certain events and weather patterns happen in different seasons.
				The local environment is a habitat for living things and can change during the seasons.
E2 / X	Deciduous & evergreen trees	B	D	Plants are living things.
				Trees are large, woody plants and are either evergreen or deciduous. Trees that lose their leaves in the autumn are called deciduous trees.
E3 / 2	Seasonal changes in deciduous trees	B	E	Deciduous trees change across the four seasons.
E4 / 3	Seasonal changes in deciduous animals	B	E	Changes happen to animals across the four seasons.
E5 / 4	What is the weather?	B	E	Weather is a physical process.
				Different types of weather include sunshine, rain, hail, wind, snow, fog, lightning, storm and cloud.
				The weather can change daily and some weather types are more common in certain seasons, such as snow in winter.
D1 / 5	Day Length	B	E	Day length is the number of hours of daylight.
				Day length is longer in the summer months and shorter in the winter months in the UK.
D2 / 6	Sun's rays	B	C	Using sun cream and wearing a hat helps you to stay safe in the Sun.
		E		Simple tests can be carried out by following a set of instructions.
D 4A / 7	Measuring and recording temperature	B	F	Simple equipment can be used for measuring weather including windsocks, thermometers and rain gauges.
D 5 / 8	Measuring precipitation	A	B	Note: Rain gauges required in advance (can make own).
		F		
D 3A / 9	Measuring and recording the wind	B	C	Wind strength is measured by the Beaufort Scale.
		F		Simple equipment can be used for measuring weather including windsocks, thermometers and rain gauges.
D 6 / 10	Weather forecasting	A	E	Talk about what they have done and say, with help, what they think they have found out.
IS1-3 / 11	Let's investigate focus: Asking and	A	C	
	answering questions	F		
IS4-5 / 12	Let's investigate focus: Asking and	E		
	answering questions			

Pupils should be taught to:

- distinguish between an object and the material from which it is made
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties.

E2 / 2	Human made materials	A	B	A material is what an object is made from.
				Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.
E3 / 3	Identification and classification	B	F	With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
				Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.
D1 / 4	Properties of materials	B	D	A property is a quality a material has.
		E		Materials with different properties have different uses.
				Materials have different properties, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or not waterproof.
D2 / 5	Venn diagrams	F		With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
D3 / 6	Testing & recording materials properties	C	E	Simple tests can be carried out by following a set of instructions.
		F		A property is a quality a material has.
				Materials with different properties have different uses.
EP / 7	Investigation: Absorbent	C		* Simple test focus

Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Sommer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

Living things and their habitats

Statutory requirements

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including micro-habitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

7 / 7 ~ [14] [13]	Year 2	Autumn	Living Things	Habitats
E1 / 1	Living and non-living things	D		Living things are those that are alive. Dead things are those that were once living but are no longer. Some things have never been alive.
				The seven life processesof living things are moving, breathing, using their senses, feeding, getting rid of waste, having offspring and growing.
E2 / 2	Identifying plants and animals in a habitat	B	D	A habitat is a place where plants and animals live.
				A microhabitat is a very small habitat.
E3 / 3	Why do these animals live in a habitat?	F		A timeline is a linear diagram.
				A life cycle is a circular diagram.
				An animal's habitat must provide water, food, air and shelter for the animal to survive.
				Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals (meat). Carnivores eat other animals (meat).
D1 / 4	Creating food chains	A	E	Food chains show how living things depend on one another for food. Plants always start a food chain because they are producers that make their own food using sunlight.
D2 / 5	Animal adaptations	B	C	Prey animals have different ways to avoid capture by predators.
		E		
D3 / 6	Plant adaptations	B	C	Plants have adaptations that protect them from being eaten by animals.
		E		
IS1 / 7	Investigation	A	E	A habitat is a place where plants and animals live.
				Local habitats include parks, woodland and gardens. Habitats beyond the locality include beaches, rainforests, deserts, oceans and mountains.
				A habitat provides food, water, shelter and space.
IS2 / 8	Investigation	D		A habitat is a place where plants and animals live.
				A microhabitat is a very small habitat.
IS3 / 9	Investigation	A	F	Food chains show how living things depend on one another for food. Plants always start a food chain because they are producers that make their own food using sunlight.
IS4 / 10	Investigation	D		Prey animals have different ways to avoid capture by predators.
IS5 / 11	Investigation	B	E	Explain how animals, including humans, need water, food, air and shelter to survive.
				Describe a range of local habitats and habitats beyond their locality (beaches, rainforests, deserts, oceans and mountains) and what all habitats provide for the things that live there.
EP (O) / 12	Bird watching	A	D	An animal's habitat must provide water, food, air and shelter for the animal to survive.
				Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals (meat). Carnivores eat other animals (meat).
				* Set up observation area
EP (O) / 13	Bird watching	B	D	An animal's habitat must provide water, food, air and shelter for the animal to survive.
		E		Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals (meat). Carnivores eat other animals (meat).
				* Observation / classification focus

Uses of everyday materials

Statutory requirements

Pupils should be taught to:

- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

6 / 6 ~ [6]	Year 2	Spring 1	Materials	Uses of Materials
E1 / 1	Exploring everyday materials	B	E	Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.
E2 / 2	Shaping materials	E		Some objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay.
E3 / 3	Bending, stretching, twisting and squashing	B	C	Some objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay.
D1 / 4	Link properties to uses	A	E	A material's physical properties make it suitable for particular purposes, such as glass for windows and brick for building walls.
				Objects can be made from one material, more than one material or different materials with similar properties.
D2 / 5	Testing paper	C	F	Results from an investigation can be used to answer a question.
D3 / 6	The problem with materials	B	C	Questions can help us find out about the world.
		E		Conservation activities include reducing, reusing and recycling, composting, saving water and saving energy.
				Conservation activities protect the environment for people in the future.

Plants

Statutory requirements

Pupils should be taught to:

- observe and describe how seeds and bulbs grow into mature plants

6 / 6 ~ [6] +1 short	Year 2	Spring 2	Plants	Plant Survival
IK / 1	Plants and their parts	A		Many plants grow from seeds or bulbs.
				Plants have roots, stems, leaves, flowers and fruit.
E1 / 2	Exploring seasonal plants	B	D	A bulb contains a tiny plant and all the food needed to grow.
E2 / 3	Germination investigation	B		A seed is a small object made by a plant that can grow into a new plant.
				Seeds need water and warmth to start growing (germinate).
				As the plant grows bigger, it develops leaves and flowers.
				The flowers of plants produce seeds.
				The flowers on some plants develop into fruit that contains seeds.
				Seeds also form inside cones.
D1 / 4	Where do plants like to grow?	E		Results from an investigation can be used to answer a question.
D2 / 5 +1	What do plants need to grow?	A	C	Plants need water, light and a suitable temperature to grow and stay healthy.
		E		

- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

D3 / 6	Unusual plants	A		Questions can help us find out about the world.

5 / 5 ~ [5]	Year 2	Summer 1	Animals / Humans	Human Survival
D2a / 1	Exercise challenge	A	C	Tests can be carried out by following a set of instructions.
		E		A prediction is a best guess at what might happen in an investigation.
E1 / 2	Human life cycle	F		Humans grow from baby to toddler to child to teenager to adult to elderly.
				A timeline is a linear diagram.
				A life cycle is a circular diagram.
E2 / 3	Human needs	A	F	Humans need water, food, air and shelter to survive.
D1 / 4	Nutrition	A		A healthy lifestyle includes exercise, a balanced diet, good quality sleep and personal hygiene.
D3 / 5	Good hygeine routines	A		Risks associated with an unhealthy lifestyle include illness, obesity, tooth decay and mental health problems.
combine				Germs are microorganisms that can cause illness in humans.
				Germs get into the body through the eyes, nose or mouth.
				Washing hands with soap and clean running water helps humans avoid getting ill and spreading germs to others.
D4 / 6	Why should we use soap	A	C	Tests can be carried out by following a set of instructions.
combine		E		A prediction is a best guess at what might happen in an investigation.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

7 / 7 ~ [7]	Year 2	Summer 2	Animals / Humans	Animal Survival
E1 / 1	Introducting invertebrates	D		A habitat is a place where plants and animals live.
				A microhabitat is a very small habitat.
				Invertebrates are animals without a backbone.
				Invertebrates include worms, molluscs, crustaceans, insects, arachnids and myriapods.
E2 / 2	Microhabitats	D	F	A habitat is a place where plants and animals live.
				A microhabitat is a very small habitat.
E3 / X	Animal needs	A		An animal's habitat must provide water, food, air and shelter for the animal to survive.
				Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals (meat).
				Carnivores eat other animals (meat).
E4 / 3	Microhabitat food chains	A		Food chains show how living things depend on one another for food. Plants always start a food chain because they are producers
				that make their own food using sunlight.
E5 / 4	Human impacts	A	E	Humans can damage or destroy habitats. Their actions can harm and even kill living things.
				Humans can help habitats. They can create new habitats, make habitats safer or provide food and shelter for living things.
D1 / 5	Life process of reproduction	A	D	Describe the basic life cycles of some familiar animals (egg, caterpillar, pupa, butterfly; egg, chick, chicken; spawn, tadpole, froglet, frog).
D2 / 6	Life cycles	D		Animals are born or hatch from eggs. The young grow and change until they become adults that can reproduce.
combine				A life cycle can be drawn as a circular diagram.
D3 / 6	Observing insect life cycles	A	B	Animals are born or hatch from eggs. The young grow and change until they become adults that can reproduce.
combine		C	E	A life cycle can be drawn as a circular diagram.
D4 / 7	Season changes	A	E	Pollination is the process where pollen is transferred from the male stamen to the female carpel of another flower of the same type.
				Questions can help us find out about the world and can be answered in different ways.
				Seeds can be dispersed by wind, animals, explosion and water.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement.

7 / 7 ~ [14] [12]	Year 3	Autumn	Animals / Humans	Animal Nutrition and the Skeletal System
E1 / 1	Asking questions	A		Nutrition is the life process of making or finding food to eat.
				Humans must eat food and drink water to gain the nutrients they need to survive.
				Humans are omnivores, so they can eat both plant parts and animals.
				Questions can help us find out about the world and can be answered in different ways.
E2 / 2	Balanced and nutritious ~ breadth ŧ depth	A	D	Humans get nutrition from what they eat.
				It is important to have a balanced diet made up of the main food groups, including: proteins, carbohydrates, fruit and vegetables, dairy products and alternatives, and fats and spreads.
				Humans stay hydrated by drinking water.
E3 / 3	Investigating fatty foods ~ breadth ŧ depth	B	C	A prediction is a best guess for what might happen in an investigation based on some prior knowledge.
		E		
E4 / 4	Animal diets	D		In the wild, animals' diets change over the year as the seasons change due to certain foods becoming available or unavailable.
D1 / 5	Bones	A	E	Humans have a skeleton and muscles for movement, support and protecting organs.
D2 / 6	Joints	B	C	A joint is where two or more bones meet and connect.
		E		Parts of the human body can bend easily because the skeleton has lots of small bones and joints.
D3 / 7	Muscles	A	E	Muscles are soft tissue made up of many stretchy fibres.
				Muscles allow us to move, breathe and digest food.
				The three main types of muscle in the human body are skeletal, cardiac and smooth.
D4 / 8	Skeleton Types	A	D	Vertebrates are animals with a spine.
				Invertebrates are animals without a spine.
				All vertebrates have an endoskeleton meaning their skeleton is found inside their body.
				Invertebrates have an exoskeleton or no skeleton.
IS1 / 9	Investigation	A		* Scientific question focus.
IS2 / 10	Investigation	C		* Investigation focus
IS3 / 11	Investigation	B	C	* Observation focus
		F		* Gather / record data focus
IS4 / 12	Investigation	E	F	* Report / conclude focus

6 / 6 ~ [12] [11]	Year 3	Spring	Forces	Forces and Magnets
E1 / 1	Points of contact	A		Some push and pull forces require direct contact.
E2 / 2	Friction forces	B	E	Friction is a force between two surfaces as they move across each other.
				Friction slows down a moving object.
				Friction produces heat, which can be a problem.
E3 / 3	Exploring force meters	B	C	Take measurements in standard units, using a range of simple equipment.
		E		
E4a / 4	Measuring and recording frictional forces	B	C	Friction is a force between two surfaces as they move over each other.
				Smooth surfaces usually generate less friction than rough surfaces.
				Friction slows down a moving object.
E4b / 5	Measuring and recording frictional forces	E	F	Data can be used to provide evidence to answer questions.
				* Report / conclude focus
D1 / 6	Magnetic forces	B	C	Magnetism is a non-contact force.
		E		Magnets have two poles (north and south). Opposite poles (north and south) attract each other.
				Like poles (north and north, or south and south) repel each other.
D2 / 7	Exploring Magnets	B	E	There are different types of magnets including bar magnets, horseshoe magnets and floating magnets.
				Magnets have different strengths.
D3 / 8	Magnetic fields ~ breadth ŧ depth	B		Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
D4 / 9	Grouping and sorting magnetic materials	D		Magnetic materials are attracted to magnets.
				Iron, cobalt, nickel and steel are magnetic metals. Other metals and materials such as plastic, paper, glass and wood are not magnetic.
D5 / 10	Magnetic Earth ~ breadth ŧ depth	E	F	* Report / conclude focus
D6 / 11	Use of magnets ŧ friction ~ breath ŧ depth	A	E	Questions can help us find out about the world and can be answered in different ways.

Light

Statutory requirements

Pupils should be taught to:

5 ~ [5] +2 short	Year 3	Summer 1	Light	Light and Shadows
E1 / 1	Exploring light	B	C	Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based
		E		on evidence collected, beginning to identify next steps or improvements.
D1 / 1	Exploring shadows	B	C	A shadow is the same shape as the object that casts it because light travels in straight lines.
Note: these two sessions could potentially be combined into		E		Shadows always appear on the opposite side of the light source.
into a focus day (one session am and one session pm for shadow changes) to support unit coverage.				
E2 / 2	Identify and classify	B	E	A light source is something that produces light.
		D		A reflector is something that reflects light.
E3 / 3	Investigating reflective materials			A prediction is a best guess for what might happen in an investigation based on some prior knowledge.
				Light can be reflected from different surfaces.
				Reflective materials are light in colour, shiny and smooth.
				Less reflective and non-reflective materials are dark in colour, dull and rough.
E4 / +1	Sun safety	A		Light from the Sun is damaging for vision and the skin.
whole class				People can protect themselves from the Sun by using sun cream, wearing sun hats and sunglasses and by staying indoors or in the shade.

- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change.

guided reading				Note: please could lesson be delivered within guided reading time (whole class) to ensure statutory coverage.
E5 / X	Investigating sun safety ~ breadth t depth	B	C	Light from the Sun is damaging for vision and the skin.
		E		People can protect themselves from the Sun by using sun cream, wearing sun hats and sunglasses and by staying indoors or in the shade.
D2 / 4	Opaque, transparent and translucent	B	E	Opaque objects cast dark shadows.
				Translucent objects cast lighter, blurry shadows.
				Transparent objects allow light to pass through them and do not create shadows.
D3 / 5	Observing changes in shadows	B	E	Shadows change when the light source or the object moves. The lower the light source the longer the shadow.
D4 / +2	Research about light, reflectors and	A	E	Questions can help us find out about the world and can be answered in different ways.
whole class	shadows ~ breadth t depth			* Research focus
guided reading				

Plants

Statutory requirements

Pupils should be taught to:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

7 ~ [7] +2 short	Year 3	Summer 2	Plants	Plant Nutrition and Reproduction
E1 / 1	Focus on roots	B	E	Water is transported in plants from the roots, through the stem to the leaves.
				Plants need air, light, water, nutrients and room to grow, in order to survive.
E2a / 2	Focus on stems	B	C	Water is transported in plants from the roots, through the stem to the leaves.
E2b / 3	Focus on stems	E	F	Data can be used to provide evidence to answer questions.
E3a / 4	Investigating plant vessels ~ breadth t	A	B	A prediction is a best guess for what might happen in an investigation based on some prior knowledge.
	depth			
E3b / 4	Investigating plant vessels ~ breadth t	A	B	* Conclusion focus
	depth	E		* Conclusion will need to be written up outside of science session e.g. guided reading time linked to research texts
				or early morning learning
E4 / 5	Focus on leaves	B	C	Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
		E	F	Take measurements in standard units, using a range of simple equipment.
D1 / +1	Flowering plant life cycle	A	E	The stages of a plant's life cycle include: germination, flower production, pollination, fertilisation, seed formation and seed dispersal.
whole class guided reading				
D2 / 6	Flower anatomy	B	E	Parts of a flower include the sepal, petal, stamen and carpel.
		F		
D3 / +2	Pollination	A	E	Pollination is the process where pollen is transferred from the male stamen to the female carpel of another flower of the same type.
whole class guided reading				Questions can help us find out about the world and can be answered in different ways.
D4 / 7	Seeds and seed dispersal	A	D	Seeds can be dispersed by wind, animals, explosion and water.

Rocks

Covered in geography unit.

Note: future marking sheet to be split into subjects to make explicit coverage clear.

Statutory requirements

Pupils should be taught to:

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter.

Notes and guidance (non-statutory)

Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.

Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Sound

Statutory requirements

Pupils should be taught to:

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it
- recognise that sounds get fainter as the distance from the sound source increases.

7 ~ [7]	Year 4	Autumn 1	Forces	Sound
IK / 1	Sound facts	A		Sound waves travel through a medium, such as air or water, to the ear.
				A sound source is something that vibrates and creates a sound, such as human vocal cords, part of a musical instrument or a piece of machinery.
				Volume is a measure, in decibels, how loud or quiet sound is.
E1 / 2	Exploring sound	B	E	Applying more force to a sound source adds more energy and results in a louder sound.
				Pitch is how high or low a sound is.
				Generally, the longer, looser, bigger and thicker the sound source is the lower the pitch.
				Generally, the shorter, tighter, smaller and thinner the sound source is the higher the pitch.
				Distant and direction of sound can be judged.
E2 / 3	How does sound travel	B	E	When energy is put into a sound source it starts to vibrate. These vibrations disturb tiny particles of air. They vibrate and collide with each other, creating sound waves.
				When the sound waves enter the ear, the eardrom vibrates. These vibrations pass through small bones, called ossicles, and are turned into electrical signals in the cochlea.
				They travel to the brain and are interpreted as sounds.
				A sound wave diagram can be drawn as a wavy line with peaks and troughs.
				The distance between two peaks or troughs is called a wavelength.
				The shorter the wavelength the higher the pitch of a sound. The longer the wavelength the lower the pitch of the sound.
				The smaller the peaks and troughs the quieter the sound. The larger the peaks and troughs the louder the sound.
E3 / 4	How do we hear sounds	A		When energy is put into a sound source it starts to vibrate. These vibrations disturb tiny particles of air. They vibrate and collide with each other, creating sound waves.
				When the sound waves enter the ear, the eardrom vibrates. These vibrations pass through small bones, called ossicles, and are turned into electrical signals in the cochlea.
				They travel to the brain and are interpreted as sounds.
				A sound wave diagram can be drawn as a wavy line with peaks and troughs.
				The distance between two peaks or troughs is called a wavelength.
				The shorter the wavelength the higher the pitch of a sound. The longer the wavelength the lower the pitch of the sound.
				The smaller the peaks and troughs the quieter the sound. The larger the peaks and troughs the louder the sound.
D1 / 5	Muffling sounds ~ breadth t depth	B	C	Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
		E		
D2 / 5	Volume and distance investigation	B	C	Scientific enquiries can be set up and carried out by following or planning a method.
Note: these two sessions could potentially be combined into		E		A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding.
a science am / pm or otherwise omitted if E1/E2 are done in detail and / or resources not available.				A fair test is one in which only one variable is changed and all others remain constant.
D3 / 6	Changing the volume of sounds	B	E	Sounds are louder when more energy is put into a sound source because the vibrations and sound waves are larger.
				The volume of sound is measured in decibels (dB).
D4 / 7	Changing the pitch of sounds	B	E	Pitch is how high or low a sound is.
				Generally, the longer, looser, bigger and thicker the sound source is the lower the pitch.
				Generally, the shorter, tighter, smaller and thinner the sound source is the higher the pitch.

Living things and their habitats

Statutory requirements

Pupils should be taught to:

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- describe the simple functions of the basic parts of the digestive system in humans
- identify the different types of teeth in humans and their simple functions
- construct and interpret a variety of food chains, identifying producers, predators and prey.

7 ~ [7]	Year 4	Autumn 2	Animals / Humans	Food and the Digestive system
E1 / 1	Ecosystems	A	F	An ecosystem is a community of living organisms and their environments that are interdependent.
				Ecosystems have biotic, or living, features including plants, animals and microorganisms. They also have abiotic, or non-living, features including sunlight, water, air, soil and temperature.
E2 / 2	Food chains	A	F	All the different food chains in a specific ecosystem can be linked together. These connected food chains are called a food web.
				Food chains start with a plant (producer), show what animals eat within a habitat and how energy is passed on over time.
				A producer is a living thing that makes its own food for energy. Almost all producers are plants.
				Producers make their own food through the process of photosynthesis. Grass and seaweed are examples of producers.
				A consumer is a living thing that feeds on other living things. Most consumers are animals. (Wolves and penguins are examples of consumers.
				A predator is a consumer that hunts, kills and eats other animals for food. An animal is called prey if it is killed by a predator for food.
E3 / 3	Changes in habitats	A	E	Habitats change over time, either due to natural or human influences.
				All living things depend on the biotic and abiotic features of their ecosystems to survive; therefore, any change to one part will affect all the other parts.
D1 / 4	Purposes and parts	A	F	The digestive system is responsible for digesting food and absorbing nutrients and water.
				The mouth, oesophagus, small intestine and large intestine are organs of the digestive system.
D2 / 5	Teeth types	A	B	A baby grows 20 primary teeth that start to fall out when a child is six years old. They are replaced by 32 adult teeth.
		D		The four different types of teeth are incisors, canines, premolars and molars.
				Incisors have sharp, straight edges for slicing and cutting food.
				Canines are pointed for gripping and tearing chewy food such as meat.
				Pre-molars and molars are wide and have cusps, for crushing and grinding up food so it is small enough to swallow.
D3 / 6	Healthy teeth	A	F	Regular teeth brushing, limiting sugary foods and visiting the dentist are important for good oral hygiene.
				Questions can help us find out about the world and can be answered using scientific enquiry.
11-5 / 7+	Investigation			

6 / 6 ~ (12) [12]	Year 4	Spring	Materials	States of Matter
E1 / 1	Classifying solids, liquids and gases	E		Some materials have properties of more than one state including: gels, powders and foams.
E2 / 2	Particle theory	E		A conclusion is the answer to a question that uses the evidence collected.
D1 / 3	Melting, freezing, evaporation and	B	E	Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible.
	condensation			Melting is the process of a solid changing into a liquid.
				Freezing is the process of a liquid changing into a solid.
				Evaporation is the process of a liquid changing into a gas.
				Condensation is the process of a gas changing into a liquid.
D2 / 4	Focus on water	B	C	Temperature is a measure of how hot or cold something is. It is measured in degrees (°) using an instrument called a thermometer.
		E		The three different scales temperature can be measured in are Celsius (°C), Fahrenheit (°F) and Kelvin (K). We use the Celsius scale in the UK.
				When solid water (ice) is heated to 0°C, it begins to melt. This is called its melting point. When liquid water is cooled to 0°C, it begins to
				freeze. This called its freezing point.

States of matter

Statutory requirements

Pupils should be taught to:

- compare and group materials together, according to whether they are solids, liquids or gases
- 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 (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Electricity

Statutory requirements

Pupils should be taught to:

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

				When liquid water is heated to 100°C, it begins to evaporate. This is called its boiling point. When gaseous water (water vapour) is
				cooled to 100°C, it begins to condense. This is called its condensing point.
D3a / 5	Observing, measuring and recording	B	C	Observations can be made regularly to identify changes over time.
	changes over time	E		
D3b / 6	Observing, measuring and recording	A	E	A line graph is a way of displaying data that might show a relationship between two things (variables). Many show changes over the time.
	changes over time ~ breadth ŧ depth			A flat line means that there was no change over time.
				A line with a shallow curve means there was a gradual change over time.
				A line with a steep curve means there was a quick change over time.
D4 / 7	Melting and boiling points.	A	F	On Earth, temperatures range from around -80°C at their lowest to around 50°C at their highest.
				Materials exist as solids, liquids or gases.
				A material's state on Earth depends on Earth's temperature because materials have different melting and boiling point.
IS1 / 8	Investigation	B	C	Scientific enquiries can be set up and carried out by following or planning a method.
		E		A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding.
				A fair test is one in which only one variable is changed and all others remain constant.
IS2 / 9	Investigation	A		Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
				Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
IS3 / 10	Investigation	C	E	Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
				Take accurate measurements in standard units, using a range of equipment.
				Note: Investigation focus.
IS4 / 11	Investigation	F		Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
IS5 / 12	Investigation	A	E	Use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple conclusions and
				identify next steps, improvements and further questions.
5 / 7 ~ (12) [12]	Year 4	Summer	Electricity	Electrical Circuits and Conductors
E1 / 1	Components	B	D	A circuit is a collection of components connected by wires through which an electric current can flow.
				A circuit must be a complete loop to work.
E2 / 2	Making series circuits	B		A series circuit has a single path for an electric current to flow through.
E2 / 3	Fixing circuits	B	E	A series circuit must be a complete loop to work and have a source of power from a battery or cell.
D1 / 4	Conductivity	A		A conclusion is the answer to a question that uses the evidence collected.
				Electrical conductivity is a measure of a material's ability to allow an electric current to pass through it.
				Electrical conductors, like metals, have low resistence and allow electricity to flow through them.
				Non-conductive materials, like plastics, are often known as electrical insulators they do not let electricity through, they have high resistance.
D1-2 / 5	Investigating conductive and non-	C	E	Scientific enquiries can be set up and carried out by following or planning a method.
	conductive materials			A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding.
				A fair test is one in which only one variable is changed and all others remain constant.
				Observations can be made regularly to identify changes over time.
D1-3 / 6	Making switches	B	E	A switch makes or breaks a circuit.
				When a switch is closed or 'on', the circuit is complete.
				When a switch is open or 'off', the circuit is incomplete.
D1-4 / 7	Understanding plugs	B	E	Working with electrical circuits can be dangerous.
				Electrical conductivity is a measure of a material's ability to allow an electric current to pass through it.
				Electrical conductors, like metals, have low resistence and allow electricity to flow through them.
				Non-conductive materials, like plastics, are often known as electrical insulators they do not let electricity through, they have high resistance.
D1-5 / 7	Researching incandescent light bulbs ~	B	E	Questions can help us find out about the world and can be answered using scientific enquiry.
	breadth ŧ depth			
D2-1 / 8	Programmable technologies	A	F	A programmable device is a machine that is provided with coded instructions for the automatic performance of a task.
				A line graph is a way of displaying data that might show a relationship between two things (variables). Many show changes over the time.
				A flat line means that there was no change over time.
				A line with a shallow curve means there was a gradual change over time.
				A line with a steep curve means there was a quick change over time.
D2-2 / 9	Simple programming	B	C	Remote control is controlling a machine or activity from a distance. Computers can be used to remotely control a device.
		E		
D2-3 / 10	Programming traffic lights	B	E	Write a program to control a physical device, such as a light, speaker or buzzer.
I1-5 / 11	Investigation			
I1-5 / 12	Investigation			

Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 explanations of and 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.

Earth and space

Statutory requirements

Pupils should be taught to:

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system
- describe the movement of the Moon relative to the Earth
- describe the Sun, Earth and Moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

7 ~ [7]	Year 5	Autumn 1	E / Space / S	Earth and Space
E1 / 1	Centre of the solar system	A	E	Questions can help us find out about the world and can be answered using a range of scientific enquiries.
E1 / 2	The Earth, Sun and Moon model	E		Earth orbits around the Sun. The length of time it takes for Earth to complete a full orbit is 365.25 days, one year.
				The Earth completes one rotation on its axis in 24 hours, one day.
				The Moon orbits the Earth once every 27.3 days and also rotates on its axis once every 27.3 days.
E2 / 3	Planets and stars are spherical	B	E	All planets are spherical because their mass is so large that they have their own force of gravity. This force of gravity pulls all of a planet's material
				towards its centre, which compresses it into the most compact shape – a sphere.
D1 / 4	Daytime and nightime	A		As Earth orbits the Sun, it also spins on its axis. It takes Earth a day (24 hours) to complete a full spin.
				During the day, the Sun appears to move through the sky. The Sun is not moving the Earth is rotating.
				Earth rotates to the east or, if viewed from above the North Pole, it rotates anti-clockwise, which means the Sun rises in the east and sets in the west.
				As Earth rotates, different parts of it face the Sun, which brings what we call daytime. The part facing away is in shadow, which is night time.
D1 / 5	Sundials	B	C	Sundials block sunlight to cast a shadow. As the Earth rotates, the angle of the sunlight upon the sundial changes, and the shadow changes length and direction.
D1 / 6	Day length and seasons ~ breadth t depth	A		The tilt of the Earth's axis as it orbits the Sun changes the length of daytime and night time and creates different seasons.
combine 6-7				When the Northern or Southern Hemisphere tilts away from the Sun, it is winter. It gets less direct sunlight, the weather is colder, the daytime is shorter and the night time is longer.
				When the Northern or Southern Hemisphere tilts towards the Sun, it is summer. It gets plenty of direct sunlight, the weather is warmer, the daytime is longer and the night time is shorter.
				When it is winter in the Northern Hemisphere it summer in the Southern Hemisphere.
D1 / 7	Times of day around the world ~ b t d	A	E	As Earth orbits the Sun, it also spins on its axis. It takes Earth a day (24 hours) to complete a full spin.
combine 6-7				During the day, the Sun appears to move through the sky. The Sun is not moving the Earth is rotating.
				Earth rotates to the east or, if viewed from above the North Pole, it rotates anti-clockwise, which means the Sun rises in the east and sets in the west.
				As Earth rotates, different parts of it face the Sun, which brings what we call daytime. The part facing away is in shadow, which is night time.
D2 / 8	The phases of the moon	E		The Moon is Earth's only natural satellite.
combine 8-9				The Moon is about 385,000km from the Earth.
				The Moon is not a natural light source. We can only see it because it reflects the Sun's light.
				All planets are spherical because their mass is so large that they have their own force of gravity. This force of gravity pulls all of a planet's material towards its centre, which compresses
				it into the most compact shape – a sphere.
D2 / 9	Lunar and solar eclipses ~ breadth t depth	A	E	A solar eclipse happens a few times a year when the Moon passes directly between the Earth and the Sun, blocking our view of the Sun and casting a shadow on the Earth.
combine 8-9				A lunar eclipse happens a few times a year when the Earth is in line between the Moon and the Sun, casting a shadow on the Moon.

Forces

Statutory requirements

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
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

7 ~ [7] +1 short	Year 5	Autumn 2	Forces	Forces and Mechanisms
E1 / 1	Gravity	B	E	Gravitational force, or gravity, is a non-contact, pulling force between objects that have mass.
				Gravitational force increases as the mass of an object increases.
				The mass of the Earth is very large so it exerts a gravitational force large enough for its effects to be seen.
E2 / 2	Mass and weight	B	F	Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.
				A force meter can be used to measure an object's mass in grams (g) or kilograms (kg) and its weight in newtons (N).
				Many people commonly mix up and misuse the words mass and weight.
				Mass is the amount of matter that an object or substance contains.
				Weight is a measure of gravitational force which is different on for example Earth and the Moon.
E3 / X	Discovery ~ breadth t depth			
D1 / 3	Friction	C	E	Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects.
		F		Lubricants reduce the contact between two surfaces and therefore reduce frictional forces.
				Liquids, such as water and oil, are used as lubricants.
				Heat caused by friction can damage moving parts and stop machines from working.
				Friction can be reduced through streamlining or the use of lubricants and ball bearings between surfaces or using materials with different properties.
D1 / 4	Air resistance	C	E	The larger the surface area of an object the greater the resistance, air or water, it will have when it moves. This will slow it down.
		F		Designing objects to have a smaller surface area and streamlined shape decreases resistance, air or water, and allows them to move more quickly through the air.
				Accurate observations can be made repeatedly or at regular intervals to identify changes over time.
D1 / 5	Water resistance	C	E	The larger the surface area of an object the greater the resistance, air or water, it will have when it moves. This will slow it down.
		F		Designing objects to have a smaller surface area and streamlined shape decreases resistance, air or water, and allows them to move more quickly through the air.
D2 / 6	Levers	B	E	A lever is a simple machine that provides a mechanical advantage to make it easier to lift a heavy load.
				A lever consists of a lever arm, a fulcrum, a load and effort. As the distance between the fulcrum and the effort increases, the effort needed to lift a load decreases.
D2 / 7	Pulleys	B	E	A pulley is a simple machine that provides a mechanical advantage to make it easier to lift a heavy load.
				A pulley consists of one or more grooved wheels and a rope. As the number of wheels, and the number of pieces of rope supporting the pulleys, increases, the effort needed to lift an object decreases, but the distance the
				rope has to be pulled increases.
				Note: suggested demonstration quite resource heavy, may wish to source simpler alternative if not viable.
D2 / +1	Gears	A	E	Gears are toothed, interlocking wheels that can be place together to make a mechanism that provides a mechanical advantage.
whole class				Linking different sized gears creates a mechanical advantage. Smaller gears rotate more quickly and are easier to turn but do not provide much force. Larger gears rotate more slowly and are harder to turn but provide
guided reading				more force.

6 / 6 ~ [12] [12]	Year 5	Spring	Animals / Humans	Human Reproduction and Ageing
E1 / 1	Animal life cycles	A		Embryo, juvenile, adolescent and adult are stages of a mammal's life cycle.
				Egg, larva (tadpole), adolescent and adult are stages of an amphibian's life cycle..
				Egg, larva, pupa and adult are the stages of some insects including butterflies, beetles and bees.
				Egg, baby, adolescent and adult are stages of a bird's life cycle.
E2 / 2	Classifying animals	D		A mammal is a vertebrate, which means it has a backbone.
				Producing milk to feed their young, being warm blooded, giving birth to live young, having fur or hair and breathing air with lungs are the five key characteristics of mammals.
E3 / 3	Tpical mammalian life cycles	A		All mammalian life cycles have the same processes of birth, growth, poberty and reproduction as well as the same stages.
				The duration of each life cycle stage is different for different mammals.

Living things and their habitats

Statutory requirements

Pupils should be taught to:

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals.

Animals, including humans

Statutory requirements

Pupils should be taught to:

- describe the changes as humans develop to old age.

Properties and changes of materials

Statutory requirements

Pupils should be taught to:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

E4 / 4	Relationship between mammalian	A	B	The gestation period is the time between conception and birth.
	gestation and mass ~ breadth t depth			In general mammals with a smaller mass have a shorter gestation period than mammals with a larger mass.
				Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.
E5 / 5	Human Life Cycle	A		Humans are mammals and have a mammalian life cycle.
D1 / 6	Human gestation stage	A	E	The human gestation period is around 40 weeks. During this time, the organs, limbs and senses develop, and the foetus grows until it is ready to be born.
D2 / 7	Human juvenile stage	B	C	Note: Investigation focus.
		A		
D3 / 8	Human adolescent stage	A		Good personal hygiene (washing, wearing clean clothes and brushing teeth) can prevent disease or illness.
				Humans go through characteristic stages as they develop towards old age.
				Puberty is the transition between childhood and adulthood.
				As humans age, many of the body's systems gradually decline, leading to the changes seen in older people.
D4 / 9	Human growth charts ~ breadth t	A	F	Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18.
	depth			
D5 / 10	Human sexual reproduction	A		Humans reproduce sexually when a female egg is fertilised by a male sperm producing offspring that are different from the parents.
				Sexual reproduction is the process of producing offspring and is essential for the continued survival of a species.
				Asexual reproduction involves one parent and produces offspring that is identical to the parent.
D6 / 11	Human adult ageing	A	E	Questions can help us find out about the world and can be answered using a range of scientific enquiries.
		F		* Research / presentation focus
I1 / 12	Investigation	C	F	
I2-5 / X	Investigation			

5 / 7 ~ (12) [12]	Year 5	Summer	Materials	Properties and Changes of Materials
E1 / 1	Testing properties	A	B	Materials can be grouped according to their basic physical properties.
		C		Properties of materials include: hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.
				A material's properties dictate what it can be used for.
E2 / 2	Thermal conductivity	B	C	Accurate observations can be made repeatedly or at regular intervals to identify changes over time.
		E		Thermal conductors, such as metals, are materials that allow the transfer of heat.
				Thermal conductors are useful for quickly heating things up.
				Thermal insulators, such as wood, glass and plastic, are materials that do not transfer heat effectively.
				Thermal insulators are useful for keeping things at the same temperature.
				Note: Resource heavy session, some items if desired from the suggested list would need to be ordered in advance including
				thermocolour sheet, assorted metal strips, faraday flim (request order from science budget).
E3 / 3	Measuring change in temperature ~	B	C	Take measurements in standard units, using a range of simple equipment.
	breadth t depth	E		
E4a / 4	Testing thermal insulators	B	C	Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.
		E		
E4b / 5	Testing thermal insulators	E	F	A conclusion is an explanation of what has been discovered using evidence collected.
				A material's properties dictate what it can be used for.
				* Report / conclude focus
E5 / 6	Solubility	B	C	Dissolving is when a solute (material) becomes incorporated into a solvent (liquid) and can no longer be seen.
		F		Solubility is a measure of a material's ability to dissolve in a solvent.
D1.1 / 7	Exploring mixtures ~ sieving	B	C	A mixture is a combination of two or more substances that aren't chemically joined and can be separated back into their individual substances.
				Heterogeneous mixtures consist of distinctly different substances and are easy to separate by classifying and grouping or sieving or filtering.
				Substances in homogeneous mixtures are evenly distributed and you cannot see the different parts. Homogeneous substances are difficult to separate.
				Reversible changes include heating, cooling, melting, dissolving and evaporating.
				Irreversible changes include burning, rusting, decaying and chemical reactions.
D1.2a / 8	Exploring mixtures ~ filtering	B	C	A mixture is a combination of two or more substances that aren't chemically joined and can be separated back into their individual substances.
				Heterogeneous mixtures consist of distinctly different substances and are easy to separate by classifying and grouping or sieving or filtering.
				Substances in homogeneous mixtures are evenly distributed and you cannot see the different parts. Homogeneous substances are difficult to separate.
D1.2b / 9	Exploring mixtures ~ filtering	B	C	Sieving can be used to separate large solids from liquids and some solids from other solids.
		F		Filtering can be used to separate small solids from liquids.
				Reversible changes include heating, cooling, melting, dissolving and evaporating.
				Irreversible changes include burning, rusting, decaying and chemical reactions.
D1.3a / 10	Exploring mixtures ~ evaporating	B	C	Evaporating can be used to separate dissolved solids from liquids.
		E		Reversible changes include heating, cooling, melting, dissolving and evaporating.
				Irreversible changes include burning, rusting, decaying and chemical reactions.
D1.3b / +1	Exploring mixtures ~ evaporating	B	E	* Observation focus daily / record findings during early morning learning or alternative suitable time each day.
D1.4 / 11	Researching reversible mixtures ~	A	E	Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
	breadth t depth	F		
D2.1 / 12	Reversible and irreversible changes			Reversible changes include heating, cooling, melting, dissolving and evaporating.
				Irreversible changes include burning, rusting, decaying and chemical reactions.
D2.2 / 12	Irreversible changes			
				Irreversible changes are usually accompanied by one or more of these signs: a gas is produced; light is produced; a smell is produced or the smell
				changes; the colour changes; sound is produced, or the temperature changes.

Ask simple questions and recognise that they can be answered in different ways.	A
Observe closely, using simple equipment.	B
Perform simple tests.	C
Identify and classify.	D
Use their observations and ideas to suggest answers to questions.	E
Gather and record data to help in answering questions.	F

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7 weeks	7 weeks	6 weeks	6 weeks	5 weeks	7 weeks

Working scientifically

Statutory requirements

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 explanations of and 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.

Animals including humans

Statutory requirements

Pupils should be taught to:

- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- describe the ways in which nutrients and water are transported within animals, including humans.

Evolution and inheritance

Statutory requirements

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
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different

7 / 7 ~ [14] [14]	Year 6	Autumn	Circulatory System	Circulatory System
E1 / 1	Role of the circulatory system	A	E	The heart, blood and blood vessels make up the circulatory system.
				The circulatory system moves blood around the body.
E2 / 2	Structure and function of the heart	B	E	The heart is a muscular organ that pumps blood around the body through the blood vessels.
				Note: Alternative to sheep hearts (previous replica experiment?)
E3 / 3	The function of blood	B	C	Blood is a substance that carries oxygen, other nutrients and hormones around the body. It also carries carbon dioxide and other waste products so they can be excreted.
		E		Blood is made up of plasma, platelets, red blood cells and white blood cells.
				Plasma is a yellowish liquid, mainly water. It carries red blood cells, white blood cells and platelets around the body.
				Red blood cells carry oxygen and carbon dioxide around the body.
				White blood cells fight infection and other diseases.
				Platelets are small cell fragments that clump together to stop bleeding from a cut in a blood vessel.
E4 / 4	The structure and function of blood vessels	A	E	Blood vessels are tubes inside the body.
				The three types of blood vessels are arteries, capillaries and veins.
				Arteries carry blood from the heart to the rest of the body.
				Capillaries connect arteries to veins. They allow oxygen and other nutrients to pass from the blood to the tissues, and carbon dioxide and other waste materials to
				pass from the tissues to the blood.
				Veins carry blood from around the body back to the heart.
D1.1 / 5	Measuring heart rate	A	C	Resting heart rate is the number of times a heart beats per minute when a person is at rest.
		F		Heart rate increases during exercise because the body requires more oxygen to meet its needs.
				Heart rate can be measured by recording the pulse at different points of the body.
				A heart rate monitor can also be used to measure the pulse.
				Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.
D1.2 / 6	Proving a hypothesis	C	F	Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.
D1.3 / 7	Heart rate investigation	B	C	Exercise benefits your heart by lowering blood pressure, reducing weight, strengthening muscles and lowering stress.
		E		
D2.1 / 8	Classifying foods	A	E	The Eatwell guide presents the foods and drinks that contribute to a healthy balanced diet.
				The five food groups are: fruit and vegetables, carbohydrates, dairy and alternatives, proteins and oils and spreads.
				Some foods, especially highly processed ones, are high in sugar, salt and fat are not necessary for a healthy, balanced diet.
				Eating more than the recommended daily amounts of saturated fat, sugar and salt can have a harmful effect on the circulatory system, such as causing
				high blood pressure and an increased risk of heart disease.
				Nutrition labels on pre-packaged food help us to know what is in the food we eat.
				Nutrition labels are often displayed using a traffic light system, so consumers can easily see whether the food contains high (red), medium (orange) or
				low (green) amounts of sugar, salt and saturated fat.
D2.2 / 9	The effects of smoking, alcohol and drugs	A	E	Smoking, drugs and alcohol can have a negative impact on the circulatory system.
				Smoking can result in cancer and heart disease.
				Alcohol can cause high blood pressure and increased stroke risk.
				Drugs can cause collapsed veins and cardiac arrest.
IS1 / 10	Investigation	A		* Scientific question focus.
IS2 / 11	Investigation	A		* Investigation plan focus
IS3 / 12	Investigation	C		* Carry out investigation
IS4 / 13	Investigation	F		* Collect / record data focus
IS5 / 14	Investigation	E	F	A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.

6 / 6 ~ [12] [10]	Year 6	Spring	Evolution and Inheritance	Evolution and Inheritance
E1 / 1	Classifying fossils	A	D	The fossil record and the DNA of living and extinct things provide evidence of evolution.
				The first and widest level in the biological classification system is called a kingdom, the second a phylum, then class, order, family, genus and species.
				There are five kingdoms: animals, plants, fungi, protists and monerans.
				Members of each kingdom have features in common.
				Living things are classified into groups, according to common observable characteristics and based on similarities and differences.
E2 / 2	Theory of evolution	A	E	The theory of evolution was developed in the 19th century by the naturalists Charles Darwin and Alfred Russel Wallace.
				The theory states that: all life on Earth has evolved from simple life forms to more complex ones over time; all life on Earth has common ancestors and
				is therefore related, and; living things with characteristics most suited to their environment are more likely to survive and reproduce.
D1.1 / 3	Inheritance	B	E	Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.
				Inheritance is when living things pass on characteristics following sexual reproduction, such as height, skin colour and eye colour.
				Variation is the natural differences in characteristics between individuals of the same species.
				Continuous variation contains a range of values, such as the height or mass of different individuals of the same species.
				Discontinuous variation has a certain number of outcomes, such as eye colour and blood groups.
D1.2 / 4	Natural selection and survival of the fittest	C	E	An adaptation is a physical or behavioural trait that allows a living thing to survive and fill an ecological niche.
				Natural selection is also known as 'survival of the fittest' because favourable traits help an organism survive and pass on their genes through reproduction.
D1.3 / 5	Exploring plant adaptions.	C	E	A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.
		F		The three different types of plant adaptations are structural, behavioural and chemical.
				Structural adaptations include modified leaves, roots and trunks.
				Behavioural adaptations include movement towards the Son and regulated growth.
				Chemical adaptations include the presence of stings and poisons.
D1.4 / 5	Artificial selection - breadth and depth	A	E	A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.
				Animals and plants can be bred to produce offspring with specific and desired characteristics. This is called selective breeding.
IS1 / 6	Investigation	A		Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.

ways and that adaptation may lead to evolution.

Living things and their habitats

Statutory requirements

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, including micro-organisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics.

Electricity

Statutory requirements

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
- 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
- use recognised symbols when representing a simple circuit in a diagram.

Light

Statutory requirements

Pupils should be taught to:

- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

IS2 / 7	Investigation	B	C	Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.
		F		
IS3 / 8	Investigation	A	E	Bar charts can be used to display for discontinuous variation when there is a set number of outcomes, such as eye colour and blood groups.
				Line graphs can be used to display continuous variation when there is a range of values, such as the height or mass of different individuals of the same species.
				Scatter graphs can be used when looking for a correlation between two data sets.
IS4 / 9	Investigation	A	E	Report on and validate their findings, answer questions and justify their methods, opinions and conclusions.
				Use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions.
				Make predictions for what they might observe.
IS5 / 10	Investigation	A	E	Report on and validate their findings, answer questions and justify their methods, opinions and conclusions.
				Use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions.
				Make predictions for what they might observe.
				Ask and answer deeper and broader scientific questions about the local and wider world.
				Build on and extend their own and others' experiences and knowledge.
5 ~ (5) +2 short	Year 6	Summer 1	Electricity	Electrical Circuits and Components
E1 / +1	Recognised circuit symbols	A	E	
E2 / +2	Recording circuits	B	E	
E2 / 1	Exploring circuit components	B	C	A circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals.
		E		An electric current is the flow of electric charge around a circuit. The electric current flows from the cell through all the components and back to the cell.
				When a switch is open, it creates a gap and the current cannot travel around the circuit.
				When a switch is closed, it completes the circuit and allows a current to flow all the way around it.
				Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.
D1 / 2	Voltage and cells	B	C	Electric current is measured using an ammeter.
		E		The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter.
				A multimeter measures both electric current and voltage.
D2 / X	Researching batteries and cells			
	- breadth & depth			
D3 / 3	Investigating voltage	B	C	Voltage is measured in volts (V).
		E		The bigger the voltage, the more electrons are pushed through the circuit.
				The more voltage flowing through a lamp, buzzer or motor, the brighter the lamp, the louder the buzzer and the faster the motor.
D4 / 4	Programming Tasks	B	C	Decomposition is breaking down a problem down into smaller parts to make it easier to process and following a sequence of instructions.
		E		Decomposition is useful for checking programs and debugging because it saves time.
D5 / 5	Sensors and Monitoring	B	C	Many devices that we see in our homes and elsewhere use programmable sensors that monitor environmental variables, such as light, sound,
		E		movement and temperature.
Note: these two sessions could potentially be combined into				
a science am / pm or otherwise omitted if E1/E2 are done in detail and / or resources not available.				
7 ~ (7)	Year 6	Summer 2	Light	Light Theory
E1 / 1	How does light travel?	B	E	Lasers are intense beams of light and they should never be pointed at people's faces or aircraft.
				A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.
				Light waves travel faster than sound waves.
				Light speed is nearly 300 million metres per second, the fastest thing in the universe.
				The light waves travels in a straight line from the light source to an object. Reflected light bounces off in a straight line at an angle equal to the angle of impact.
				Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel.
E2 / 2	How do we see?	A	F	Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.
E3 / 3	Visible Light	A	E	Explain that, due to how light travels, we can see things because they give out or reflect light into the eye.
		F		
E4 / 3	Colour Perception - breadth & depth	A	E	Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts
		F		from opinions, pose further questions and make predictions for what they might observe.
D1 / 4	Shadows	B	C	When a light source is close to an object, the shadow is large because the object is blocking more of the light coming from the source.
				As a light source moves further away from an object, the shadow gets smaller because the object blocks less light coming from the source.
D2 / 5	Reflections	A	B	Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards.
		C		Plane mirror reflections are the same size, and the right way up but they are reversed.
				Concave mirrors enlarge the image and concentrate the rays of light into a focal point.
				Convex mirrors make images smaller and disperse light which reflects a wider view.
D3 / 6	Measuring light	A	B	Specialised equipment is used to take accurate measurements in standard units including light sensors measuring light intensity (lux).
		C		Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.
D4 / 7	Refraction - breadth & depth	B	C	Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.
		E		Refraction is the bending of light as it passes from one transparent material to another.
				Refracted light creates a visible spectrum when white light shines through a prism or raindrops.