Science at Lees Primary School

At Lees, we aim to inspire a lifelong curiosity about the world through an engaging, ambitious and knowledge-rich science curriculum. We encourage children to ask questions, explore their surroundings and develop a deep appreciation of the natural world, fostering respect for both living and non-living things.



Our curriculum enables pupils to develop secure scientific knowledge alongside the skills needed to think and work as scientists. Through practical, hands-on investigations and carefully sequenced learning, children learn to observe, predict, test, record and explain with increasing accuracy and confidence. Working Scientifically is woven throughout the curriculum, enabling pupils to think critically, evaluate evidence and communicate their ideas using appropriate scientific vocabulary.



We make the most of our rich local environment, providing meaningful opportunities for outdoor learning, exploration and first-hand discovery. From studying plants, animals and seasonal change in Key Stage 1 to exploring the human body, forces, light, sound, electricity and evolution in Key Stage 2, pupils build their knowledge progressively, making connections across topics and applying their understanding to the world around them.



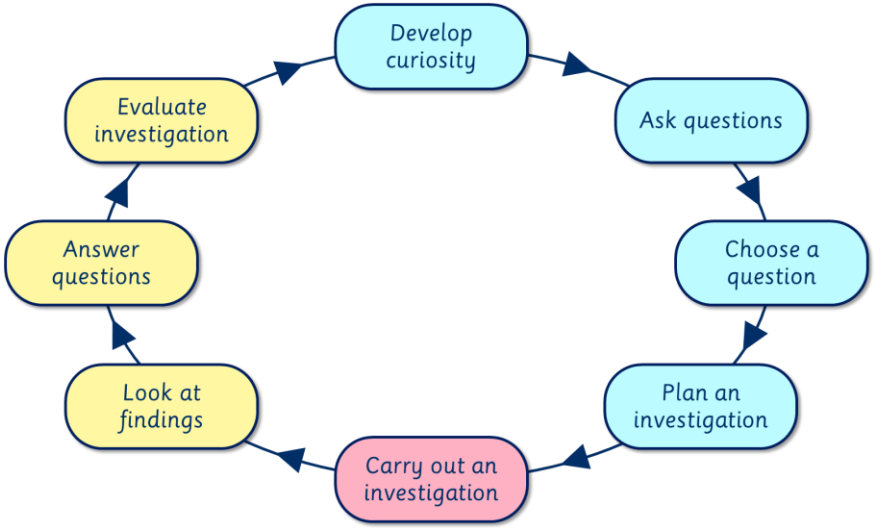
By the time they leave Lees, our pupils will have developed the knowledge, skills and confidence to question, investigate and understand the world, equipping them with a strong foundation for future scientific learning and an enduring sense of wonder.

Science at Lees Primary School

Scientific Enquiry

What is scientific enquiry?

Scientific enquiry is the process children go through to answer scientific questions and understand the world around them.



The process begins by developing children's natural curiosity through stimulating opportunities to play, observe, manipulate and question their environment.

By capturing the questions children have about a stimulus, teachers can develop these into investigable scientific questions. Children can then plan and carry out an investigation to answer their question.

This **plan, investigate and evaluate** cycle sits at the heart of scientific enquiry. Children develop their understanding of each stage through repeated opportunities to apply and refine their skills.

Children will engage with different parts of the cycle at different points in their primary science journey, gradually moving from teacher modelling and guided practice towards greater independence in the later years.

The five enquiry types

Children select and use one of the five enquiry types below to investigate their question and find out the answer.



Pattern seeking
Find relationships between sets of data



Comparative/fair test
Explores relationships between variables



Research
Finds answers to questions that are difficult to answer



Observation over time
Examines changes over a period of time



Identify, group and classify
Sort objects by their similarities and differences

Science at Lees Primary School

Working Scientifically

What is working scientifically?

Working scientifically is the process of **thinking and acting** like a scientist**.** It focuses on the practical and thinking skills, often known as **disciplinary skills**, that children develop and use when carrying out scientific enquiries.

The **enquiry process** is the overall journey: **plan**, **investigate** and **evaluate**. Working scientifically skills are the individual skills children use within this process, such as making observations, taking measurements, recording data and drawing conclusions.

Working scientifically is **as important as substantive scientific knowledge**. The National Curriculum places equal importance on developing scientific knowledge and working scientifically. At Lees, these skills are therefore an integral part of every science lesson.

Children may use several working scientifically skills in one lesson, but teachers should focus teaching and modelling **on one skill at a time** to avoid cognitive overload. Other skills may still be used but can be modelled or completed together.

We organise these working scientifically skills into eight key areas:









- **Ask questions –** Ask questions about what they notice and want to find out
- **Plan –** Decide how to investigate the question and identify the variables involved.
- **Make observations –** Use their senses and observations to notice changes and patterns
- **Take measurements –** Use appropriate equipment to measure accurately
- **Gather, record and classify data –** Collect, organise and sort information
- **Present findings –** Communicate results clearly using tables, charts, diagrams or writing
- **Answer questions and make conclusions –** Use evidence to answer the question and explain findings
- **Evaluate –** Consider how reliable the investigation was and how it could be improved







Science at Lees Primary School

Early Years - Nursery

Strands	ELGs
Animals, including humans	• Use their senses to explore materials. • Understand key features of animal life cycles. • Understand need to respect and care for natural environment and all living things.
Plants	• Plant seeds and care for growing plants. • Understand key features of plant life cycle. • Understand need to respect and care for natural environment and all living things.
Living things and their habitats	• Understand need to respect and care for natural environment and all living things.
Seasonal changes	• Understand need to respect and care for natural environment and all living things. • Talk about the differences in the changes that they notice.
Light	• Explore colour and colour mixing.(Special celebrations using light e.g. bonfire fireworks, Christmas lights).
Sound	• Listen with increased attention to sounds. • Respond to what they have heard expressing their thoughts and feelings. • Play instruments to express their feelings and ideas. • Sing the pitch of a tone sung by another person. • Sing melodic shape (moving melody down and up of familiar songs). • Create own songs or improvise around a known song.
Earth and space	• Understand need to respect and care for natural environment and all living things.
Materials	• Use all their senses in exploring natural materials. • Explore collections of materials with similar or different properties. • Talk about the differences between materials and changes that they notice. • Join different materials and explore different textures. • Explore colour and colour mixing.

Science at Lees Primary School

Early Years - Reception

Strands	ELGs
Animals, including humans	• Name and describe familiar people. • Talk about members of their immediate family and community. • Recognise some environments that are different to which they live in. • Explore the natural world around them, making observations and drawing pictures of animals and plants.
Plants	• Explore the natural world around them, making observations and drawing pictures of animals and plants.
Living things and their habitats	• Recognise some environments that are different to which they live in.
Seasonal changes	• Understand effects of changing seasons upon the natural world. • Explore the natural world around them, making observations & drawing pictures of animals and plants. • Know some similarities and differences between natural world around them and contrasting environments, drawing on their experiences and what has been read. • Understand some important processes and changes in the natural world around them, including seasons and changing states of matter.
Light	• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Special celebrations using light e.g. Diwali, Chinese New Year, Hanukkah, Christmas lights.
Sound	• Listen attentively move to and talk about music, express their feelings and responses. • Sing in a group or on their own, increasing matching the pitch and following the melody. • Understand how to listen carefully and why listening is important. • Make comments about what they have heard and ask questions to clarify their understanding.
Earth and space	
Materials	• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Science at Lees Primary School

Curriculum overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**The Human Body** WRS Aut B1 **Seasons – autumn** WRS Aut B2	**Materials** WRS Aut B3 **Seasons – winter** WRS Aut B4	**Compare and group animals** WRS Spr B2 (Steps 1-6)	**Animal diets** WRS Spr B2 (Steps 7-9) **Seasons – spring** WRS Spr B4	**Plants and trees** WRS Sum B1	**Growing and cooking** WRS Sum B3 **Seasons – summer** WRS Sum B4
Year 2	**Animals and humans** WRS Aut B1 + B2	**Materials** WRS Aut B3	**What do plants need to grow?** WRS Spr B1 **My local habitat** WRS Spr B2 (Step 1)	**Habitats** WRS Spr B2 (Steps 2-9)	**Bulbs and seeds** WRS Sum B1 **Growing up** WRS Sum B2 (Steps 1-2)	**Life cycles** WRS Sum B2 (Steps 3-6)
Year 3	**Skeletons and muscles** WRS Aut B1 + B2	**Nutrition and diet** WRS Aut B3	**Rocks, fossils and soils** WRS Aut B5 + Spr B1 + Spr B2	**Light** WRS Aut B3	**Plants** WRS Sum B1	**Forces and magnets** WRS Sum B2 + B2
Year 4	**Living things** WRS Aut B1 + Sum B5	**Data collection A** WRS Aut B2 **States of matter** WRS Aut B3	**Sound** WRS Spr B1	**Data collection B** WRS Spr B2 **Electricity** WRS Spr B3	**Habitats** WRS Sum B2 **Data collection C** WRS Sum B1	**Digestion** WRS Sum B4
Year 5	**Forces** WRS Aut B1	**Space** WRS Aut B2	**Properties of materials** WRS Spr B1	**Human and animal life cycles** WRS Spr B2 + B3	**Changes in materials** WRS Sum B2	**Reproduction** WRS Sum B1 + B4
Year 6	**The circulatory system** WRS Spr B3	**Light** WRS Spr B1	**Living things and their habitats** WRS Aut B1	**Evolution and inheritance** WRS Sum B1 + B2 + B3	**Electricity** WRS Aut B2	**Diet, drugs and lifestyle** WRS Spr B4

Science at Lees Primary School

Curriculum overview – Year 1

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**The Human Body** WRS Aut B1 **Seasons – autumn** WRS Aut B2	**Materials** WRS Aut B3 **Seasons – winter** WRS Aut B4	**Compare and group animals** WRS Spr B2 (Steps 1-6)	**Animal diets** WRS Spr B2 (Steps 7-9) **Seasons – spring** WRS Spr B4	**Plants and trees** WRS Sum B1	**Growing and cooking** WRS Sum B3 **Seasons – summer** WRS Sum B4
Enquiry	 Do the oldest children have the longest feet?	 Which material would be the best for a pair of curtains?	 Are all animals the same?	 What are the main changes each season?	 How can we sort plants into different groups?	 What are the main changes in each season?
Skills	• Ask questions • Answer questions and make conclusions • Take measurements	• Gather, record and classify data • Make observations • Take measurements • Answer questions and make conclusions • Ask questions	• Ask questions • Gather, record and classify data • Answer questions and make conclusions	• Gather, record and classify data • Ask questions	• Gather, record and classify data • Make observations • Answer questions and make conclusions	• Ask questions • Gather, record and classify data • Answer questions and make conclusions
Vocabulary	body, nose, sense, light, eyes, sound, tongue, smell, ears, skin					
Misconceptions	• We taste with our mouth rather than our tongue • We touch with our hands rather than our skin • We smell with our face rather than our nose					

Science at Lees Primary School

Curriculum overview – Year 2

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**Animals and humans** WRS Aut B1 + B2	**Materials** WRS Aut B3	**What do plants need to grow?** WRS Spr B1 **My local habitat** WRS Spr B2 (Step 1)	**Habitats** WRS Spr B2 (Steps 2-9)	**Bulbs and seeds** WRS Sum B1 **Growing up** WRS Sum B2 (Steps 1-2)	**Life cycles** WRS Sum B2 (Steps 3-6)
Enquiry	 How can animals be grouped based on their needs for survival?	 Which material would be the best for an umbrella?	 Do plants grow healthier in the light or dark?	 What different habitats are there and what lives in each habitat?	 How do bulbs and seeds change over time?	 Are there patterns between the life cycles of different animals?
Skills	• Ask questions • Gather, record and classify data • Answer questions and make conclusions • Make observations	• Gather, record and classify data • Take measurements • Ask questions • Answer questions and make conclusions • Make observations	• Make observations • Ask questions • Take measurements • Gather, record and classify data	• Answer questions and make conclusions • Gather, record and classify data • Make observations	• Make observations • Present findings • Take measurements • Ask questions • Gather, record and classify data	• Gather, record and classify data • Make observations • Answer questions and make conclusions
Vocabulary	survival air water shelter food mammal carnivore omnivore herbivore hygiene					
Misconceptions	• Animals have different needs depending on what type of animal they are • Carnivore, herbivore and omnivore describe what an animal is rather than what it eats • Humans are separate from animals					

Science at Lees Primary School

Curriculum overview – Year 3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**Skeletons and muscles** WRS Aut B1 + B2	**Nutrition and diet** WRS Aut B3	**Rocks, fossils and soils** WRS Aut B5 + Spr B1 + Spr B2	**Light** WRS Aut B3	**Plants** WRS Sum B1	**Forces and magnets** WRS Sum B2 + B2
Enquiry	 How can animals be sorted and grouped based on their skeletons?	 What is a balanced diet and is it important?	 How can rocks be identified and grouped based on their properties?	 How does the distance between the light source and the object affect the size of a shadow?	 Does the number of seeds within one plant pot affect the growth of the plants?	 Are all metals magnetic?
Skills	• Ask questions • Gather, record and classify data • Present findings • Answer questions and make conclusions	• Gather, record and classify data • Answer questions and make conclusions • Present findings	• Make observations • Gather, record and classify data • Ask questions • Present findings • Answer questions and make conclusions • Plan • Take measurements	• Answer questions and make conclusions • Gather, record and classify data • Ask questions • Plan • Evaluate	• Answer questions and make conclusions • Gather, record and classify data • Ask questions • Plan • Present findings	• Answer questions and make conclusions • Plan • Gather, record and classify data • Present findings
Vocabulary	skeleton skull ribcage spine femur exoskeleton muscle joint contract relax					
Misconceptions	• Muscles push bones to make them move • All joints work in the same way • Animals without a spine don't have a skeleton					

Science at Lees Primary School

Curriculum overview – Year 4

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**Living things** WRS Aut B1 + Sum B5	**Data collection A** WRS Aut B2 **States of matter** WRS Aut B3	**Sound** WRS Spr B1	**Data collection B** WRS Spr B2 **Electricity** WRS Spr B3	**Habitats** WRS Sum B2 **Data collection C** WRS Sum B1	**Digestion** WRS Sum B4
Enquiry	 How can living things be grouped and classified?	 How does the temperature of the water affect the time it takes for ice to melt?	 How does the distance from the sound source affect the volume of the sound?	 What materials are conductors or insulators of electricity and is there a pattern?	 What living things do we have in our local area and does this change over the year?	 What is the digestive system and how does it work?
Skills	• Gather, record and classify data • Ask questions • Present findings • Answer questions and make conclusions	• Gather, record and classify data • Ask questions • Take measurements • Plan • Answer questions and make conclusions • Make observations	• Ask questions • Gather, record and classify data • Take measurements • Plan • Answer questions and make conclusions	• Gather, record and classify data • Answer questions and make conclusions • Ask questions	• Ask questions • Gather, record and classify data • Present findings	• Answer questions and make conclusions • Ask questions • Plan • Gather, record and classify data • Present findings
Vocabulary	classification vertebrate invertebrate exoskeleton classification key flowering non-flowering pollination deciduous evergreen					
Misconceptions	• All invertebrates have an exoskeleton • A whale is a fish because it lives in water • Plants and trees aren't living things					

Science at Lees Primary School

Curriculum overview – Year 5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**Forces** WRS Aut B1	**Space** WRS Aut B2	**Properties of materials** WRS Spr B1	**Human and animal life cycles** WRS Spr B2 + B3	**Changes in materials** WRS Sum B2	**Reproduction** WRS Sum B1 + B4
Enquiry	 Does the surface area of a parachute affect how long it takes for it to fall to the ground?	 How have our ideas about the Solar System changed over time?	 Which material is the best insulator of heat?	 Are there patterns linking gestation periods and lifespans?	 Which changes are reversible and which are irreversible?	 Which plant cutting produces the tallest plant?
Skills	• Answer questions and make conclusions • Ask questions • Plan • Take measurements • Present findings	• Answer questions and make conclusions • Gather, record and classify data • Present findings	• Gather, record and classify data • Plan • Take measurements • Evaluate • Answer questions and make conclusions	• Ask questions • Gather, record and classify data • Answer questions and make conclusions • Present findings	• Evaluate • Gather, record and classify data • Take measurements • Present findings • Answer questions and make conclusions	• Present findings • Gather, record and classify data • Answer questions and make conclusions • Plan • Take measurements • Evaluate
Vocabulary	force friction air resistance water resistance gravity contact force non-contact force streamlined mechanism gear					
Misconceptions	• Heavier objects fall faster than lighter objects • Friction only happens between rough surfaces / only happens when things are moving • A larger gear with more teeth makes something move faster					

Science at Lees Primary School

Curriculum overview – Year 6

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**The circulatory system** WRS Spr B3	**Light** WRS Spr B1	**Living things and their habitats** WRS Aut B1	**Evolution and inheritance** WRS Sum B1 + B2 + B3	**Electricity** WRS Aut B2	**Diet, drugs and lifestyle** WRS Spr B4
Enquiry	 What is the circulatory system and how does it work?	 How does the distance from a light source affect the size of the shadow?	  How can animals, plants and microorganisms be identified, grouped and classified?	 Is the type of food a bird eats related to the shape of its beak?	 How does the voltage in a circuit affect the loudness of a buzzer?	 How does the duration of exercise affect heart rate?
Skills	• Ask questions • Answer questions and make conclusions • Present findings	• Answer questions and make conclusions • Gather, record and classify data • Plan • Take measurements	• Answer questions and make conclusions • Gather, record and classify data • Present findings	• Gather, record and classify data • Answer questions and make conclusions • Ask questions • Present findings	• Gather, record and classify data • Plan • Take measurements • Evaluate	• Answer questions and make conclusions • Plan • Take measurements • Evaluate
Vocabulary	circulatory system heart blood vessel blood plasma red blood cell white blood cell artery vein capillary					
Misconceptions	• Arteries carry oxygenated blood and veins carry deoxygenated blood • The heart is just one chamber that pumps blood around the body • Blood is just red liquid that carries oxygen					

Science at Lees Primary School

Progression mapping – substantive knowledge

Strand:

Animals, including humans

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement	• Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey	• Describe the changes as humans develop to old age	• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans

Strand:

Evolution and inheritance

Year 6
• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Science at Lees Primary School

Progression mapping – substantive knowledge

Strand:

Living things and their habitats

Year 2	Year 4	Year 5	Year 6
• Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including microhabitats • 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	• Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics

Strand:

Plants

Year 1	Year 2	Year 3
• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees	• Observe and describe how seeds and bulbs grow into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • Investigate the way in which water is transported within plants • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Science at Lees Primary School

Progression mapping – substantive knowledge

Strand:

Materials

Year 1	Year 2	Year 5
• Distinguish between an object and the material from which it is made • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Strand:

Electricity

Year 4	Year 6
• Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram

Science at Lees Primary School

Progression mapping – substantive knowledge

Strand:

Rocks

Year 3
• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Describe in simple terms how fossils are formed when things that have lived are trapped within rock • Recognise that soils are made from rocks and organic matter

Strand:

States of matter

Year 4
• Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Strand:

Earth and space

Year 5
• Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the moon relative to the Earth • Describe the sun, Earth and moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

Strand:

Seasonal changes

Year 1
• Observe changes across the 4 seasons • Observe and describe weather associated with the seasons and how day length varies

Science at Lees Primary School

Progression mapping – substantive knowledge

Strand:

Sound

Year 4
• Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases

Strand:

Light

Year 3	Year 6
• Recognise that they need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object • Find patterns in the way that the size of shadows change	• Recognise that light travels in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Strand:

Forces and magnetism

Year 3	Year 5
• Compare how things move on different surfaces • Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • 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 • Describe magnets as having 2 poles • Predict whether 2 magnets will attract or repel each other, depending on which poles are facing	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

Science at Lees Primary School

Progression mapping – disciplinary skills

Strand:

Ask questions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Ask simple questions.	• Ask simple questions and recognise that they can be answered in different ways.	• Ask questions and understand there are different enquiry types they could use to answer them.	• Ask relevant questions and use different types of scientific enquiry to answer them.	• Ask scientific questions and begin to understand which questions would be best suited to each enquiry type.	• Ask relevant scientific questions and choose which enquiry type would be best suited to answer them.

Strand:

Plan

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Planning is not explicitly mentioned in the KS1 curriculum however, if appropriate, children can verbally state what they will investigate, what they will change and what they will keep the same.		• Make relevant predictions. • Identify what they will change, observe and keep the same. • With support, set up simple practical enquiries	• Make predictions based on simple scientific knowledge. • Identify what they will change, observe or measure and keep the same. • Set up simple practical enquiries, comparative and fair tests.	• Make predictions based on scientific knowledge. • With support, plan different types of scientific enquiry. Where appropriate, identify the dependent, independent and controlled variables.	• Make predictions based on scientific knowledge. • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

Strand:

Make observations

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Observe closely.	• Observe closely, using simple equipment.	• Make careful observations using scientific equipment.	• Make systematic and careful observations using scientific equipment.	• Use a range of scientific equipment to make systematic and careful observations.	• Use a range of scientific equipment to make systematic and careful observations with increased complexity.

Science at Lees Primary School

Progression mapping – disciplinary skills

Strand:

Take measurements

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Carry out simple tests using non-standard measurements when appropriate.	• Perform simple tests using standard units when appropriate.	• Perform tests and simple experiments and take measurements using standard units.	• Take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	• Take accurate measurements using a range of scientific equipment. Start to take repeat readings when appropriate.	• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

Strand:

Gather, record and classify data

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Gather and record simple data. • Sort objects and living things into groups based on simple properties.	• Gather and record data to help in answering questions. • Identifying and classifying.	• Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.	• Gather, record and classify data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	• Record data using scientific diagrams and labels, classification keys, tables, bar and line graphs.	• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Strand:

Present findings

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Explain what they found out to an adult or a partner.	• Talk about what they have found out and how they found it out (non-statutory)	• Make careful observations using scientific equipment.	• Make systematic and careful observations using scientific equipment.	• Use a range of scientific equipment to make systematic and careful observations.	• Use a range of scientific equipment to make systematic and careful observations with increased complexity.

Science at Lees Primary School

Progression mapping – disciplinary skills

Strand:

Answer questions and make conclusions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Answer simple questions.	• Use their observations and ideas to suggest answers to questions.	• Make simple conclusions. • Use results, findings or observations to answer questions.	• Use straight-forward scientific evidence to answer questions or to support their findings. • Use results to draw simple conclusions. • Begin to identify differences, similarities or changes related to simple ideas or processes.	• Make conclusions based on scientific evidence and from their own testing and findings. • Identify scientific evidence and use it to answer questions.	• Make conclusions based on scientific evidence and from their own testing and findings. • Identify scientific evidence that has been used to support or refute ideas or arguments.

Strand:

Evaluate

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Evaluating is not explicitly mentioned in the KS1 curriculum.		• Suggest questions for further investigation.	• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	• Continue to use results to draw simple conclusions, suggest improvements and raise further questions for possible testing.	• Use test results to make predictions to set up further comparative and fair tests. • Provide some simple examples of how to extend the investigation.