Curriculum 22 – Subject Sequence for Science

Year Group & Unit	NC PoS Reference	Knowledge (specific facts or truth components. A knowledge statement will often contain substantive, declarative or explicit knowledge.)	Skills (the use and application of composite knowledge. A skill statement will often contain implicit, procedural and disciplinary knowledge.)
Year 1 Everyday materials Key Concepts: Gather & record datal dentify & classifI Investigation Measurement Observation Physical things Properties and uses Questioning Report and conclude 10 Programmes of study, 10 skills and 9 knowledge statements	Y1 **Ask simple questions and recognise that they can be answered in different ways.**	core knowledgeQuestion words include what, why, how, when, who and which.	Y1 skill 1 Ask simple scientific questions.
	Y1 **Observe closely, using simple equipment.**	core knowledgeSimple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses.	Y1 skill 1 With support, use simple equipment to measure and make observations.
	Y1 **Perform simple tests.**	core knowledgeSimple tests can be carried out by following a set of instructions.	Y1 skill 1 With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.
	Y1 **Identify and classify.**	core knowledgeObjects, materials and living things can be looked at and compared.	Y1 skill 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.
	Y1 **Use their observations and ideas to suggest answers to questions.**	core knowledgeThe results are information that has been found out from an investigation.	Y1 skill 1 Talk about what they have done and say, with help, what they think they have found out.
	Y1 **Gather and record data to help in answering questions**	core knowledgeData can be recorded and displayed in different ways, including tables, pictograms and drawings.	Y1 skill 1 With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
	Y1 **Distinguish between an object and the material from which it is made.**	core knowledgeA material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.	Y1 skill 1 Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.
	Y1 **Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.**	core knowledgeA material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.	Y1 skill 1 Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.
	Y1 **Describe the simple physical properties of a variety of everyday materials.**	core knowledgeMaterials have different properties, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or not waterproof; magnetic or non-magnetic.	Y1 skill 1 Investigate and describe the simple physical properties of some everyday materials, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or not waterproof and magnetic or non-magnetic.
	Y1 **Compare and group together a variety of everyday materials on the basis of their simple physical properties.**	core knowledgeMaterials can be grouped according to their properties.	Y1 skill 1 Compare and group materials in a variety of ways, such as based on their physical properties; being natural or man-made and being recyclable or non-recyclable.

Year 1 Shade and Shelter – DT Focus Key Concepts: Identify & classify	**Y1 Distinguish between an object and the material from which it is made.**	**core knowledge** A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.	**Y1 skill 1** Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.
	Y1 Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.	**core knowledge** A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.	**Y1 skill 1** Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.
Year 1 Human Senses – Science Focus Key Concepts: Gather & record data Human body Identify & classifyI Nvestigation Measurement Observation Parts and functions Questioning Report and conclude 9 Programmes of study, 9 skills and 9 knowledge statements	**Y1 Ask simple questions and recognise that they can be answered in different ways.**	**core knowledge** Question words include what, why, how, when, who and which.	**Y1 skill 1** Ask simple scientific questions.
	Y1 Observe closely, using simple equipment.	**core knowledge** Simple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses.	**Y1 skill 1** With support, use simple equipment to measure and make observations.
	Y1 Perform simple tests.	**core knowledge** Simple tests can be carried out by following a set of instructions.	**Y1 skill 1** With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.
	Y1 Identify and classify.	**core knowledge** Objects, materials and living things can be looked at and compared.	**Y1 skill 1** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.
	Y1 Use their observations and ideas to suggest answers to questions.	**core knowledge** The results are information that has been found out from an investigation.	**Y1 skill 1** Talk about what they have done and say, with help, what they think they have found out.
	Y1 Gather and record data to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, pictograms and drawings.	**Y1 skill 1** With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
	Y1 Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	**core knowledge** Animals are living things. Animals can be sorted and grouped into six main groups: fish, amphibians, reptiles, birds, invertebrates and mammals.	**Y1 skill 1** Identify, compare, group and sort a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features.
	Y1 Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	**core knowledge** Different animal groups have some common body parts, such as eyes and a mouth, and some different body parts, such as fins or wings.	**Y1 skill 1** Label and describe the basic structures of a variety of common animals, including fish, amphibians, reptiles, birds and mammals.
	Y1 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**core knowledge** The basic body parts are the head, arms, legs, nose, eyes, ears, mouth, hands and feet. The five senses are hearing, sight, smell, taste and touch. Ears are used for hearing, eyes are used to see, the nose is used to smell, the tongue is used to taste and skin gives the sense of touch.	**Y1 skill 1** Draw and label the main parts of the human body and say which body part is associated with which sense.

Year 1 Bright Lights Big City – Geography focus Key Concepts: Changes Observation 2 Programmes of study, 2 skills and 2 knowledge statements	Y1 **Identify and classify.**	core knowledgeObjects, materials and living things can be looked at and compared. •	Y1 skill 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.
	Y2 **Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.**	core knowledgeSome objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay.	Y2 skill 1 Describe how some objects and materials can be changed and how these changes can be desirable or undesirable.
Year 1 Seasonal Changes – Science focus Key Concepts: Changes EarthF Orces Gather & record data Habitats Identify & classify Investigation Living things Measurement Observation Pattern seeking QuestioningR eport and conclude Staying safe 11 Programmes of study, 14 skills and 25 knowledge statements	Y1 **Ask simple questions and recognise that they can be answered in different ways.**	core knowledgeQuestion words include what, why, how, when, who and which. specific knowledgeA rain gauge is a piece of equipment used for measuring rainfall in millimetres (mm).	Y1 skill 2 Ask simple scientific questions.
	Y1 **Observe closely, using simple equipment.**	core knowledgeSimple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses. specific knowledgeThe Sun provides Earth with heat and light. However, it gives out invisible rays that can damage our skin and eyes over time. specific knowledgeUV beads change colour when exposed to UV light. They are good as an indicator of potentially damaging rays from the Sun. specific knowledgeTemperature is the measure of how hot or cold something is. It is measured using a thermometer on many different scales, including degrees Celsius.	Y1 skill 4 With support, use simple equipment to measure and make observations.
	Y1 **Perform simple tests.**	core knowledgeSimple tests can be carried out by following a set of instructions.	Y1 skill 1 With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.
	Y1 **Identify and classify.**	core knowledgeObjects, materials and living things can be looked at and compared.	Y1 skill 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.

	Y1 **Use their observations and ideas to suggest answers to questions.**	core knowledge The results are information that has been found out from an investigation. specific knowledge A weather forecast predicts the weather, including the temperature, the type of weather, the chance of precipitation and the strength of the wind for a specific place and time.	Y1 skill 2 Talk about what they have done and say, with help, what they think they have found out.
		core knowledge The local environment is a habitat for living things and can change during the seasons.	Y1 skill 1 Observe the local environment throughout the year and ask and answer questions about living things and seasonal change.
	Y1 **Gather and record data to help in answering questions.**	core knowledge Data can be recorded and displayed in different ways, including tables, pictograms and drawings.	Y1 skill 1 With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
	Y1 **Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.**	core knowledge Plants are living things. Common plants include the daisy, daffodil and grass. Trees are large, woody plants and are either evergreen or deciduous. Trees that lose their leaves in the autumn are called deciduous trees. Examples include oak, beech and rowan. Trees that shed old leaves and grow new leaves all year round are called evergreen trees. Examples include holly and pine.	Y1 skill 1 Identify, compare, group and sort a variety of common wild and garden plants, including deciduous and evergreen trees, based on observable features.
	Y1 **Observe changes across the four seasons.**	core knowledge There are four seasons: spring, summer, autumn and winter. Certain events and weather patterns happen in different seasons. specific knowledge In winter, the weather can be cold and frosty. Days are short. Deciduous trees are bare, and animals are less active. In spring, days begin to lengthen. The weather is changeable. Trees grow leaves and blossom, and plants start to grow. Animal life is more active, and baby animals are visible. In summer, days are long. There is abundant growth of plants and animals. The weather is warm and sunny with some rain. In autumn, days begin to shorten. The weather is cool and often wet and windy. Some leaves change colour, and plants die off. Animals are active and preparing for winter. The pattern of the seasons is repeated every year. specific knowledge In spring, many animals give birth to young or lay eggs that hatch. In summer, animals eat a lot of food, and young animals grow and learn to look after themselves. In autumn, animals eat or collect lots of food and make nests and shelters to prepare for winter. In winter, animals protect themselves from the cold weather by hibernating, migrating or spending time in their nests.	Y1 skill 3 Observe changes across the four seasons.

	Y1 Observe and describe weather associated with the seasons and how day length varies.	**core knowledge** Day length (the number of daylight hours) is longer in the summer months and shorter in the winter months. **specific knowledge** The length of daytime in winter in the UK is shorter because the Northern Hemisphere is tilted away from the Sun. The length of daytime in summer is longer because the Northern Hemisphere is tilted towards the Sun.	**Y1 skill 1** Observe and describe how day length changes across the year.
		core knowledge 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. **specific knowledge** The weather is what the air is like outside in one place and at one time. **specific knowledge** The Sun creates the weather on Earth. The wind is formed when the Sun heats up different parts of the Earth. Clouds are formed when water is heated by the Sun and rises into the sky. Precipitation falls from clouds as rain when it is warm and snow, hail or sleet when it is cold.	**Y1 skill 3** Observe and describe different types of weather.
	Y1 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	**core knowledge** It is important to stay safe. Some ways to stay safe include staying safe in strong sunlight (sun cream, sun hat and sunglasses), crossing roads (stop, look and listen), in the kitchen (not touching hot or sharp objects) and with household chemicals (not touching, drinking or eating).	**Y1 skill 1** Describe ways to stay safe in some familiar situations.

	Y1 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	**core knowledge** All living things (plants and animals) change over time as they grow and mature. **specific knowledge** Apple trees are deciduous. In winter, branches are bare and develop buds. In spring, buds open as leaves or blossom and fruit starts to grow. In summer, apples grow quickly and ripen. In autumn, apples are ready to be harvested.	**Y1 skill 1** Describe, following observation, how plants and animals change over time.
		core knowledge Simple equipment can be used for measuring weather, such as measuring temperature with a thermometer; identifying wind direction and force with a windsock or measuring rainfall with a rain gauge.	**Y1 skill 1** Investigate weather using toys, models or simple equipment.
Year 1 Chop, Slice and Mash – DT Focus Key Concepts: **Healthy lifestyle**	**Y1** Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	**core knowledge** Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs.	**Y1 skill 1** Explain why hand washing and cleanliness are important.
Year 1 Animal Parts – Science focus Key Concepts: **Gather & record data** **Habitats** **Identify & classify** **Investigation** **Living things** **Measurement** **Nutrition** **Observation** **Parts and functions** **Questioning** **Report and conclude** **Survival**	**Y1** Ask simple questions and recognise that they can be answered in different ways.	**core knowledge** Question words include what, why, how, when, who and which.	**Y1 skill 1** Ask simple scientific questions.
	Y1 Observe closely, using simple equipment.	**core knowledge** Simple equipment is used to take measurements and observations. Examples include metre sticks, measuring tapes, egg timers and hand lenses	**Y1 skill 1** With support, use simple equipment to measure and make observations.
	Y1 Perform simple tests.	**core knowledge** Simple tests can be carried out by following a set of instructions.	**Y1 skill 1** With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.
	Y1 Identify and classify.	**core knowledge** Objects, materials and living things can be looked at and compared.	**Y1 skill 1** Observe objects, materials, living things and changes over time, sorting and grouping them based on their features.
	Y1 Use their observations and ideas to suggest answers to questions.	**core knowledge** The results are information that has been found out from an investigation.	**Y1 skill 1** Talk about what they have done and say, with help, what they think they have found out.

11 Programmes of study, 12 skills and 12 knowledge statements		core knowledgeThe local environment is a habitat for living things and can change during the seasons.	Y1 skill 1 Observe the local environment throughout the year and ask and answer questions about living things and seasonal change.
	Y1 Gather and record data to help in answering questions.	core knowledgeData can be recorded and displayed in different ways, including tables, pictograms and drawings.	Y1 skill 1 With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).
	Y1 Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	core knowledgeAnimals are living things. Animals can be sorted and grouped into six main groups: fish, amphibians, reptiles, birds, invertebrates and mammals.	Y1 skill 1 Identify, compare, group and sort a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features.
	Y1 Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	core knowledgeCarnivores eat other animals (meat), herbivores eat plants and omnivores eat other animals and plants.	Y1 skill 1 Group and sort a variety of common animals based on the foods they eat.
	Y1 Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	core knowledgeDifferent animal groups have some common body parts, such as eyes and a mouth, and some different body parts, such as fins or wings.	Y1 skill 1 Label and describe the basic structures of a variety of common animals, including fish, amphibians, reptiles, birds and mammals.
	Y1 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	core knowledgeLiving things need to be cared for in order for them to survive. They need water, food, warmth and shelter.	Y1 skill 1 Describe how to care for plants and animals, including pets.
	Y1 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	core knowledgeAll living things (plants and animals) change over time as they grow and mature.	Y1 skill 1 Describe, following observation, how plants and animals change over time.
Year 2 Human Survival – Science focus Key Concepts: Gather & record data Healthy lifestyle Human body Investigation Measurement ObservationQ Uestioning Report and conclude Staying safeS urvival	Y2 Ask simple questions and recognise that they can be answered in different ways.	core knowledgeQuestions can help us find out about the world.	Y2 skill 1 Ask and answer scientific questions about the world around them.
	Y2 Observe closely, using simple equipment.	core knowledgeSimple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	Y2 skill 1 Use simple equipment to measure and make observations.
	Y2 Perform simple tests.	core knowledgeTests can be carried out by following a set of instructions. A prediction is a guess at what might happen in an investigation.	Y2 skill 1 Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions.

9 Programmes of study, 10 skills and 10 knowledge statements	Y2 Identify and classify.	core knowledge Objects, materials and living things can be looked at, compared and grouped according to their features.	Y2 skill 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.
	Y2 Use their observations and ideas to suggest answers to questions.	core knowledge The results are information that has been found out from an investigation and can be used to answer a question.	Y2 skill 1 Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.
	Y2 Gather and record data to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, pictograms and drawings.	Y2 skill 1 Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.
	Y2 Notice that animals, including humans, have offspring which grow into adults.	core knowledge Human offspring go through different stages as they grow to become adults. These include baby, toddler, child, teenager, adult and elderly.	Y2 skill 1 Describe the stages of human development (baby, toddler, child, teenager, adult and elderly).
	Y2 Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).	core knowledge Humans need water, food, air and shelter to survive.	Y2 skill 1 Describe what humans need to survive.
		core knowledge Animals need water, food, air and shelter to survive. Their habitat must provide all these things.	Y2 skill 1 Explain how animals, including humans, need water, food, air and shelter to survive.
	Y2 Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	core knowledge A healthy lifestyle includes exercise, good personal hygiene, good quality sleep and a balanced diet. Risks associated with an unhealthy lifestyle include obesity, tooth decay and mental health problems.	Y2 skill 1 Describe the importance of a healthy lifestyle, including exercise, a balanced diet, good quality sleep and personal hygiene.
Year 2 Remarkable Recipes – DT Focus Key Concepts: Identify & classify 1 Programme of study, 1 skills and 1 knowledge statement	Y2 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	core knowledge Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled.	Y2 skill 1 Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.
Year 2 Habitats – Science focus Key Concepts:	Y2 Ask simple questions and recognise that they can be answered in different ways.	core knowledge Questions can help us find out about the world.	Y2 skill 1 Ask and answer scientific questions about the world around them.

Gather & record data **Habitats** **Identify & classify** **Investigation** **Measurement** **Nutrition** **Observation** **Physical things** **Questioning** 10 Programmes of study, 10 skills and 10 knowledge statements	Y2 Observe closely, using simple equipment.	**core knowledge** Simple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	Y2 **skill** 1 Use simple equipment to measure and make observations.
		core knowledge Tests can be carried out by following a set of instructions. A prediction is a guess at what might happen in an investigation.	Y2 **skill** 1 Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions.
	Y2 Identify and classify.	**core knowledge** Objects, materials and living things can be looked at, compared and grouped according to their features.	Y2 **skill** 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.
	Y2 Use their observations and ideas to suggest answers to questions.	**core knowledge** The results are information that has been found out from an investigation and can be used to answer a question.	Y2 **skill** 1 Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.
	Y2 Gather and record data to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, pictograms and drawings.	Y2 **skill** 1 Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.
	Y2 Explore and compare the differences between things that are living, dead, and things that have never been alive.	**core knowledge** Living things are those that are alive. Dead things are those that were once living but are no longer. Some things have never been alive.	Y2 **skill** 1 Compare and group things that are living, dead or have never been alive.
	Y2 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.	**core knowledge** Local habitats include parks, woodland and gardens. Habitats beyond the locality include beaches, rainforests, deserts, oceans and mountains. All living things live in a habitat to which they are suited and it must provide everything they need to survive.	Y2 **skill** 1 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.
	Y2 Identify and name a variety of plants and animals in their habitats, including microhabitats.	**core knowledge** A habitat is a place where a living thing lives. A microhabitat is a very small habitat.	Y2 **skill** 1 Identify and name a variety of plants and animals in a range of habitats and microhabitats.
	Y2 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.	**core knowledge** Food chains show how living things depend on one another for food. All food chains start with a plant, followed by animals that either eat the plant or other animals.	Y2 **skill** 1 Interpret and construct simple food chains to describe how living things depend on each other as a source of food.

Year 2 Coastline – Geography focus Key Concepts: **Forces** 1 Programme of study, 1 skills and 1 knowledge statement	Y2 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	**core knowledge** Some objects float and others sink. Objects that float are typically light or hollow. Objects that sink are typically heavy or dense.	Y2 **skill** 1 Sort and group objects that float and sink.
Year 2 Using Materials – science focus **Changes** **Gather & record data** **Investigation** **Measurement** **Observation** **Properties and uses** **Questioning** **Report and conclude** 8 Programmes of study, 8 skills and 14 knowledge statements	Y2 Ask simple questions and recognise that they can be answered in different ways.	**core knowledge** Questions can help us find out about the world. **specific knowledge** Earth provides natural resources, and humans need to ensure that these resources do not run out. Sustainability is looking after Earth for the future. We can live more sustainably by reducing, reusing and recycling. **specific knowledge** Recycling is making old, used materials into new objects. Symbols are printed on some packaging to tell us whether or not they can be recycled.	Y2 **skill** 3 Ask and answer scientific questions about the world around them.
	Y2 Observe closely, using simple equipment.	**core knowledge** Simple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	Y2 **skill** 1 Use simple equipment to measure and make observations.
	Y2 Perform simple tests.	**core knowledge** Tests can be carried out by following a set of instructions. A prediction is a guess at what might happen in an investigation. **specific knowledge** Whether a material can be bent, stretched, twisted or squashed can determine its uses. For example, clay will bend, stretch, twist and squash, and it won't return to its original shape, making it ideal for sculpting.	Y2 **skill** 2 Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions.
	Y2 Identify and classify.	**core knowledge** Objects, materials and living things can be looked at, compared and grouped according to their features.	Y2 **skill** 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.
	Y2 Use their observations and ideas to suggest answers to questions.	**core knowledge** The results are information that has been found out from an investigation and can be used to answer a question. **specific knowledge** Paper is made from wood. There are many types of paper, such as printer paper, newsprint and	Y2 **skill** 2 Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.

		cardboard. Different paper types have different properties that make them suitable for specific purposes.	
	Y2 Gather and record data to help in answering questions.	core knowledgeData can be recorded and displayed in different ways, including tables, charts, pictograms and drawings.	Y2 skill 1 Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.
	Y2 Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	core knowledgeA material's physical properties make it suitable for particular purposes, such as glass for windows and brick for building walls. Many materials are used for more than one purpose, such as metal for cutlery and cars. specific knowledgeObjects can be made from one material, more than one material or different materials with similar properties.	Y2 skill 2 Compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard .
	Y2 Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	core knowledgeSome objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay. specific knowledgeBending is pulling or pushing a material until it is no longer straight. Stretching is pulling or pushing a material to make it thinner, longer or wider. Twisting is turning a material until it makes a spiral shape. Squashing is pushing a material so that it becomes flatter.	Y2 skill 1 Describe how some objects and materials can be changed and how these changes can be desirable or undesirable.
Year 2 Plant Survival – Science focus Key Concepts: Gather & record data Habitats Identify & classifyI Nvestigation Living things Measurement Observation Parts and functions Questioning Report and conclude 10 Programmes of study, 10 skills and 13 knowledge statements	Y2 Ask simple questions and recognise that they can be answered in different ways.	core knowledgeQuestions can help us find out about the world.	Y2 skill 1 Ask and answer scientific questions about the world around them.
	Y2 Observe closely, using simple equipment.	core knowledgeSimple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	Y2 skill 1 Use simple equipment to measure and make observations.
	Y2 Perform simple tests.	core knowledgeTests can be carried out by following a set of instructions. A prediction is a guess at what might happen in an investigation.	Y2 skill 1 Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions.
	Y2 Identify and classify.	core knowledgeObjects, materials and living things can be looked at, compared and grouped according to their features. specific knowledgeMany plants grow from seeds or bulbs. Different plants grow in different habitats and change with the	Y2 skill 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.

		seasons. Plants have roots, stems, leaves, flowers and fruit. Trees have roots, a trunk, bark, branches and leaves.	
	Y2 Use their observations and ideas to suggest answers to questions.	core knowledge The results are information that has been found out from an investigation and can be used to answer a question.	Y2 skill 1 Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.
	Y2 Gather and record data to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, pictograms and drawings.	Y2 skill 1 Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.
	Y2 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.	core knowledge Local habitats include parks, woodland and gardens. Habitats beyond the locality include beaches, rainforests, deserts, oceans and mountains. All living things live in a habitat to which they are suited and it must provide everything they need to survive.	Y2 skill 1 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.
	Y2 Identify and name a variety of plants and animals in their habitats, including microhabitats.	core knowledge A habitat is a place where a living thing lives. A microhabitat is a very small habitat. specific knowledge A bulb contains a tiny plant and all the food needed to grow. Spring bulbs can start to grow in winter when the ground is frozen.	Y2 skill 2 Identify and name a variety of plants and animals in a range of habitats and microhabitats.
	Y2 Observe and describe how seeds and bulbs grow into mature plants.	core knowledge Plants grow from seeds and bulbs. Seeds and bulbs need water and warmth to start growing (germinate). As the plant grows bigger, it develops leaves and flowers. specific knowledge The flowers of plants produce seeds. Seeds also form inside cones. The flowers on some plants develop into fruit that contains seeds.	Y2 skill 2 Observe and describe how seeds and bulbs change over time as they grow into mature plants.
	Y2 Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	core knowledge Plants need water, light and a suitable temperature to grow and stay healthy. Without any one of these things, they will die.	Y2 skill 1 Describe how plants need water, light and a suitable temperature to grow and stay healthy.
Year 2 Animal Survival – Science focus Key Concepts: **Gather & record data** **Identify & classify** **Investigation** **Measurement**	Y2 Ask simple questions and recognise that they can be answered in different ways.	core knowledge Questions can help us find out about the world.	Y2 skill 1 Ask and answer scientific questions about the world around them.
	Y2 Observe closely, using simple equipment.	core knowledge Simple equipment is used to take measurements and observations. Examples include timers, hand lenses, metre sticks and trundle wheels.	Y2 skill 1 Use simple equipment to measure and make observations.

Nutrition **Observation** **Questioning** **Report and conclude** **Survival** 10 Programmes of study, 10 skills and 10 knowledge statements			
	Y2 Perform simple tests.	**core knowledge** Tests can be carried out by following a set of instructions. A prediction is a guess at what might happen in an investigation.	Y2 **skill** 1 Follow a set of instructions to perform a range of simple tests, making simple predictions for what might happen and suggesting ways to answer their questions.
	Y2 Identify and classify.	**core knowledge** Objects, materials and living things can be looked at, compared and grouped according to their features.	Y2 **skill** 1 Observe objects, materials, living things and changes over time, sorting and grouping them based on their features and explaining their reasoning.
	Y2 Use their observations and ideas to suggest answers to questions.	**core knowledge** The results are information that has been found out from an investigation and can be used to answer a question.	Y2 **skill** 1 Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language.
	Y2 Gather and record data to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, pictograms and drawings.	Y2 **skill** 1 Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy.
	Y2 Identify and name a variety of plants and animals in their habitats, including microhabitats.	**core knowledge** A habitat is a place where a living thing lives. A microhabitat is a very small habitat.	Y2 **skill** 1 Identify and name a variety of plants and animals in a range of habitats and microhabitats.
	Y2 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.	**core knowledge** Food chains show how living things depend on one another for food. All food chains start with a plant, followed by animals that either eat the plant or other animals.	Y2 **skill** 1 Interpret and construct simple food chains to describe how living things depend on each other as a source of food.
	Y2 Notice that animals, including humans, have offspring which grow into adults. Y2 Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).	**core knowledge** Animals have offspring that grow into adults. Different animals have different stages of growth or life cycles. **core knowledge** Animals need water, food, air and shelter to survive. Their habitat must provide all these things.	Y2 **skill** 1 Describe the basic life cycles of some familiar animals (egg, caterpillar, pupa, butterfly; egg, chick, chicken; spawn, tadpole, froglet, frog). Y2 **skill** 1 Explain how animals, including humans, need water, food, air and shelter to survive.
Year 2 Push and Pull – science focus Key Concepts: **Modelling**	Y2 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	**core knowledge** Models can have moving parts that use levers, sliders, wheels and axles.	Y2 **skill** 1 Make models with moving parts

1 Programme of study, 1 skills and 1 knowledge statement			
Year 3 Skeletal and Muscular Systems – science focus Key Concepts: **Gather & record data** **Human body** **Identify & classify** **Investigation** **Measurement** **Nutrition** **Observation** **Questioning** **Report and conclude** 11 Programmes of study, 13 skills and 9 knowledge statements	Y3 Ask relevant questions and using different types of scientific enquiries to answer them.	**core knowledge** Questions can help us find out about the world and can be answered in different ways.	Y3 skill 1 Ask questions about the world around them and explain that they can be answered in different ways.
	Y3 Set up simple practical enquiries, comparative and fair tests.	**core knowledge** Tests can be set up and carried out by following or planning a set of instructions. A prediction is a best guess for what might happen in an investigation based on some prior knowledge.	Y3 skill 1 Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
	Y3 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**core knowledge** Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Taking repeat readings can increase the accuracy of the measurement.	Y3 skill 1 Take measurements in standard units, using a range of simple equipment.
		core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features.	Y3 skill 1 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Gather, record, classify and present data in a variety of ways to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 skill 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 skill 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.

	Y3 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features.	Y3 skill 1 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Use straightforward scientific evidence to answer questions or to support their findings.	core knowledge Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 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.	core knowledge Animals cannot make their own food and need to get nutrition from the food they eat. Carnivores get their nutrition from eating other animals. Herbivores get their nutrition from plants. Omnivores get their nutrition from eating a combination of both plants and other animals.	Y3 skill 1 Compare and contrast the diets of different animals.
	Y3 Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	core knowledge Humans have a skeleton and muscles for movement, support and protecting organs. Major bones in the human body include the skull, ribs, spine, humerus, ulna, radius, pelvis, femur, tibia and fibula. Major muscle groups in the human body include the biceps, triceps, abdominals, trapezius, gluteals, hamstrings, quadriceps, deltoids, gastrocnemius, latissimus dorsi and pectorals.	Y3 skill 1 Describe how humans need the skeleton and muscles for support, protection and movement.
		core knowledge Some animals have skeletons for support, movement and protection. Endoskeletons are those found inside some animals, such as humans, cats and horses. Exoskeletons are those found on the outside of some animals, such as beetles and flies. Some animals have no skeleton, such as slugs and jellyfish.	Y3 skill 1 Identify and group animals that have no skeleton, an internal skeleton (endoskeleton) and an external skeleton (exoskeleton).
Year 3 Cookwell, Eat well – Science focus Key Concepts: **Healthy lifestyle** 1 Programme of study, 1 skills and 1 knowledge statement	Y3 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.	core knowledge Humans have to 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 need to stay hydrated by drinking water.	Y3 skill 1 Explain the importance and characteristics of a healthy, balanced diet.

Year 3 Rocks, Relics and Rumbles – Geography focus Key Concepts: **Changes** **Earth** **Properties and uses** 3 Programmes of study, 3 skills and 3 knowledge statements	Y3 Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	**core knowledge**There are three different rock types: sedimentary, igneous and metamorphic. Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. Examples include sandstone and limestone. Igneous rocks are made from cooled magma or lava. They usually contain visible crystals. Examples include pumice and granite. Metamorphic rocks are formed when existing rocks are heated by the magma under the Earth's crust or squashed by the movement of the Earth's tectonic plates. They are usually very hard. Examples include slate and marble.	Y3 **skill** 1 Compare and group rocks based on their appearance, properties or uses.
	Y3 Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	**core knowledge**Fossils form over millions of years and are the remains of a once-living organism, preserved as rock. Scientists can use fossils to find out what life on Earth was like in prehistoric times. Fossils form when a living thing dies in a watery environment. The body gets covered by mud and sand and the soft tissues rot away. Over time, the ground hardens to form sedimentary rock and the skeletal or shell remains turn to rock.	Y3 **skill** 1 Describe simply how fossils are formed, using words, pictures or a model.
	Y3 Recognise that soils are made from rocks and organic matter.	**core knowledge**Soils are made from tiny pieces of eroded rock, air and organic matter. There are a variety of naturally occurring soils, including clay, sand and silt. Different areas have different soil types.	Y3 **skill** 1 Investigate soils from the local environment, making comparisons and identifying features.
Year 3 Forces and Magnets – science focus Key Concepts: **ForcesGather & record data** **Investigation** **Measurement** **Observation** **Phenomena** **Physical things** **Properties and uses** **Questioning** **Report and conclude** 15 Programmes of study, 16 skills and 20 knowledge statements	Y3 Ask relevant questions and using different types of scientific enquiries to answer them.	**core knowledge**Questions can help us find out about the world and can be answered in different ways.	Y3 **skill** 1 Ask questions about the world around them and explain that they can be answered in different ways.
	Y3 Set up simple practical enquiries, comparative and fair tests.	**core knowledge**Tests can be set up and carried out by following or planning a set of instructions. A prediction is a best guess for what might happen in an investigation based on some prior knowledge.	Y3 **skill** 1 Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
	Y3 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**core knowledge**Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Taking repeat readings can increase the accuracy of the measurement. **specific knowledge**A force meter is a piece of equipment that measures a force or mass. Forces are measured in newtons (N). Mass is measured in kilograms (kg).	Y3 **skill** 1 Take measurements in standard units, using a range of simple equipment.

		core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. **specific knowledge** Magnets have invisible magnetic fields that can be seen using iron filings. Magnetic field lines emerge from a magnet's north pole then travel in an arc to a magnet's south pole. Magnetic force is stronger at the poles of a magnet.	Y3 **skill** 2 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Gather, record, classify and present data in a variety of ways to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions. **specific knowledge** A bar chart displays information (data) as rectangular bars. A bar chart's vertical axis has a numerical scale, and its horizontal axis has values of something that has been investigated.	Y3 **skill** 2 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions. **specific knowledge** A bar chart displays information (data) as rectangular bars. A bar chart's vertical axis has a numerical scale, and its horizontal axis has values of something that has been investigated.	Y3 **skill** 2 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** The Earth acts like a huge bar magnet. It is surrounded by an invisible magnetic field called the magnetosphere, protecting it from the Sun's solar wind. **specific knowledge** A navigational compass needle is magnetic and always points north.	Y3 **skill** 3 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.

	Y3 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** The Earth acts like a huge bar magnet. It is surrounded by an invisible magnetic field called the magnetosphere, protecting it from the Sun's solar wind. **specific knowledge** A navigational compass needle is magnetic and always points north.	Y3 **skill** 3 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Identify differences, similarities or changes related to simple scientific ideas and processes.	**core knowledge** An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. **specific knowledge** Magnets have invisible magnetic fields that can be seen using iron filings. Magnetic field lines emerge from a magnet's north pole then travel in an arc to a magnet's south pole. Magnetic force is stronger at the poles of a magnet.	Y3 **skill** 2 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Use straightforward scientific evidence to answer questions or to support their findings.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** The Earth acts like a huge bar magnet. It is surrounded by an invisible magnetic field called the magnetosphere, protecting it from the Sun's solar wind. **specific knowledge** A navigational compass needle is magnetic and always points north.	Y3 **skill** 3 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Compare how things move on different surfaces.	**core knowledge** Friction is a force between two surfaces as they move over each other. Friction slows down a moving object. Smooth surfaces usually generate less friction than rough surfaces. **specific knowledge** Friction is greater the rougher the surfaces.	Y3 **skill** 1 Compare how objects move over surfaces made from different materials.
	Y3 Notice that some forces need contact between two objects, but magnetic forces can act at a distance.	**core knowledge** An object will not move unless a pushing or pulling force is applied. Some forces require direct contact, whereas other forces can act at a distance, such as magnetic force.	Y3 **skill** 2 Explain that an object will not move unless a push or pull force is applied, describing forces in action and whether the force requires direct contact or whether the force can act at a distance (magnetic force).

		specific knowledge Forces act in pairs that oppose each other. Forces cause objects to move, change speed or change shape.	
	Y3 Observe how magnets attract or repel each other and attract some materials and not others.	core knowledge Some materials have magnetic properties. Magnetic materials are attracted to magnets. All magnetic materials are metals but not all metals are magnetic. Iron is a magnetic metal. specific knowledge Iron, cobalt, nickel and steel are magnetic metals.	Y3 skill 1 Compare and group materials based on their magnetic properties.
	Y3 Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.	core knowledge Some materials have magnetic properties. Magnetic materials are attracted to magnets. All magnetic materials are metals but not all metals are magnetic. Iron is a magnetic metal. specific knowledge Iron, cobalt, nickel and steel are magnetic metals.	Y3 skill 1 Compare and group materials based on their magnetic properties.
	Y3 Describe magnets as having two poles.	core knowledge Magnets have two poles (north and south). Opposite poles (north and south) attract each other, while like poles (north and north, or south and south) repel each other. specific knowledge Magnetism is a non-contact force. specific knowledge There are different types of magnets, such as horseshoe magnets, magnetic marbles, wand magnets and floating magnets. Magnets have different strengths.	Y3 skill 2 Investigate and compare a range of magnets (bar, horseshoe and floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other.
	Y3 Predict whether two magnets will attract or repel each other, depending on which poles are facing.	core knowledge Magnets have two poles (north and south). Opposite poles (north and south) attract each other, while like poles (north and north, or south and south) repel each other. specific knowledge Magnetism is a non-contact force. specific knowledge There are different types of magnets, such as horseshoe magnets, magnetic marbles, wand magnets and floating magnets. Magnets have different strengths.	Y3 skill 2 Investigate and compare a range of magnets (bar, horseshoe and floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other.
Year 3 Making it move – DT focus Key Concepts:	Y3 Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.		Y3 skill 1 Make working models with simple mechanisms or electrical circuits.

Modelling 1 Programme of study, 1 skills			
Year 3 Plant nutrition and reproduction Key Concepts: Gather & record data Investigation Living things Measurement Observation Parts and functions Questioning Report and conclude Survival 13 Programmes of study, 14 skills and 18 knowledge statements	Y3 Ask relevant questions and using different types of scientific enquiries to answer them.	core knowledgeQuestions can help us find out about the world and can be answered in different ways. specific knowledgePollination is the process where pollen grains are transferred from the stamen of one flower to the carpel of another of the same type. After pollination, seeds form in the carpel's ovary. A pollinator is an animal that pollinates flowering plants. Some plants are pollinated by the wind.	Y3 skill 2 Ask questions about the world around them and explain that they can be answered in different ways.
	Y3 Set up simple practical enquiries, comparative and fair tests.	core knowledgeTests can be set up and carried out by following or planning a set of instructions. A prediction is a best guess for what might happen in an investigation based on some prior knowledge.	Y3 skill 1 Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
	Y3 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	core knowledgeEquipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Taking repeat readings can increase the accuracy of the measurement. specific knowledgeLeaves have two main functions. They capture energy from sunlight to make food through the process of photosynthesis, and they lose water in a process called transpiration, which causes water and nutrients to enter the root and move through the plant. The structure, shape, size and position of leaves help them carry out these functions.	Y3 skill 1 Take measurements in standard units, using a range of simple equipment.

		core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. **specific knowledge** The parts of a flower include the sepal, petal, stamen and carpel. The male stamen includes the anther and the filament. The female carpel consists of the stigma, style and ovary.	Y3 **skill** 2 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Gather, record, classify and present data in a variety of ways to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 **skill** 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 **skill** 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 **skill** 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 **skill** 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Identify differences, similarities or changes related to simple scientific ideas and processes.	**core knowledge** An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. **specific knowledge** The parts of a flower include the sepal, petal, stamen and carpel. The male stamen includes the anther and the filament. The female carpel consists of the stigma, style and ovary.	Y3 **skill** 2 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Use straightforward scientific evidence to answer questions or to support their findings.	**core knowledge** Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 **skill** 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.

	Y3 Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	core knowledge The plant's roots anchor the plant in the ground and transport water and minerals from the ground to the plant. The stem (or trunk) support the plant above the ground. The leaves collect energy from the Sun and make food for the plant. Flowers make seeds to produce new plants. specific knowledge Plant parts have specific functions. The stem transports water, nutrients and food around the plant. The leaves draw water and nutrients from the soil up through the roots and the stem of the plant. Seeds are dispersed away from the parent plant. specific knowledge Seed dispersal is the movement of seeds away from the parent plant.	Y3 skill 2 Name and describe the functions of the different parts of flowering plants (roots, stem, leaves and flowers).
	Y3 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.	core knowledge Plants need air, light, water, minerals from the soil and room to grow, in order to survive. Different plants have different needs depending on their habitat. Examples include cacti, which need less water than is typical, and ferns, which can grow in lower light levels.	Y3 skill 1 Describe the requirements of plants for life and growth (air, light, water, nutrients and room to grow) and how they vary from plant to plant.
	Y3 Investigate the way in which water is transported within plants.	core knowledge Water is transported in plants from the roots, through the stem and to the leaves, through tiny tubes called xylem. specific knowledge There are two main types of root systems. In a taproot system, a primary root grows deep into the soil. Lateral roots covered in tiny root hairs grow out from the sides of the taproot and take in water and nutrients from the soil. A fibrous root system grows just under the soil's surface from the plant's stem. Fibrous roots are covered in root hairs and spread far from the plant to take in water and nutrients. Aerial roots are unusual because they grow above ground. specific knowledge Vascular plants contain tubes called vessels. Xylem carry water and nutrients. Phloem carry food made by the plant's leaves to where it is needed.	Y3 skill 2 Investigate how water is transported within plants.
	Y3 Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	core knowledge Flowers are important in the life cycle of flowering plants. The processes of a plant's life cycle include germination, flower production, pollination, seed formation and seed dispersal. Insects and the wind can transfer pollen from one plant to another (pollination). Animals, wind, water and explosions can disperse seeds away from the parent plant (seed dispersal).	Y3 skill 1 Draw and label the life cycle of a flowering plant.

		specific knowledge A life cycle is a series of changes that happen to a living thing during its lifetime. All plants have a life cycle.	
Year 3 Light and Shadows – Science Focus Key Concepts: Gather & record data Identify & classify Investigation Measurement Observation Pattern seeking Phenomena Questioning Report and conclude Staying safe 14 Programmes of study, 15 skills and 11 knowledge statements	Y3 Ask relevant questions and using different types of scientific enquiries to answer them.	core knowledge Questions can help us find out about the world and can be answered in different ways.	Y3 skill 1 Ask questions about the world around them and explain that they can be answered in different ways.
	Y3 Set up simple practical enquiries, comparative and fair tests.	core knowledge Tests can be set up and carried out by following or planning a set of instructions. A prediction is a best guess for what might happen in an investigation based on some prior knowledge.	Y3 skill 1 Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
	Y3 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	core knowledge Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Taking repeat readings can increase the accuracy of the measurement.	Y3 skill 1 Take measurements in standard units, using a range of simple equipment.
		core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features.	Y3 skill 1 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Gather, record, classify and present data in a variety of ways to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 skill 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions.	Y3 skill 1 Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy.
	Y3 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	core knowledge Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.

	Y3 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	core knowledge Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features.	Y3 skill 1 Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.
	Y3 Use straightforward scientific evidence to answer questions or to support their findings.	core knowledge Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y3 skill 1 Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.
	Y3 Recognise that they need light in order to see things and that dark is the absence of light.	core knowledge Dark is the absence of light and we need light to be able to see.	Y3 skill 1 Describe the differences between dark and light and how we need light to be able to see.
	Y3 Notice that light is reflected from surfaces.	core knowledge Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors.	Y3 skill 1 Group and sort materials as being reflective or non-reflective.
	Y3 Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.	core knowledge Light from the Sun is damaging for vision and the skin. Protection from the Sun includes sun cream, sun hats, sunglasses and staying indoors or in the shade.	Y3 skill 1 Explain why light from the Sun can be dangerous.
	Y3 Recognise that shadows are formed when the light from a light source is blocked by a solid object.	core knowledge A shadow is formed when light from a light source, such as the Sun, is blocked by an opaque object. Transparent objects allow light to pass through them and do not create shadows.	Y3 skill 1 Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object.
	Y3 Find patterns in the way that the size of shadows change.	core knowledge Shadows change shape and size when the light source moves. For example, when the light source is high above the object, the shadow is short and when the light source is low down, the object's shadow is long.	Y3 skill 1 Find patterns in the way shadows change during the day.
Year 4 Digestive System – Science focus Key Concepts:	Y4 Ask relevant questions and using different types of scientific enquiries to answer them.	core knowledge Questions can help us find out about the world and can be answered using scientific enquiry.	Y4 skill 1 Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.

Gather & record data Healthy lifestyle Human body Investigation Measurement Nutrition Observation Parts and functions Questioning Report and conclude 13 Programmes of study, 14 skills and 10 knowledge statements	Y4 Set up simple practical enquiries, comparative and fair tests.	core knowledge Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant.	Y4 skill 1 Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately. Y4 skill 1 Take accurate measurements in standard units, using a range of equipment.
	Y4 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	core knowledge Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres). core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Gather, record, classify and present data in a variety of ways to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 skill 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 skill 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Use straightforward scientific evidence to answer questions or to support their findings.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.

	Y4 Describe the simple functions of the basic parts of the digestive system in humans.	core knowledge The digestive system is responsible for digesting food and absorbing nutrients and water. The main parts of the digestive system are the mouth, oesophagus, stomach, small intestines, large intestines and rectum. The mouth starts digestion by chewing food and mixing it with saliva. The oesophagus transports the chewed food to the stomach, where it mixes with stomach acid and gets broken down into smaller pieces. In the small intestine, nutrients from the food are absorbed by the body. In the large intestine, water is absorbed by the body. The remaining undigested waste is stored in the rectum before excretion through the anus.	Y4 skill 1 Describe the purpose of the digestive system, its main parts and each of their functions.
	Y4 Identify the different types of teeth in humans and their simple functions.	core knowledge There are four different types of teeth: incisors, canines, premolars and molars. Incisors are used for cutting. Canines are used for tearing. Premolars and molars are used for grinding and chewing. Carnivores, herbivores and omnivores have characteristic types of teeth. Herbivores have many large molars for grinding plant material. Carnivores have large canines for killing their prey and tearing meat.	Y4 skill 1 Identify the four different types of teeth in humans and other animals, and describe their functions.
	Y4 Construct and interpret a variety of food chains, identifying producers, predators and prey.	core knowledge Food chains show what animals eat within a habitat and how energy is passed on over time. All food chains start with a producer, which is typically a green plant. The producer is eaten by a primary consumer (prey), which is eaten by a secondary consumer (prey), which is eaten by a tertiary consumer. All food chains end with a top or apex predator. Changes within a food chain, such as an abundance or lack of one food type, have an impact on the entire food chain.	Y4 skill 1 Construct and interpret a variety of food chains and webs to show interdependence and how energy is passed on over time.
	Y4 Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	core knowledge Regular teeth brushing, limiting sugary foods and visiting the dentist are important for good oral hygiene.	Y4 skill 1 Describe what damages teeth and how to look after them.
Year 4 Sound – Science Focus Key Concepts: Gather & record data Investigation Measurement Observation Pattern seeking Phenomena Questioning Report and conclude	Y4 Ask relevant questions and using different types of scientific enquiries to answer them.	core knowledge Questions can help us find out about the world and can be answered using scientific enquiry.	Y4 skill 1 Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.
	Y4 Set up simple practical enquiries, comparative and fair tests.	core knowledge Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant.	Y4 skill 1 Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.

14 Programmes of study, 15 skills and 10 knowledge statements	Y4 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	core knowledge Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres).	Y4 skill 1 Take accurate measurements in standard units, using a range of equipment.
		core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Gather, record, classify and present data in a variety of ways to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 skill 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 skill 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.

	Y4 Use straightforward scientific evidence to answer questions or to support their findings.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Identify how sounds are made, associating some of them with something vibrating.	core knowledge When an instrument is played, the air around or inside it vibrates. These vibrations travel as a sound wave. Sound waves travel through a medium, such as air or water, to the ear.	Y4 skill 1 Explain how sounds are made and heard using diagrams, models, written methods or verbally.
	Y4 Recognise that vibrations from sounds travel through a medium to the ear.	core knowledge When an instrument is played, the air around or inside it vibrates. These vibrations travel as a sound wave. Sound waves travel through a medium, such as air or water, to the ear.	Y4 skill 1 Explain how sounds are made and heard using diagrams, models, written methods or verbally.
	Y4 Find patterns between the pitch of a sound and features of the object that produced it.	core knowledge Pitch is how high or low a sound is. Parts of an instrument that are shorter, tighter or thinner produce high-pitched sounds. Parts of an instrument that are longer, looser or fatter produce low-pitched sounds.	Y4 skill 1 Compare and find patterns in the pitch of a sound, using a range of equipment, such as musical instruments.
	Y4 Find patterns between the volume of a sound and the strength of the vibrations that produced it.	core knowledge Volume is how loud or quiet a sound is. The harder an instrument is hit, plucked or blown, the stronger the vibrations and the louder the sound.	Y4 skill 1 Compare and find patterns in the volume of a sound, using a range of equipment, such as musical instruments.
	Y4 Recognise that sounds get fainter as the distance from the sound source increases.	core knowledge Sounds are louder closer to the sound source and fainter as the distance from the sound source increases.	Y4 skill 1 Compare how the volume of a sound changes at different distances from the source.
Year 4 Misty Mountain, Winding River – Geography focus Key Concepts: Earth Habitats	Y4 Recognise that environments can change and that this can sometimes pose dangers to living things.	core knowledge Humans can affect habitats in negative ways, such as littering, pollution and land development, or positive ways, such as garden ponds, bird boxes and wildflower areas.	Y4 skill 1 Describe how environments can change due to human and natural influences and the impact this can have on living things.

2 Programmes of study, 2 skills and 2 knowledge statements	Y4 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**core knowledge** The water cycle has four stages: evaporation, condensation, precipitation and collection. Water in lakes, rivers and streams is warmed by the Sun, causing the water to evaporate and rise into the air as water vapour. As the water vapour rises, it cools and condenses to form water droplets in clouds. The clouds become full of water until the water falls back to the ground as precipitation (rain, hail, snow and ice). The fallen water collects back in lakes, rivers and streams. Evaporation and condensation are caused by temperature changes.	Y4 skill 1 Describe the water cycle using words or diagrams and explain the part played by evaporation and condensation.
Year 4 States of Matter – science focus Key Concepts: **Changes** **Gather & record data** **Identify & classify** **Investigation** **Measurement** **Observation** **Report and conclude** 10 Programmes of study, 11 skills and 13 knowledge statements	Y4 Set up simple practical enquiries, comparative and fair tests.	**core knowledge** Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant. **specific knowledge** Factors that affect the rate of ice melting include the size of the ice, the temperature, agitation by stirring and changing its composition.	Y4 skill 2 Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
	Y4 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**core knowledge** Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres).	Y4 skill 1 Take accurate measurements in standard units, using a range of equipment
		core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.

	Y4 Gather, record, classify and present data in a variety of ways to help in answering questions.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. specific knowledge A line graph is a way of displaying data that shows a relationship between two variables. Many line graphs show changes over 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.	Y4 skill 2 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. specific knowledge A line graph is a way of displaying data that shows a relationship between two variables. Many line graphs show changes over 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.	Y4 skill 2 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. specific knowledge Particles make up all materials. The particles are close together and arranged in a regular pattern in a solid. In a liquid, the particles are close together but arranged randomly. In a gas, the particles are randomly arranged and far apart.	Y4 skill 2 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.
	Y4 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. specific knowledge Particles make up all materials. The particles are close together and arranged in a regular pattern in a solid. In a liquid, the particles are close together but arranged randomly. In a gas, the particles are randomly arranged and far apart.	Y4 skill 2 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.
	Y4 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.

	Y4 Use straightforward scientific evidence to answer questions or to support their findings.	**core knowledge** Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** Particles make up all materials. The particles are close together and arranged in a regular pattern in a solid. In a liquid, the particles are close together but arranged randomly. In a gas, the particles are randomly arranged and far apart.	Y4 **skill** 2 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.
	Y4 Compare and group materials together, according to whether they are solids, liquids or gases.	**core knowledge** Materials can be grouped according to whether they are solids, liquids or gases. Solids stay in one place and can be held. Some solids can be squashed, bent, twisted and stretched. Examples of solids include wood, metal, plastic and clay. Liquids move around (flow) easily and are difficult to hold. Liquids take the shape of the container in which they are held. Examples of liquids include water, juice and milk. Gases spread out to fill the available space and cannot be held. Examples of gases include oxygen, helium and carbon dioxide. Air is a mixture of gases.	Y4 **skill** 1 Group and sort materials into solids, liquids or gases.
	Y4 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).	**core knowledge** Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible. The temperature at which materials change state varies depending on the material. Water changes state from solid (ice) ⇌ liquid (water) at 0°C and from liquid (water) ⇌ gas (water vapour) at 100°C. The process of changing from a solid to liquid is called melting. The reverse process of changing from a liquid to a solid is called freezing. The process of changing from a liquid to a gas is called evaporation. The reverse process of changing from a gas to a liquid is called condensation. **specific knowledge** The temperature when a solid begins to melt is called its melting point. The temperature when a liquid begins to freeze is called its freezing point. The temperature when a liquid begins to evaporate is called its boiling point. The temperature when a gas begins to condense is called its condensing point. **specific knowledge** Temperature is a measure of how hot or cold something is. It is measured in degrees using an instrument called a thermometer. In the United Kingdom, temperature is measured in degrees Celsius. **specific knowledge** Different materials have different melting and boiling points. A material's state on Earth depends on Earth's temperature.	Y4 **skill** 4 Observe and explain that some materials change state when they are heated or cooled and measure or research the temperature in degrees Celsius (˚C) at which materials change state.

Year 4 Grouping and Classifying – science focus Key Concepts: **Gather & record data** **Identify & classify** **Observation** **Questioning** 10 Programmes of study, 10 skills and 11 knowledge statements	Y4 Ask relevant questions and using different types of scientific enquiries to answer them.	**core knowledge** Questions can help us find out about the world and can be answered using scientific enquiry.	Y4 **skill** 1 Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.
	Y4 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**core knowledge** An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time. **specific knowledge** Classification is the arrangement of living and non-living things into groups or categories. Single-stage classification involves separating a large group of objects into smaller groups based on a single property. Multi-stage classification involves sorting groups into subgroups repeatedly until all the objects in one group are the same. Serial ordering involves sorting objects into an order based on a property.	Y4 **skill** 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Gather, record, classify and present data in a variety of ways to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. **specific knowledge** Classification keys are created by devising a set of yes or no questions that separate a group into two groups until objects end up on their own. Classification keys are also called dichotomous keys or branching trees.	Y4 **skill** 2 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. **specific knowledge** Classification keys are created by devising a set of yes or no questions that separate a group into two groups until objects end up on their own. Classification keys are also called dichotomous keys or branching trees.	Y4 **skill** 2 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	**core knowledge** Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** All vertebrates are covered with skin, feathers, scales, fur or hair. They give birth to live young or lay eggs. They can be cold blooded or warm blooded.	Y4 **skill** 2 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
	Y4 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**core knowledge** Results are information, such as data or observations, that have been found out from an investigation.	Y4 **skill** 2 Use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple

		A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** All vertebrates are covered with skin, feathers, scales, fur or hair. They give birth to live young or lay eggs. They can be cold blooded or warm blooded.	conclusions and identify next steps, improvements and further questions.
	Y4 Identify differences, similarities or changes related to simple scientific ideas and processes.	**core knowledge** An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time. **specific knowledge** Classification is the arrangement of living and non-living things into groups or categories. Single-stage classification involves separating a large group of objects into smaller groups based on a single property. Multi-stage classification involves sorting groups into subgroups repeatedly until all the objects in one group are the same. Serial ordering involves sorting objects into an order based on a property.	Y4 **skill** 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Use straightforward scientific evidence to answer questions or to support their findings.	**core knowledge** Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. **specific knowledge** All vertebrates are covered with skin, feathers, scales, fur or hair. They give birth to live young or lay eggs. They can be cold blooded or warm blooded.	Y4 **skill** 2 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.
	Y4 Recognise that living things can be grouped in a variety of ways.	**core knowledge** Scientists classify living things according to shared characteristics. Animals can be divided into six main groups: mammals, reptiles, amphibians, birds, fish and invertebrates. These groups can be further subdivided. Classification keys are scientific tools that aid the identification of living things. **specific knowledge** The animal kingdom is divided into vertebrates and invertebrates. A vertebrate is an animal with a backbone. An invertebrate is an animal without a backbone. All vertebrates are covered with skin, feathers, scales, fur or hair. Invertebrates usually have soft bodies or a hard outer shell or covering called an exoskeleton. **specific knowledge** Invertebrates usually have soft bodies or a hard outer shell or covering called an exoskeleton. There are six main groups of invertebrates: annelids, molluscs, arachnids, crustaceans, insects and myriapods. **specific knowledge** The plant kingdom is divided into vascular and non-vascular plants. There are two main types of vascular	Y4 **skill** 4 Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour.

		plants: plants with seeds and plants with spores. There are two groups of plants with seeds: flowering plants and cone-bearing plants.	
	Y4 Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	**core knowledge** Scientists classify living things according to shared characteristics. Animals can be divided into six main groups: mammals, reptiles, amphibians, birds, fish and invertebrates. These groups can be further subdivided. Classification keys are scientific tools that aid the identification of living things. **specific knowledge** The animal kingdom is divided into vertebrates and invertebrates. A vertebrate is an animal with a backbone. An invertebrate is an animal without a backbone. All vertebrates are covered with skin, feathers, scales, fur or hair. Invertebrates usually have soft bodies or a hard outer shell or covering called an exoskeleton. **specific knowledge** Invertebrates usually have soft bodies or a hard outer shell or covering called an exoskeleton. There are six main groups of invertebrates: annelids, molluscs, arachnids, crustaceans, insects and myriapods. **specific knowledge** The plant kingdom is divided into vascular and non-vascular plants. There are two main types of vascular plants: plants with seeds and plants with spores. There are two groups of plants with seeds: flowering plants and cone-bearing plants.	Y4 **skill** 4 Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour.
Year 4 Electrical Circuits Key Concepts: **Forces** **Gather & record data** **Investigation** **Modelling** **Observation** **Physical things** **Properties and uses** **Questioning** **Report and conclude** **Staying safe** 15 Programmes of study, 15 skills and 14 knowledge statements	Y4 Ask relevant questions and using different types of scientific enquiries to answer them.	**core knowledge** Questions can help us find out about the world and can be answered using scientific enquiry.	Y4 **skill** 1 Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.
	Y4 Set up simple practical enquiries, comparative and fair tests.	**core knowledge** Scientific enquiries can be set up and carried out by following or planning a method. A prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant.	Y4 **skill** 1 Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
	Y4 Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	**core knowledge** An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 **skill** 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Gather, record, classify and present data in a variety of ways to help in answering questions.	**core knowledge** Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 **skill** 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).

	Y4 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	core knowledge Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams.	Y4 skill 1 Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
	Y4 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Identify differences, similarities or changes related to simple scientific ideas and processes.	core knowledge An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time.	Y4 skill 1 Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
	Y4 Use straightforward scientific evidence to answer questions or to support their findings.	core knowledge Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected.	Y4 skill 1 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.
	Y4 Identify common appliances that run on electricity.	core knowledge Electricity is a type of energy. It is used to power many everyday items, such as kettles, computers and televisions. Electricity can also come from batteries. Batteries eventually run out of power and need to be recycled or recharged. Batteries power devices that can be carried around, such as mobile phones and torches. specific knowledge Electricity is essential to our daily lives and makes peoples' lives easier. Electricity comes from two sources, mains and batteries.	Y4 skill 1 Compare common household equipment and appliances that are and are not powered by electricity.
	Y4 Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.	core knowledge Electrical components include cells, wires, lamps, motors, switches and buzzers. Switches open and close a circuit and provide control. specific knowledge A circuit is a collection of components connected by wires through which an electric current can flow. A circuit must be a complete loop to work.	Y4 skill 4 Construct operational simple series circuits using a range of components and switches for control.

		specific knowledge2 A series circuit has a single path for an electric current to flow through.	
	Y4 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.	core knowledge A series circuit is a simple loop with only one path for the electricity to flow. A series circuit must be a complete loop to work and have a source of power from a battery or cell.	Y4 skill 1 Predict and describe whether a circuit will work based on whether or not the circuit is a complete loop and has a battery or cell.
	Y4 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	core knowledge Electrical components include cells, wires, lamps, motors, switches and buzzers. Switches open and close a circuit and provide control. specific knowledge A circuit is a collection of components connected by wires through which an electric current can flow. A circuit must be a complete loop to work. specific knowledge2 A series circuit has a single path for an electric current to flow through.	Y4 skill 4 Construct operational simple series circuits using a range of components and switches for control.
	Y4 Recognise some common conductors and insulators, and associate metals with being good conductors.	core knowledge Electrical conductors allow electricity to flow through them, whereas insulators do not. Common electrical conductors are metals. Common insulators include wood, glass, plastic and rubber. specific knowledge Plugs and cabling are made from a combination of conductive and insulating materials. Insulating plastic covers conductive metals to make plugs safe to use.	Y4 skill 2 Describe materials as electrical conductors or insulators.
	Y4 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	core knowledge Working with electrical circuits can be dangerous. Precautions include not touching electrical components with wet hands and not putting batteries in mouths.	Y4 skill 1 Explain the precautions needed for working safely with electrical circuits.
Year 5 Forces and Mechanisms – Science focus Key Concepts: Forces Gather & record data	Y5 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledge A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y5 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.

Investigation Measurement Modelling Observation Phenomena Questioning Report and conclude 9 Programmes of study, 11 skills and 9 knowledge statements		core knowledgeQuestions can help us find out about the world and can be answered using a range of scientific enquiries.	Y5 skill 1 Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
	Y5 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledgeSpecialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).	Y5 skill 1 Take increasingly accurate measurements in standard units, using a range of chosen equipment.
		core knowledgeAn observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.	Y5 skill 1 Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.
	Y5 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledgeData can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.	Y5 skill 1 Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models).
	Y5 Use test results to make predictions to set up further comparative and fair tests.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	core knowledgeGravity is a force of attraction. Anything with a mass can exert a gravitational pull on another object. The	Y5 skill 1 Explain that objects fall to Earth due to the force of gravity.

		Earth's large mass exerts a gravitational pull on all objects on Earth, making dropped objects fall to the ground.	
	Y5 Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	core knowledge Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects. These forces can be useful, such as bike brakes and parachutes, but sometimes we need to minimise their effects, such as streamlining boats and planes to move through water or air more easily, and using lubricants and ball bearings between two surfaces to reduce friction.	Y5 skill 1 Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction.
	Y5 Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	core knowledge Mechanisms, such as levers, pulleys and gears, give us a mechanical advantage. A mechanical advantage is a measurement of how much a simple machine multiplies the force that we put in. The bigger the mechanical advantage, the less force we need to apply.	Y5 skill 1 Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects.
Year 5 Earth and Space – science focus Key Concepts: Earth Gather & record data Investigation Measurement Observation Pattern seeking Phenomena Questioning Report and conclude 10 Programmes of study, 12 skills and 10 knowledge statements	Y5 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledge A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y5 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.
		core knowledge Questions can help us find out about the world and can be answered using a range of scientific enquiries.	Y5 skill 1 Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
	Y5 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledge Specialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).	Y5 skill 1 Take increasingly accurate measurements in standard units, using a range of chosen equipment.

		core knowledge An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.	Y5 skill 1 Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.
	Y5 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledge Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.	Y5 skill 1 Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models).
	Y5 Use test results to make predictions to set up further comparative and fair tests.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.	core knowledge The Solar System is made up of the Sun and everything that orbits around it. There are eight planets in our Solar System: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Earth orbits around the Sun and a year (365 days) is the length of time it takes for Earth to complete a full orbit.	Y5 skill 1 Describe or model the movement of the planets in our Solar System, including Earth, relative to the Sun.
	Y5 Describe the movement of the Moon relative to the Earth.	core knowledge The Moon orbits Earth, completing a full orbit every month (28 days).	Y5 skill 1 Describe or model the movement of the Moon relative to Earth.

	Y5 Describe the Sun, Earth and Moon as approximately spherical bodies.	core knowledgeThe Sun, Earth, Moon and the planets in our solar system are roughly spherical. 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.	Y5 skill 1 Describe the Sun, Earth and Moon as approximately spherical bodies and use this knowledge to understand the phases of the Moon and eclipses.
	Y5 Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	core knowledgeAs 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. However, this is due to the Earth rotating and not the Sun moving. 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.	Y5 skill 1 Use the idea of Earth's rotation to explain day and night, and the Sun's apparent movement across the sky.
Year 5 Sow, Grow and Farm – Geography focus Key Concpets: Habitats Identify & classify Investigation Nutrition Parts and functions Physical things Survival 5 Programmes of study, 7 skills and 10 knowledge statements	Y5 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledgeA method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y5 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.
	Y5 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	core knowledgeA life cycle is the series of changes in the life of a living thing and includes these basic stages: birth, growth, reproduction and death. Mammals' life cycles include the stages: embryo, juvenile, adolescent and adult. Amphibians' life cycles include the stages: egg, larva (tadpole), adolescent and adult. Some insects' (butterflies, beetles and bees) life cycles include the stages: egg, larva, pupa and adult. Birds' life cycles include the stages: egg, baby, adolescent and adult.	Y5 skill 1 Compare the life cycles of animals, including a mammal, an amphibian, an insect and a bird.
	Y5 Describe the life process of reproduction in some plants and animals.	core knowledgeFlowering plants reproduce sexually. The flower is essential for sexual reproduction. Other plants reproduce asexually. Bulbs, corms and rhizomes are some parts used in asexual reproduction in plants.	Y5 skill 1 Group and sort plants by how they reproduce.
		core knowledgeParts of a flower include the stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal. Pollination is when the male part of a plant (pollen) is carried, by wind, insects or other animals, to the female part of the plant (carpel). The pollen travels to the ovary, where it fertilises the ovules (eggs). Seeds are then produced, which disperse far away from the parent plant and grow new plants.	Y5 skill 1 Label and draw the parts of a flower involved in sexual reproduction in plants (stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal).

		core knowledge Reproduction is the process of producing offspring and is essential for the continued survival of a species. There are two types of reproduction: sexual and asexual. Sexual reproduction involves two parents (one female and one male) and produces offspring that are different from the parents. Asexual reproduction involves one parent and produces offspring that is identical to the parent. **specific knowledge** Some plants reproduce sexually, where male pollen grains from one plant are transferred to and fertilise the female ovules of a different plant. Some plants produce asexually, where they create a genetically identical offspring using structures such as bulbs, rhizomes, tubers, corms and runners.	**Y5 skill 2** Describe the life process of reproduction in some plants and animals.
	Y5 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	**core knowledge** Population changes in a habitat can have significant consequences for food chains and webs. **specific knowledge** A food web is a set of interconnected food chains that show how animals rely on plants and other animals for food.	**Y5 skill 1** Describe, using their knowledge of food chains and webs, what could happen if a habitat had a living thing removed or introduced.
	Y5 Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	**core knowledge** Farming in the UK can be divided into three main types: arable (growing crops), pastoral (raising livestock), mixed (arable and pastoral). Intensive farming in the past has resulted in the loss of habitats. **specific knowledge** Modern farming methods, such as excessive tillage, monoculture, removal of hedgerows, use of synthetic fertilisers and chemical pesticides, irrigation technologies and autumn planting, all impact on wildlife and the natural environment.	**Y5 skill 2** Research and describe different farming practices in the UK and how these can have positive and negative effects on natural habitats.

Year 5 Human reproduction and ageing – science focus Key Concepts: Gather & record data Healthy lifestyle Human body Investigation Living things Measurement Observation Physical things Questioning Report and conclude Survival 10 Programmes of study, 13 skills and 22 knowledge statements	Y5 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledge A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding. specific knowledge Juveniles go through rapid growth, change and development over time. They become taller, talk and walk, learn new skills, such as reading and writing, and change from wholly dependent babies to more independent school children.	Y5 skill 2 Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.
		core knowledge Questions can help us find out about the world and can be answered using a range of scientific enquiries. specific knowledge As humans age, many of the body's systems gradually decline, leading to the changes seen in older people. These changes include the loss of eyesight and hearing, greying hair, wrinkled skin, weakened bones, joints and muscles, heart problems, memory loss, and brain function problems.	Y5 skill 1 Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
	Y5 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledge Specialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).	Y5 skill 1 Take increasingly accurate measurements in standard units, using a range of chosen equipment.
		core knowledge An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.	Y5 skill 1 Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.

	Y5 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledge Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams. specific knowledge A scatter graph is used when we have two sets of data, called variables, and we want to see a relationship between them. If there is a relationship between the variables, it is called a correlation. If there is no relationship between the variables, it is called no correlation. specific knowledge In general, mammals with a smaller mass have a shorter gestation period, and mammals with a larger mass have a longer gestation period. specific knowledge Humans are mammals and have a mammalian life cycle.	Y5 skill 4 Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models).
	Y5 Use test results to make predictions to set up further comparative and fair tests.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected. specific knowledge Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18.	Y5 skill 2 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected. specific knowledge Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18.	Y5 skill 2 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected. specific knowledge Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18.	Y5 skill 2 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	core knowledge A life cycle is the series of changes in the life of a living thing and includes these basic stages: birth, growth, reproduction and death. Mammals' life cycles include the stages: embryo, juvenile, adolescent and adult. Amphibians'	Y5 skill 4 Compare the life cycles of animals, including a mammal, an amphibian, an insect and a bird.

		life cycles include the stages: egg, larva (tadpole), adolescent and adult. Some insects' (butterflies, beetles and bees) life cycles include the stages: egg, larva, pupa and adult. Birds' life cycles include the stages: egg, baby, adolescent and adult. **specific knowledge** Vocabulary used to describe stages of a life cycle include foetus, infant, juvenile, adolescent and adult. Vocabulary used to describe processes in a life cycle include birth, growth, puberty and reproduction. **specific knowledge** A mammal is a vertebrate, which means it has a backbone. The five key mammalian characteristics of mammals are that they produce milk to feed their young, are warm blooded, give birth to live young, have fur or hair and breathe air with lungs. **specific knowledge** The processes in mammalian life cycles are birth, growth, puberty and reproduction. The stages in mammalian life cycles are embryo, juvenile, adolescent and adult. The length of time for each stage and process varies between different mammals.	
	Y5 Describe the life process of reproduction in some plants and animals.	**core knowledge** Humans reproduce sexually, which involves two parents (one female and one male) and produces offspring that are different from the parents. **specific knowledge** During human sexual reproduction, a female egg is fertilised by a male sperm.	Y5 **skill** 1 Describe the process of human reproduction.
		core knowledge Reproduction is the process of producing offspring and is essential for the continued survival of a species. There are two types of reproduction: sexual and asexual. Sexual reproduction involves two parents (one female and one male) and produces offspring that are different from the parents. Asexual reproduction involves one parent and produces offspring that is identical to the parent.	
	Y5 Describe the changes as humans develop to old age.	**core knowledge** Humans go through characteristic stages as they develop towards old age. These stages include baby, infant, toddler, child, adolescent, young adult, adult and senior citizen. Puberty is the transition between childhood and adulthood. **specific knowledge** Gestation is the length of time the young of a mammal develops inside the female's body before birth. The human gestation period is around 40 weeks. During this	Y5 **skill** 2 Describe the changes as humans develop from birth to old age.

		time, the organs, limbs and senses develop, and the foetus grows until it is ready to be born.	
	Y5 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	core knowledgeGood personal hygiene (washing, wearing clean clothes and brushing teeth) can prevent disease or illness. Puberty is the period during which adolescents reach sexual maturity and become capable of reproduction. It causes physical and emotional changes.	Y5 skill 1 Explain why personal hygiene is important during puberty.
Year 5 Properties and changes of materials Key Concepts: Changes Gather & record data Identify & classify Investigation Measurement Observation Properties and uses Questioning Report and conclude Staying safe 13 Programmes of study, 15 skills and 12 knowledge statements	Y5 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledgeA method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y5 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.
		core knowledgeQuestions can help us find out about the world and can be answered using a range of scientific enquiries.	Y5 skill 1 Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
	Y5 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledgeSpecialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).	Y5 skill 1 Take increasingly accurate measurements in standard units, using a range of chosen equipment.
		core knowledgeAn observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.	Y5 skill 1 Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.
	Y5 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledgeData can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams.	Y5 skill 1 Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models).
	Y5 Use test results to make predictions to set up further comparative and fair tests.	core knowledgeThe results are information, such as measurements or observations, that have been collected	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on

		during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	evidence collected, identify improvements, further questions and predictions.
	Y5 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.	Y5 skill 1 Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
	Y5 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.	core knowledgeMaterials can be grouped according to their basic physical properties. Properties include hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.	Y5 skill 1 Compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.
	Y5 Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	core knowledgeSome materials (solutes) will dissolve in liquid (solvents) to form a solution. The solute can be recovered by evaporating off the solvent by heating.	Y5 skill 1 Explain, following observation, that some substances (solutes) will dissolve in liquid (solvents) to form a solution and the solute can be recovered by evaporating off the solvent.
	Y5 Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	core knowledgeSome mixtures can be separated by filtering, sieving and evaporating. Sieving can be used to separate large solids from liquids and some solids from other solids. Filtering can be used to separate small solids from liquids. Evaporating can be used to separate dissolved solids from liquids.	Y5 skill 1 Separate mixtures by filtering, sieving and evaporating.
	Y5 Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	core knowledgeA material's properties dictate what it can be used for. For example, cooking pans are made from metal, which is a good thermal conductor, allowing heat to quickly transfer from the hob to the contents of the pan.	Y5 skill 1 Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass.
	Y5 Demonstrate that dissolving, mixing and changes of state are reversible changes.	core knowledgeReversible changes include heating, cooling, melting, dissolving and evaporating. Irreversible changes include burning, rusting, decaying and chemical reactions.	Y5 skill 1 Identify, demonstrate and compare reversible and irreversible changes.
	Y5 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.	core knowledgeReversible changes include heating, cooling, melting, dissolving and evaporating. Irreversible changes include burning, rusting, decaying and chemical reactions.	Y5 skill 1 Identify, demonstrate and compare reversible and irreversible changes.

	Y5 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	core knowledgeVery hot and very cold materials can burn skin. Heating materials should be done safely.	Y5 skill 1 Explain the precautions needed for working safely when heating, burning, cooling and mixing materials.
Year 6 Key Concepts: Gather & record data Healthy lifestyle Human bodyInvestigation Measurement Nutrition Observation Questioning Report and conclude 9 Programmes of study, 11 skills and 9 knowledge statements	Y6 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledgeA method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y6 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.
		core knowledgeQuestions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.	Y6 skill 1 Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
	Y6 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledgeSpecialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).	Y6 skill 1 Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.
		core knowledgeAn observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.	Y6 skill 1 Independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.

	Y6 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledge Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.	Y6 skill 1 Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.
	Y6 Use test results to make predictions to set up further comparative and fair tests.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	core knowledge The circulatory system includes the heart, blood vessels and blood. The heart pumps blood through the blood vessels and around the body. There are three types of blood vessel: arteries, veins and capillaries. They each have a different-sized hole (lumen) and walls. The blood carries gases (oxygen and carbon dioxide), water and nutrients to where they are needed. The red blood cells carry oxygen and carbon dioxide around the body. The blood also contains white blood cells, which protect the body from infection.	Y6 skill 1 Name and describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood.
	Y6 Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	core knowledge Lifestyle choices can have a positive (exercise and eating healthily) or negative (drugs, smoking and alcohol) impact on the body.	Y6 skill 1 Explain the impact of positive and negative lifestyle choices on the body.
	Y6 Describe the ways in which nutrients and water are transported within animals, including humans.	core knowledge The role of the circulatory system is to transport oxygen, water and nutrients around the body. They are transported in blood and delivered to where they are needed.	Y6 skill 1 Explain that the circulatory system in animals transports oxygen, water and nutrients around the body.

Year 6 Frozen Kingdoms – Geography focus Key Concepts: **Habitats** **Identify & classify** **Investigation** **Questioning** **Survival** 4 Programmes of study, 6 skills and 7 knowledge statements	Y6 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	**core knowledge** A method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y6 **skill** 1 Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.
		core knowledge 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.	Y6 **skill** 1 Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
	Y6 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.	**core knowledge** Classification keys help us identify living things based on their physical characteristics.	Y6 **skill** 1 Use and construct classification systems to identify animals and plants from a range of habitats.
		core knowledge Scientists classify living organisms into broad groups according to their characteristics. Vertebrates are an example of a classification group. There are a number of ranks, or levels, within the biological classification system. The first rank is called a kingdom, the second a phylum, then class, order, family, genus and species. **specific knowledge** Vertebrates, or chordates, can be subdivided into five groups: amphibians, birds, fish, mammals and reptiles.	Y6 **skill** 2 Classify living things, including microorganisms, animals and plants, into groups according to common observable characteristics and based on similarities and differences.
	Y6 Give reasons for classifying plants and animals based on specific characteristics.	**core knowledge** Living things are classified into groups, according to common observable characteristics and based on similarities and differences.	Y6 **skill** 1 Research unfamiliar animals and plants from a range of habitats, deciding upon and explaining where they belong in the classification system.
	Y6 Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	**core knowledge** An adaptation is a physical or behavioural trait that allows a living thing to survive and fill an ecological niche. Adaptations evolve by natural selection. Favourable traits help an organism survive and pass on their genes to subsequent generations.	Y6 **skill** 1 Identify how animals and plants are adapted to suit their environment, such as giraffes having long necks for feeding, and that adaptations may lead to evolution.

Class 6 Electrical Circuits and Conductors – science focus Key Concepts: **Forces** **Gather & record data** **Investigation** **Measurement** **Modelling** **Observation** **Phenomena** **Questioning** **Report and conclude** 9 Programmes of study, 11 skills and 12 knowledge statements	Y6 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	**core knowledge** A method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y6 **skill** 1 Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.
		core knowledge 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.	Y6 **skill** 1 Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
	Y6 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	**core knowledge** Specialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).	Y6 **skill** 1 Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.
		core knowledge An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.	Y6 **skill** 1 Independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.

	Y6 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledge Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams. specific knowledge Electricity is a form of energy that makes things work. Circuit components include cells, buzzers, switches, wires, lamps and motors. A collection of components connected by wires in a loop is called a series circuit. Materials that allow electricity to flow through them are called electrical conductors. Materials that do not allow electricity to flow through them are called electrical insulators.	Y6 skill 1 Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.
	Y6 Use test results to make predictions to set up further comparative and fair tests.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence. specific knowledge 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. specific knowledge Electric current is measured using an ammeter. The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter. A multimeter measures both electric current and voltage.	Y6 skill 2 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence. specific knowledge 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. specific knowledge Electric current is measured using an ammeter. The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter. A multimeter measures both electric current and voltage.	Y6 skill 2 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledge The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 2 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.

		specific knowledgeAn 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. specific knowledgeElectric current is measured using an ammeter. The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter. A multimeter measures both electric current and voltage.	
	Y6 Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.	core knowledgeVoltage is measured in volts (V) and is a measure of the difference in electrical energy between two parts of a circuit. 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.	Y6 skill 1 Explain how the brightness of a lamp or volume of a buzzer is affected by the number and voltage of cells used in a circuit.
	Y6 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.	core knowledgeA circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals. Other components include lamps, buzzers or motors, which an electric current passes through and affects a response, such as lighting a lamp or turning a motor. 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.	Y6 skill 1 Compare and give reasons for variations in how components in electrical circuits function (brightness of lamps; volume of buzzers and function of on or off switches).
	Y6 Use recognised symbols when representing a simple circuit in a diagram.	core knowledgeThere are recognised symbols for different components of circuits.	Y6 skill 1 Create circuits using a range of components and record diagrammatically using the recognised symbols for electrical components.
Year 6 Light Theory – Science focus Key Concepts: Earth	Y6 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledgeA method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y6 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.

Gather & record data **Investigation** **Measurement** **Observation** **Pattern seeking** **Phenomena** **Properties and uses** **Questioning** **Report and conclude** **Staying safe** 12 Programmes of study, 15 skills and 12 knowledge statements		**core knowledge** Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.	Y6 **skill** 1 Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
	Y6 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	**core knowledge** Specialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).	Y6 **skill** 1 Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.
		core knowledge An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.	Y6 **skill** 1 Independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.
	Y6 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	**core knowledge** Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.	Y6 **skill** 1 Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.
	Y6 Use test results to make predictions to set up further comparative and fair tests.	**core knowledge** The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 **skill** 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	**core knowledge** The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what	Y6 **skill** 1 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

		has been discovered, using correct, precise terminology and collected evidence.	facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Recognise that light appears to travel in straight lines.	core knowledgeLight travels in straight lines.	Y6 skill 1 Identify that light travels in straight lines.
	Y6 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.	core knowledgeLight sources give out light. They can be natural or artificial. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Vertebrates, such as mammals, birds and reptiles, have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina. Once light reaches the retina, it is transmitted to the brain via the optic nerve.	Y6 skill 1 Explain that, due to how light travels, we can see things because they give out or reflect light into the eye.
	Y6 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.	core knowledgeLight sources give out light. They can be natural or artificial. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Vertebrates, such as mammals, birds and reptiles, have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina. Once light reaches the retina, it is transmitted to the brain via the optic nerve.	Y6 skill 1 Explain that, due to how light travels, we can see things because they give out or reflect light into the eye.
	Y6 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	core knowledgeA shadow appears when an object blocks the passage of light. Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object. The distortion or fuzziness depends on the position or type of light source.	Y6 skill 1 Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how shadows can be changed.
	Y6 Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	core knowledgeLasers are intense beams of light and they should never be pointed at people's faces or aircraft.	Y6 skill 1 Explain the dangers of using lasers and ways to use them safely.

		core knowledge 'White' light is a term used to describe visible, ordinary daylight. White light can be split into a spectrum of colours (rainbow) by droplets of water or prisms.	Y6 skill 1 Describe, using scientific language, phenomena associated with refraction of light.
	Y6 Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	core knowledge Mirrors and lenses are used in a range of everyday objects (telescopes, periscopes, cards and on roads). The human eye has a lens that bends and focuses light on the back of the eye (retina) so that we can see.	Y6 skill 1 Describe, using diagrams, how light behaves when reflected off a mirror (plane, convex or concave) and when passing through a lens (concave or convex).
Year 6 Evolution and Inheritance – Science focus Key Concepts: Changes Gather & record data Investigation Living things Measurement Observation Parts and functions Physical things Questioning Report and conclude Survival 10 Programmes of study, 14 skills and 11 knowledge statements	Y6 Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	core knowledge A method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.	Y6 skill 1 Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.
		core knowledge 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.	Y6 skill 1 Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.
	Y6 Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	core knowledge Specialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).	Y6 skill 1 Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.

		core knowledgeAn observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.	Y6 skill 1 Independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.
	Y6 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	core knowledgeData can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.	Y6 skill 1 Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.
	Y6 Use test results to make predictions to set up further comparative and fair tests.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Identify scientific evidence that has been used to support or refute ideas or arguments.	core knowledgeThe results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.	Y6 skill 1 Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.
	Y6 Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.	core knowledgeScientists compare fossilised remains from the past to living species that exist today to hypothesise how living things have evolved over time. Humans and apes share a common ancestry and evidence for this comes from fossil discoveries and genetic comparison.	Y6 skill 1 Explain that living things have changed over time, using specific examples and evidence. Y6 skill 1 Describe some significant changes that have happened on Earth and the evidence, such as fossils, that support this.
	Y6 Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	core knowledgeAnimals that sexually reproduce generate new offspring of the same kind by combining the genetic material of two individuals. Each offspring inherits two of every gene, one from the female parent and one from the male parent.	Y6 skill 1 Identify that living things produce offspring of the same kind, although the offspring are not identical to either parent.

		core knowledgeAnimals and plants can be bred to produce offspring with specific and desired characteristics. This is called selective breeding. Examples include cows that produce large quantities of milk or crops that are disease-resistant.	Y6 skill 1 Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding).
	Y6 Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	core knowledgeAn adaptation is a physical or behavioural trait that allows a living thing to survive and fill an ecological niche. Adaptations evolve by natural selection. Favourable traits help an organism survive and pass on their genes to subsequent generations.	Y6 skill 1 Identify how animals and plants are adapted to suit their environment, such as giraffes having long necks for feeding, and that adaptations may lead to evolution.
	Y6 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	core knowledgeEnvironmental factors can affect the distribution of living things within a habitat. These factors include light (intensity and duration), weather, altitude, soil type and humans, such as when we mow or trample grass.	Y6 skill 1 Compare the living things in two contrasting areas of a habitat (top vs bottom of a hill, full sun vs shade, exposed location vs sheltered location or well-trodden path vs unused area).