Rationale and Progression Document for Teaching Science

The word *science* originates from the Latin *scientia*, meaning *knowledge*—reflecting the discipline's central purpose: to develop an ever deepening understanding of the natural world through systematic enquiry and evidencebased reasoning. Science equips pupils with tools for making sense of phenomena they encounter in everyday life, helping them to ask questions, test ideas, gather evidence, and draw reasoned conclusions about how and why things happen.

Our rigorous academic study of science is designed to foster curiosity, critical thinking and conceptual understanding. Content not only support pupils' growing scientific understanding, but also connects meaningfully with geographical thinking about environments, historical thinking about change and evidence, and mathematical thinking about pattern and measurement.

The curriculum is deliberately sequenced so that pupils build knowledge cumulatively—revisiting key scientific concepts in increasingly sophisticated ways. Disciplinary skills—planning enquiries, making predictions, collecting and recording data, evaluating outcomes, and using evidence to justify conclusions—are taught explicitly and revisited across all year groups, supporting pupils to think, speak and behave like scientists.

Science learning in our trust aims to help pupils understand the scientific principles that underpin life, matter and physical processes. It also provides opportunities to consider how scientific ideas have shaped society. Through purposeful investigation, rich discussion, and carefully structured progression, pupils develop an appreciation of the role of science in solving problems, improving lives, and shaping the future.

Ultimately, our science curriculum aims to nurture a sense of wonder about the world, alongside the knowledge, skills and attitudes needed to participate thoughtfully in it. Pupils learn that science is not just a body of facts to be remembered, but a dynamic, disciplined way of thinking—one that empowers them to question, explore and understand their world with confidence.

Science:

Working Scientifically

Asking Questions

KS1

- use a range of given question stems, such as:
  - what; what if; why; when; who; and how;
- to ask questions about the objects, living things and processes they are exploring
- construct a question based on a scenario or story the teacher has presented.

UKS2

- independently ask scientific enquiry questions



EYFS N

- Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" (CL)
- While playing and exploring, the children demonstrate their curiosity
- While playing and exploring, the children begin to ask 'I wonder ...' questions.
- With support, the children think of ideas for answering their questions

EYFS R

- Ask questions to find out more and to check they understand what has been said to them. (CL)
- While playing and exploring, the children ask 'I wonder...' questions.
- With support, the children develop their ideas for answering their questions.

LKS2

- ask scientific enquiry questions with support
- following a scientific enquiry, ask questions stimulated by what they have just found out.

Science:

Working Scientifically

Planning an Enquiry



LKS2

- identify the data required to answer the scientific enquiry question
- select appropriate practical equipment to gather the data
- identify how to gather the data required to answer the scientific enquiry question
- suggest the type of scientific enquiry they are using.

UKS2

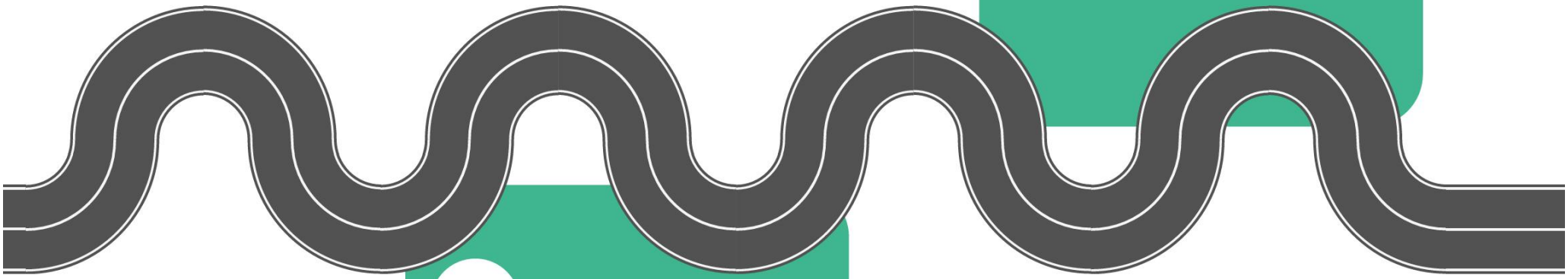
- describe the method they would use to gather data to answer a scientific enquiry question.

Making Predictions

Science:

Working Scientifically

Making Predictions



UKS2

- use the data they have already gathered to suggest further values
- use the scientific understanding gained from scientific enquiry to make predictions they can investigate using further comparative and fair tests.

LKS2

- use the data they have already gathered to suggest values for the next reading.

Gathering Data

Science:

Working Scientifically



Gathering Data

KS1

- talk about their observations of objects, materials and living things
- talk about their observations when comparing objects, materials and living things
- talk about their observations when describing changes
- when using a magnifying glass, adjust the position in order to see the enlarged image clearly
- when using a digital microscope, relate features on the enlarged view to the object
- make direct comparisons of length and height
- use variety of items to take non-standard measurements of length
- use simple measuring equipment, e.g. teaspoons, pipettes, rulers, metre sticks etc.

UKS2

- make relevant systematic and detailed observations
- use a range of equipment to take measurements (e.g. distance, time, temperature, capacity, force) using standard units
- select measuring equipment to give appropriately precise results
- Identify when a sensor can be used to gather evidence
- take repeat readings as appropriate.

EYFS N

- Use all their senses in hands-on exploration of natural materials. (UTW) Explore how things work. (UTW)
- Use one-handed tools and equipment. Choose the right resources to carry out their own plan. (PD)
- Make comparisons between objects relating to size, length, weight and capacity. (Mathematics)
- Compare quantities using language: 'more than', 'fewer than'. (Mathematics)

EYFS R

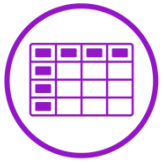
- Explore the natural world around them. Describe what they see, hear and feel whilst outside. (UTW)
- Develop their small motor skills so that they can use a range of tools competently, safely and confidently. (PD)
- Count objects, actions and sounds. (Mathematics)
- Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. (CL)
- Show resilience and perseverance in the face of challenge. Select and use activities and resources (with help when needed) to help them to achieve a goal they have chosen, or one which is suggested to them. (PSED)
- With support, explore the natural and made world using their senses. • With support use magnifying glasses or tablets with magnifiers to make observations. • Explore using beakers/scoops etc. • Make comparisons between objects and quantities. • While playing and exploring, select and use resources for a particular task. • With support, sort and group objects.

LKS2

- make systematic and careful observations
- measure time in standard units using stopwatches or timer
- measure length in standard units using rulers, meter sticks, tape measures or trundle wheels
- measure temperature in standard units using thermometers
- measure capacity in standard units using syringes, beakers or measuring cylinders
- use sensors to take measurements (e.g. light, sound, temperature).

Science:

Working Scientifically



Recording Data

KS1

- use a camera to take photographs or videos to record their observations
- record their observations using drawings
- record their observations using labelled drawings
- record their observations or comparisons in writing • physically group objects, materials and living things or their images by a criterion
- physically group objects or materials according to the data they gather
- use data they gather to physically rank objects or materials
- add their data to a prepared table or simple Venn diagram
- add pictures to a pictogram •
- add tally marks to a tally chart and count up the total number
- make a physical block graph or bar chart by using bricks, lolly sticks etc. or paper strips with which they measured lengths or heights.

UKS2

- choose an appropriate method to record the data they will gather using experience of recording methods learnt in Key Stage 1 and Lower Key Stage 2 (e.g. photographs, videos, drawings, labelled diagrams, writing and tables)
- construct, and record data in, a complex table
- construct, and record data in, a bar chart
- construct, and record data in, a line graph
- add data on to a scatter graph with the axes and scales provided
- construct, and record data in a key.



EYFS N

- Talk about what they see, using a wide vocabulary. (UTW)
- Create closed shapes with continuous lines, and begin to use these shapes to represent objects. (UTW)
- Draw with increasing complexity and detail, such as representing a face with a circle and including details. (UTW)
- With support, the children talk about what they have observed.
- They sometimes draw and make marks to record their observations

EYFS R

- Connect one idea or action to another using a range of connectives. (CL)
- Describe events in some detail. (CL)
- The children, sometimes, draw and write simple labels to record their observations.
- With support, they record their observations and comparisons e.g. using simple prepared tables, taking photographs, using sorting rings and boxes.

LKS2

- record data in a simple table they construct themselves
- record data onto a complex table provided for them
- record their measurements directly onto a bar chart with the axes and scales provided
- record observations and information using a drawing, a labelled diagram and, in Year 4 only, a key.

Science:

Working Scientifically



Presenting Data



UKS2

- present the recorded data in a different way in order to help answer the question.

LKS2

- present, with support, the recorded data in a different way in order to help answer the question.

Science:

Working Scientifically



Drawing Conclusions

KS1

- Use their observations and simple secondary sources to name living things they find in the local area.
- Recognise 'biggest and smallest', 'best and worst' etc. from their data.
- GIve an answer to their scientific enquiry question that is consistent with the data they have gathered either through observations, measurements or from research.
- Recognise that they can answer scientific enquiry questions in different ways.

UKS2

- answer the scientific enquiry question using the data gathered
- discuss whether other evidence (e.g. from other groups or their scientific understanding) supports or refutes their answer
- talk about how their scientific ideas change due to new data that they have gathered
- talk about how scientific discoveries have changed scientific understanding in the past and continue to do so today.

EYFS N

- Make comparisons between objects relating to size, length, weight and capacity. (Mathematics)
- Compare quantities using language: 'more than', 'fewer than'. (Mathematics)
- With support, children demonstrate and talk about what they have done and noticed.
- With support, the children notice how they made a difference to an outcome, e.g. "My car went further when I pushed it harder.", and answer the question, where appropriate.
- With support, the children make comparisons between objects e.g. "My plant is taller than Sarah's.".

EYFS R

- Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary. Connect one idea or action to another using a range of connectives. Describe events in some detail. (CL)
- Compare length, weight and capacity. (Mathematics)
- Talk about what they have observed. Demonstrate and talk about what they have found out.
- They, sometimes, talk about what they have found out from secondary sources, including non-fiction texts. • Notice and talk about how they made a difference to an outcome e.g. "My car went further when I pushed it harder." • The children make direct comparisons or use their recorded observations to communicate what they have found out and answer the question, where appropriate.

LKS2

- ask scientific enquiry questions with support
- following a scientific enquiry, ask questions stimulated by what they have just found out.

Science:

Working Scientifically

Evaluating an Enquiry



UKS2

- evaluate the precision of their measurements
- evaluate whether the results are trustworthy enough to answer the scientific enquiry question.

LKS2

- identify ways in which they adapted their method as they progressed or how they could change it to improve the data gathered
- compare two methods for a test.

Science Plants



R

- Explore the natural world around them.
- Describe what they feel, hear and see when outside.
- Recognise some environments that are different to the one in which they live.
- Understand the effect of the changing seasons on the natural world around them.

1

- 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

2

- 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 name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)

3

- 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 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.

4

- Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats)
- Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

5

- Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)

6

- 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. (Y6 - Living things and their habitats)
- Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Science:

Living things & their Habitats



R

- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Recognise some environments that are different to the one in which they live.

1

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)
- Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)
- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)
- Observe changes across the four seasons. (Y1 - Seasonal change)

2

- 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 & 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.
- Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)

3

- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)

4

- 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.
- Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)

5

- 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.

6

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance)
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)

Science:

Animals, including Humans



R

- Talk about members of their immediate family and community.
- Name and describe people who are familiar to them.
- Recognise some environments that are different to the one in which they live.

1

- 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.

2

- 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.
- 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. (Y2 - Living things and their habitats)

3

- 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.

4

- 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

5

- Describe the changes as humans develop to old age.
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)
- Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)

6

- 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.
- 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. (Y6 - Living things and their habitats)
- Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Science:

Evolution & Inheritance



R

- Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats)

1

2

- 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. (Y2 - Living things and their habitats)
- Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)

3

- Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)
- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)

4

- Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

5

- Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)

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:

Seasonal Changes



R

- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Understand the effect of changing seasons on the natural world around them

1

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

2

3

- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)

4

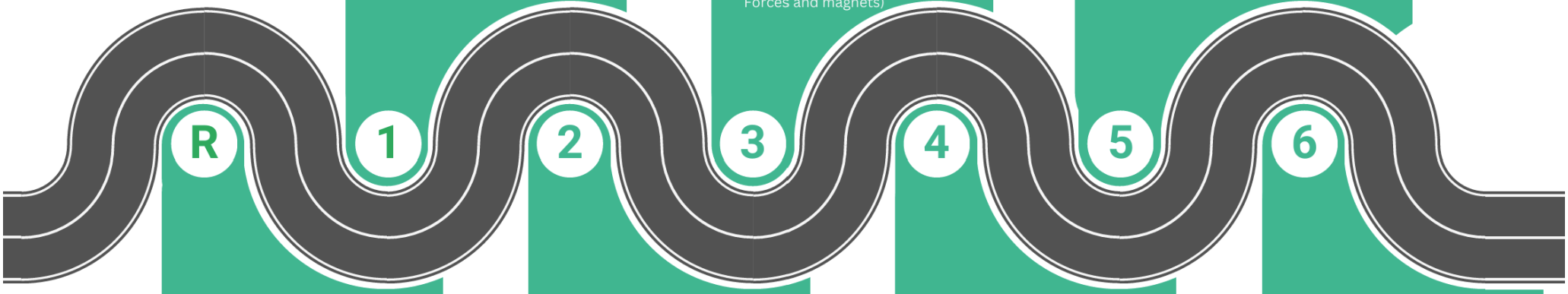
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- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)

6

- IThe seasons and the Earth's tilt, day length at different times of year, in different hemispheres.

Science:
Materials



R

- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.

1

- 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.

2

- 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.

3

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks)
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)
- 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. (Y3 - Forces and magnets)

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.
- Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)

5

- 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.

6

Science:

Rocks



R

- Explore the natural world around them. (Reception – Living things and their habitats)
- Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)

1

- Distinguish between an object and the material from which it is made. (Y1 - Everyday materials
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)
- Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)
- Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

2

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

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

4

5

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. (Y6 - Evolution and inheritance)

Science:

Light



R

- Describe what they see, hear and feel whilst outside

1

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)
- Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)

2

3

- 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.

4

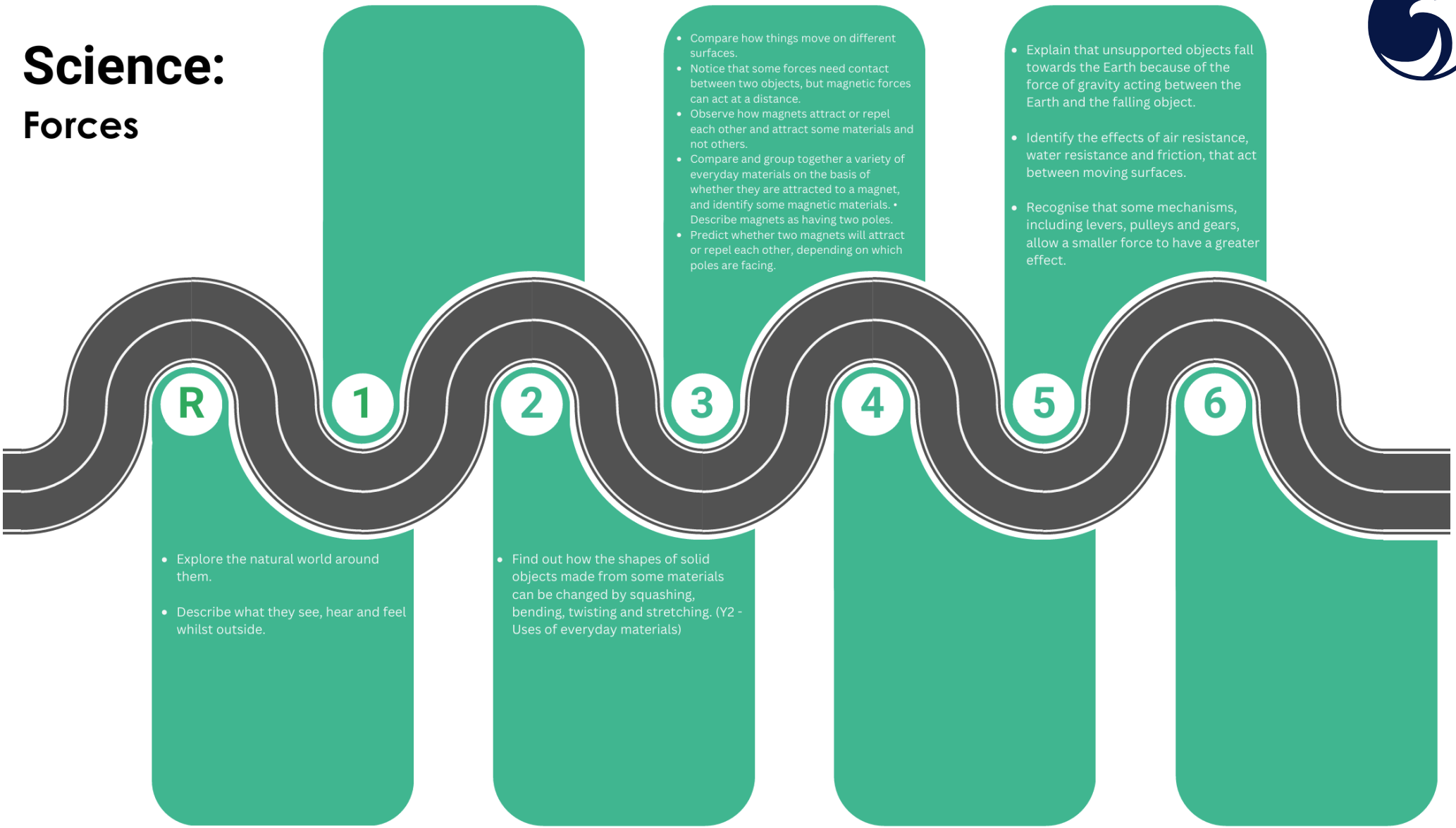
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- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)

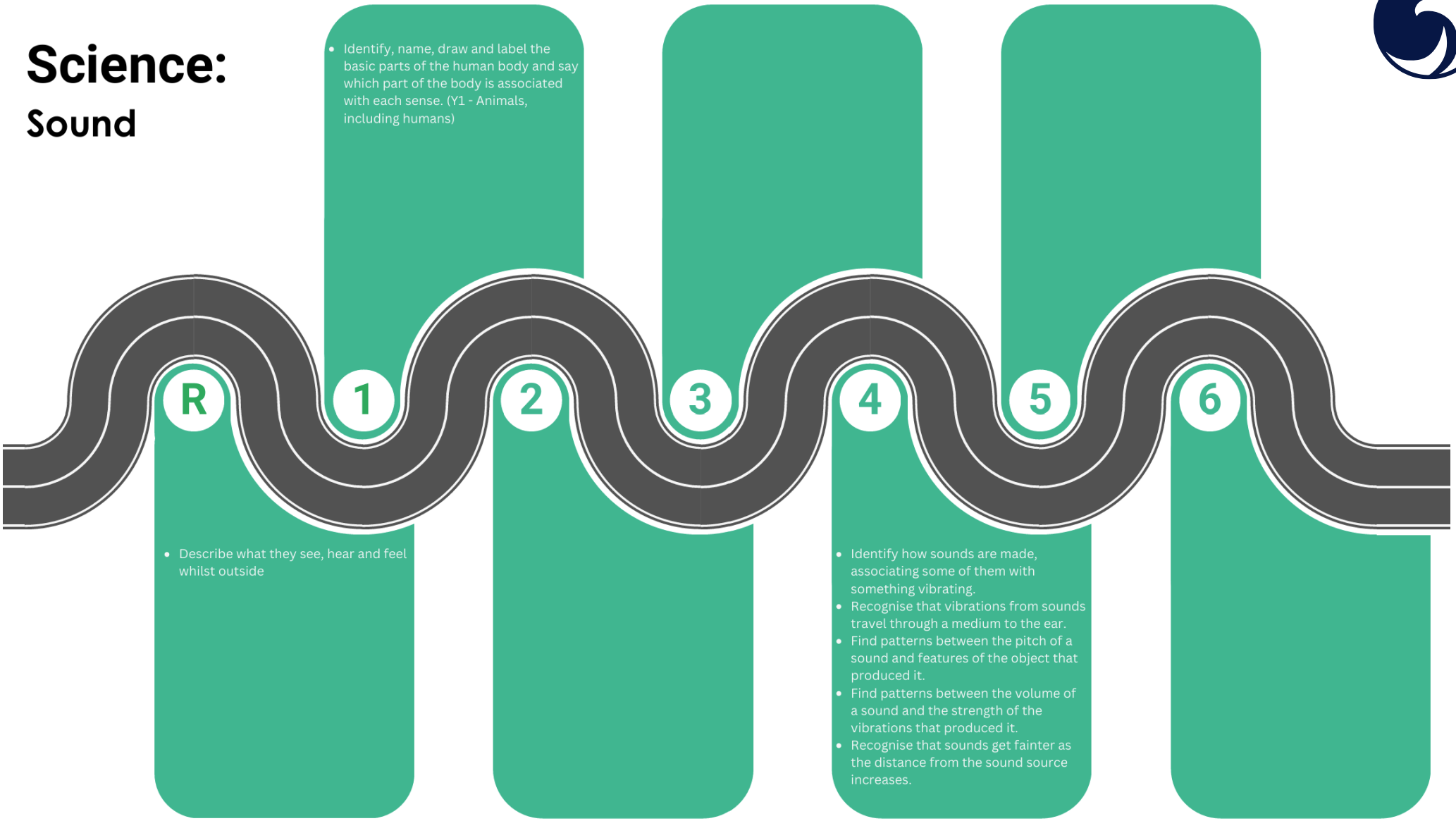
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- Recognise that light appears to travel in straight lines.
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels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

Science:
Forces

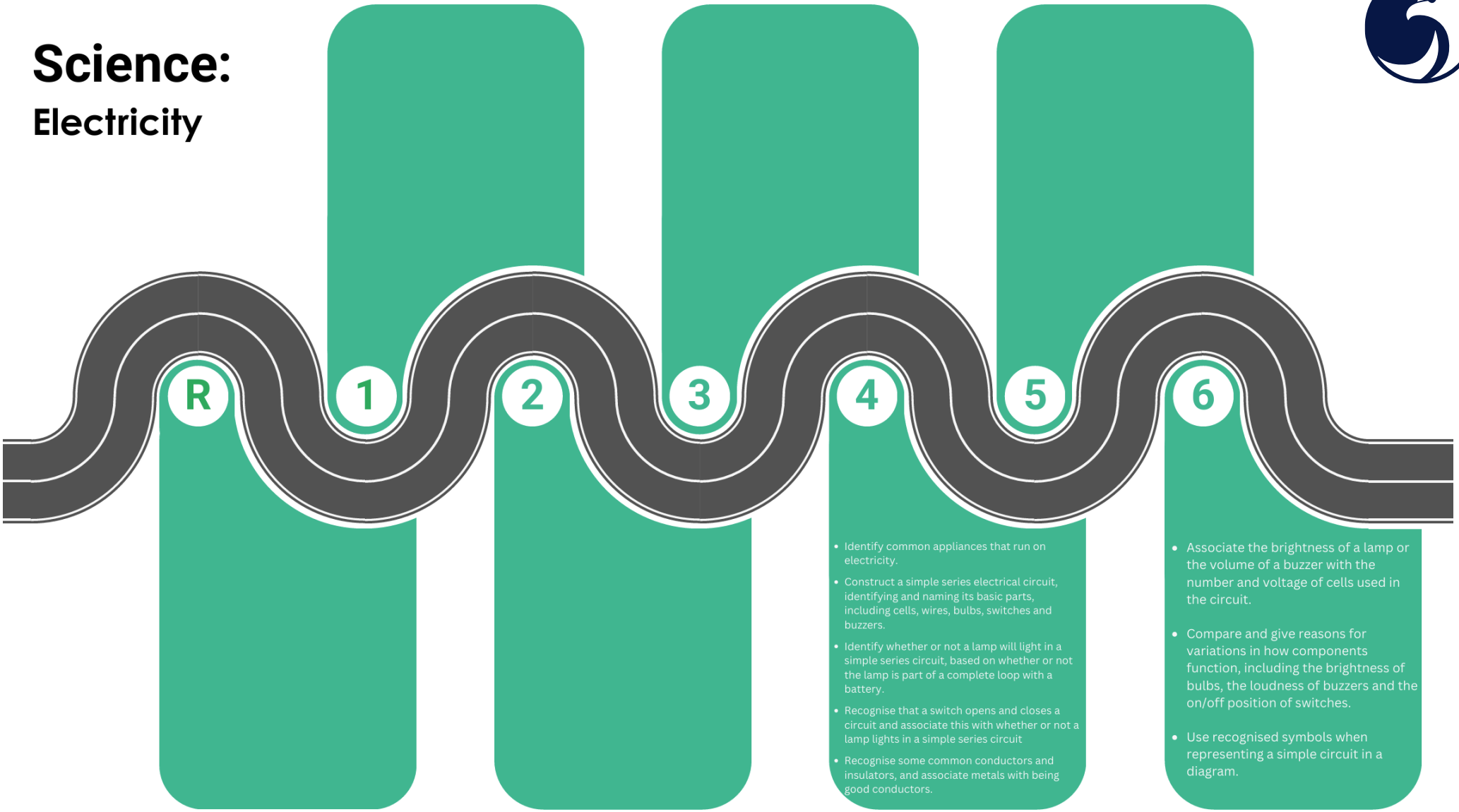


Science:
Sound



Science:

Electricity



4

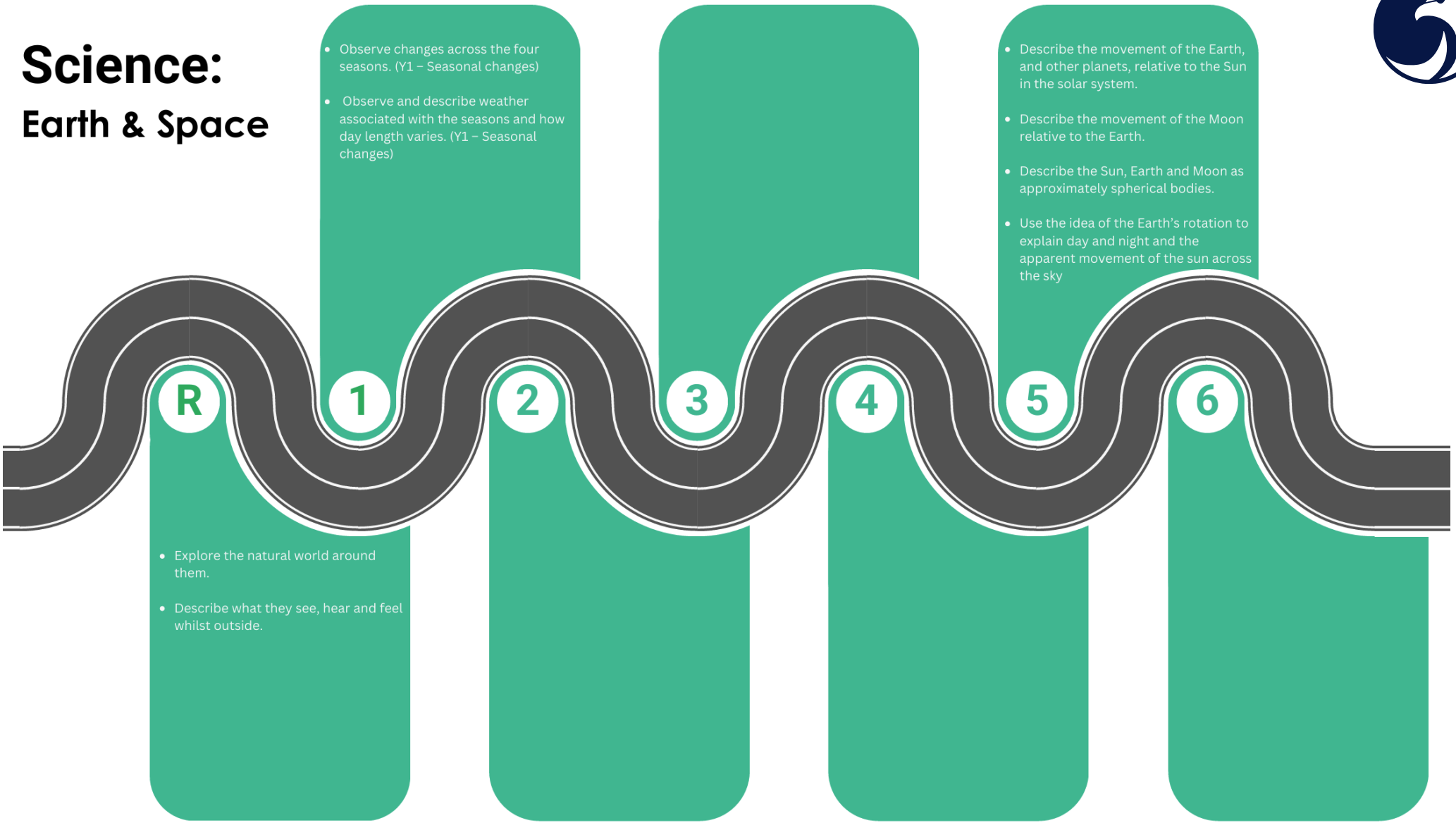
- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is 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.

6

- 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:

Earth & Space



Science Units Overview					
	Unit 1	***Unit2***	***Unit 3***	***Unit 4***	***Unit 5***
EYFS	All About Me *(My body, the Senses, How I've changed)*		Frozen Planet *(Signs of Winter, Changes of State, Penguin Life Cycle)*	How things Grow *(Seasons, Life Cycles, Plants, Minibeasts)*	
Year 1	Seasonal change	Senses	Everyday materials	Plants	Animals including humans - Animals
Year 2	Living things and their habitats	Animals including humans – Keeping Healthy	Everyday materials	Plants	Animals including humans - Animals
Year 3	Animals including Humans – Nutrition & Movement	Forces & Magnets	Plants	Light	Rocks and Soils
Year 4	States of Matter	Animals including Humans -Teeth, Eating & Food Chains	Electricity	Sound	Living things and their habitats – Identifying and classifying
Year 5	Earth and Space	Materials	Forces	Living things and their habitats - Lifecycles	Humans – link to PHSE – Puberty
Year 6	Animals including humans – Circulatory System	Evolution and Inheritance	Electricity	Living things and their habitats – Classification System	Light

Year1

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Seasonal Change**	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies • Ask simple questions. • Observe closely using simple equipment. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	To know and describe the four seasons. (Part 1)
2			To know how weather changes across the seasons. (Part 1)
3			To investigate hours of daylight in each season. (Part 1)
4			To investigate wind direction. (Part 1)
5			To know that temperature tells us how hot or cold something is. (Part 1)
6			To know how the seasons affect plants and trees. (Part 2)
7			To know how the seasons affect animals. (Part 2)
8			To know how the seasons affect humans. (Part 2)
9			To investigate levels of rainfall. (Part 2)
10			To plan and carry out a weather report. (Part 2)

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Senses**	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	To identify and name the parts of the human body.
2			To know and name the five senses that help us to notice the world around us.
3			To know skin allows us to touch and feel.
4			To know our nose helps us to smell and our tongue helps us to taste.
5			To know our ears are the part of our body for hearing.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Everyday materials**	• 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 • Ask simple questions. • Observe closely using simple equipment.	To identify and name a variety of everyday materials.
2			To distinguish between an object and the material from which it is made.
3			To know that materials have different properties.
4			To compare and group together a variety of everyday materials on the basis of their simple physical properties.
5			To group materials based on their properties (absorbency).

		• Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Plants**	• 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 closely using simple equipment. • Identify and classify. • Use observations and ideas to suggest answers to questions.	To know what plants need in order to grow.
2			To identify and label parts of a plant.
3			To know how a plant transports water.
4			To know that plants spread their seeds to make new plants.
5			To know that some plants are deciduous and some are evergreen.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Animals including humans - Animals**	• 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).	To identify animals and their offspring with similar features
2			To explain the life stages of birds.
3			To investigate birds' favourite food.
4			To explain the life stages of insects.
5			To explain the life stages of amphibians.
6			To explain the life stages of mammals.
7			To describe the basic needs of animals.
8			To explain how to take care of a pet.
9			To explain what animals need to survive.

Year 2

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Living things and their habitats**	• 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 • Ask simple questions and recognise that they can be answered in different ways. • Observe closely using simple equipment. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	To identify and classify living and non-living things.
2			To understand what a habitat is and why this is important to wildlife.
3			To identify different living things and their habitats.
4			To identify different living things and their habitats.
5			To understand why and how scientists track animals.
6			Field study: to observe and record in a local micro-habitat.
7			To present observations and draw conclusions.
8			To understand and create simple food chains.
9			To understand how habitats can be damaged and protected.
10			Field study: to revisit a local micro-habitat and make and record observations.
11			Compare the local micro-habitat. Record obserations and draw conclusions.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Animals including humans – keeping healthy**	• Notice that animals, including humans, have offspring which grow into adults.	To know that animals, including humans need air, food, shelter and water to survive.
2			To know that our skeleton and our muscles help us to move.
3			To understand that our bodies digest our food.
4			To know that our heart pumps blood around our body.

5		• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Ask simple questions and recognise that they can be answered in different ways. • Ask simple questions and recognise that they can be answered in different ways. • Use observations and ideas to suggest answers to questions.	To understand the importance of keeping clean.
6			To understand how we can make ourselves better when we are unwell.
7			To understand how exercise improves our health.
8			To understand that sleep affects our bodies.
9			To understand why it is important to eat healthily.
10			To show my understanding of how to keep healthy.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Everyday Materials**	• Identify and compare the suitability of a variety of everyday materials (wood, metal, plastic, glass, brick, rock, paper, 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. • Ask simple questions and recognise that they can be answered in different ways. • Observe closely using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	To know that materials have uses based on their properties.
2			To be able to describe properties of materials using scientific vocabulary.
3			To compare suitability of every day materials for different purposes.
4			To know what is meant by a natural or synthetic material.
5			To know that the shape of some solid materials can be changed by squashing, bending or stretching.
6			To know that some materials are more absorbent than others.
7			To observe the difference between frozen and liquid water.
8			To know that some materials dissolve in water.
9			To investigate which materials are most stretchy.
10			To know that new products are invented by scientists using their knowledge of properties of materials.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Plants**	• 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 • Observe closely using simple equipment. • Perform simple tests. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	To know that there are many different types of plants.
2			To know that seeds produce new plants.
3			To know how bulbs grow into plants.
4			To know the different parts of a plant and their function.
5			To know what a plant needs to stay healthy.
6			To know how greenhouses help plants to grow.
7			To know that different plants have different features to help them live in different conditions.
8			To know that arable farming is the way that farmers grow crops.
9			To know what parts of a plant we eat.
10			To assess what we have learnt about plants.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Animals including humans - Animals**	• 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. • Ask simple questions and recognise that they can be answered in different ways. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.	To identify animals and their offspring with similar features
2			To explain the life stages of birds.
3			To investigate birds' favourite food.
4			To explain the life stages of insects.
5			To explain the life stages of amphibians.
6			To explain the life stages of mammals.
7			To describe the basic needs of animals.
8			To explain how to take care of a pet.
9			To explain what animals need to survive.

Year 3

Lesson	Unit	National Curriculum Statements	Learning intentions

1	**Animals including Humans – Nutrition and Movement**	• 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. • Make systematic and careful observations. • Gather, record, classify and present data in a variety of ways. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Use straightforward scientific evidence to answer questions or support findings.	To know what a skeleton is and understand its purpose.
2			To name and label bones of a human skeleton.
3			To identify, compare and classify the skeletons of animals.
4			To know the purpose of muscles and understand how they work.
5			To carry out a comparative test.
6			
7			To use knowledge of the structure of the hand to create a bionic hand. (STEM)
8			
9			To use food labels to explore the nutritional content of a range of food items.
10			

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Forces & Magnets**	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others.	To describe the force needed to make an object move (e.g. push/pull)
2			To know that friction happens when one surface moves against another.
3			To record results in a bar chart and write a conclusion.
4			Know that magnets can attract and repel.
5			To sort objects according to whether or not they are magnetic.
6			To make predictions about whether an object is magnetic.
7			To compare the strength of different magnets.
8			To know that magnets have a variety of uses in every day life.
9			To plan and carry out a fair test.
10			

		• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations. • Gather, record, classify and present data in a variety of ways. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Identify differences, similarities and changes related to scientific ideas. • Use straightforward scientific evidence to answer questions or support findings.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Plants**	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	To explain the function of each part of a plant.
2			To explain why plants need light, water, space and a suitable temperature to grow.
3			To know that water is taken in through the roots and transported through the stem to other parts of the plant.

4		• Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow). • Investigate the way water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. • Ask relevant questions and use different types of scientific enquiries to answer them. • Take accurate measurements using standard units and equipment (e.g., thermometers, data loggers). • Gather, record, classify and present data in a variety of ways. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Identify differences, similarities and changes related to scientific ideas. • Use straightforward scientific evidence to answer questions or support findings.	To carry out a fair test.
5			To compare and contrast the needs of different plants.
6			To describe the life-cycle of a sunflower.
7			To understand the role flowers play in the life cycle of a flowering plant.
8			To interpret data to write a conclusion.
9			To understand how the use of science has contributed to food production.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Light**	• 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.	Identify sources of light and understand that they emit their own light.
2			Identify and describe materials that are opaque, transparent and translucent.
3			Use a range of equipment, including thermometers, data loggers, rulers and stopwatches) to measure accurately,
4			Understand that shadows are the absence of light.
5			Investigate shadow size.

		• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Rocks and Soil**	• Compare and group together different kinds of rocks based on 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 • Ask relevant questions and use different types of scientific enquiries to answer them.	Describe and compare rocks based on their appearance.
2			Know the three main types of rock and understand how they are formed.
3			Investigate the hardness of different rocks.
4			Know what soil is composed of and to make careful observations of different soils.
5			To know what soil is composed of and to make careful observations of different soils.
6			To understand what fossils are and how they are formed.

		• Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations. • Gather, record, classify and present data in a variety of ways. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing.	

Year 4

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**States of Matter**	• 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. • Identify the part played by evaporation and condensation in the water cycle. • Associate the rate of evaporation with temperature • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations and take accurate measurements.	To know the states of matter.
2			To understand how particles are arranged in solids, liquids and gases.
3			To make careful observations.
4			To compare granular solids and liquids.
5			To understand viscosity and know how this affects flow.
6			To know gases around us.
7			To carry out a comparison test; which sponge holds the most air?
8			To understand how heat causes substances to change state.
9			To investigate the process of melting.
10			To investigate whether different solids can speed up the melting process.
11			To understand and observe evaporation.
12			To understand how cooling causes substances to change state.
13			To understand condensation.
14			To describe the water cycle.

		• Gather, record, classify and present data using diagrams, keys, bar charts and tables. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings from enquiries using oral and written explanations. • Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. • Identify differences, similarities and changes related to simple scientific ideas and processes • Use scientific evidence to answer questions or support findings.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Animals including Humans- Teeth & Eating**	• 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. • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests.	To know that humans have teeth to bite, tear, crush and grind food.
2			To know the causes of tooth decay and how to prevent it.
3			To know how to design and conduct a test to answer a scientific query.
4			To know that the digestive process begins with the mouth.
5			Know that carnivores, omnivores and herbivores have different kinds of teeth.

		• Make systematic and careful observations and take accurate measurements. • Gather, record, classify and present data using diagrams, keys, bar charts and tables. • Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings from enquiries using oral and written explanations. • Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. • Use scientific evidence to answer questions or support findings.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Electricity**	• Identify common appliances that run on electricity. • Construct a simple series circuit. • Identify and name basic circuit components including cells, wires, bulbs, switches and buzzers. • Recognise that a switch opens and closes a circuit. • Recognise common conductors and insulators • Make systematic and careful observations.	To know when electricity gathers in one place it is known as static electricity.
2			To know that electricity travels through a circuit.
3			To know that switches are used to open and close a circuit.
4			To know that some materials are electrical conductors and some are electrical insulators.
5			To be able to draw and read simple circuit diagrams and identify missing components.
6			To know how a light bulb works and who invented it.
7			To know how voltage affects the brightness of a bulb.
8			To know how to write up a science investigation using technical terms and vocabulary.
9			
10			

		• Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Use straightforward scientific evidence to answer questions or support findings	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Sound**	• Identify how sounds are made. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between pitch and features of the object producing the sound. • Find patterns between volume and strength of vibrations. • Recognise ways to reduce sound • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations. • Take accurate measurements using standard units and equipment (e.g., thermometers, data loggers). • Gather, record, classify and present data in a variety of ways.	To understand how sound is made.
2			To know how sound travels through different mediums.
3			To understand how we hear.
4			To investigate volume.
5			To investigate pitch.

		• Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Identify differences, similarities and changes related to scientific ideas. • Use straightforward scientific evidence to answer questions or support findings	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Living things and their Habitats – identifying & classifying**	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys. • Recognise that environments can change and that this can pose dangers to living things. • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations. • Take accurate measurements using standard units and equipment (e.g., thermometers, data loggers). • Gather, record, classify and present data in a variety of ways.	
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		• Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings orally and in writing. • Use results to draw simple conclusions, make predictions and raise further questions. • Identify differences, similarities and changes related to scientific ideas. • Use straightforward scientific evidence to answer questions or support findings	

Year 5

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Earth & Space**	• Describe the movement of the Earth and other planets relative to the Sun. • 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. • Identify scientific evidence that has been used to support or refute ideas or arguments.	To understand what the universe is.
2			To know what objects are in our solar system.
3			To name and identify the characteristics of the eight planets.
4			To identify scientific evidence that has been used to support or refute ideas regarding the classification of Pluto.
5			To understand that space is a vacuum
6			To explain how we know that the Sun, planets and Moon are spherical.
7			To explain how planets move in our Solar System.
8			To explain day an night and the apparent movement of the Sun across the sky.
9			To investigate night and day in different parts of the Earth.
10			To understand and describe the phases of the Moon.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Materials**	• Compare and group together everyday materials on the basis of their properties.	To describe different materials and their properties.
2			To understand magnetism.
3			To understand that some materials can conduct heat.

4		• Know that some materials dissolve and form solutions. • Use knowledge of solids, liquids and gases to separate mixtures. • Give reasons for uses of materials based on their properties. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes form new materials and are not reversible • Record data and results using tables, scatter graphs, bar graphs and line graphs. • Report and present findings orally and in writing, including conclusions and explanations.	To know that some materials can conduct electricity.
5			To explain the meaning of the properties of Hardness, Transparency and Flexibility
6			I can explain the meaning of a solution.
7			I can explain the meaning of a mixture.
8			I know how to separate some solutions and mixtures.
9			I can design a product based on its properties.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Forces**	• Explain that unsupported objects fall towards the Earth because of gravity. • Identify the effects of air resistance, water resistance and friction. • Recognise that mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. • Take measurements using a range of scientific equipment with increasing accuracy and precision. • Record data and results using tables, scatter graphs, bar graphs and line graphs.	To know that a force can cause an object to: speed up, slow down, change direction and change shape.
2			To know that objects fall to the Earth because of the force of gravity
3			Use a newton meter accurately to measure the force acting on an object.
4			To know the effects of friction and be able to explain them.
5			To know that air resistance slows moving objects.
6			To know that elasticity allows an object to return to its original shape.
7			Know when an object is submerged, water provides an upward force (up thrust).
8			To understand levers and gears can be used to increase the force applied to objects.
9			To know that simple machines can help us to increase the forces applied to objects.

		• Report and present findings orally and in writing, including conclusions and explanations.	

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Living things and their Habitats- Lifecycles**	• 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	Show the life cycle of a flowering plant and contrast to a non-flowering plant.
2			Know the arts of a flower and how pollen is necessary for reproduction.
3			Know that mammals and amphibians have different life-cycles.
4			Explain the life cycle of a bird.
5			Explain the life cycle of an insect.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Humans – link to PSHE- Puberty**	• Describe the changes as humans develop to old age • Plan different types of scientific enquiries to answer questions.	Recognise the stages of human growth; including gestation, birth and infancy.
2			Know that the human body changes as it goes through puberty.
3			Identify the physical and mental changes to the human body that happen from adulthood to old age.
4			To compare gestation periods and growth stages of animals and humans and suggest reasons for the difference.
5			Plan an investigation into animal gestation.

Year 6

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Animals including humans - circulation**	• Identify and name the main parts of the human circulatory system. • Describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the body.	Identify and name the main parts of the human circulatory system.
2			Identify the different parts of the heart and their function.
3			Know the function of blood vessels.
4			Name and identify the components of blood and describe their roles.
5			Understand how the heart pumps blood to the lungs and around the body.
6			Describe the ways in which nutrients and water are transported in humans.
7			Understand the importance of a healthy diet and exercise on the human body.

8		• Describe the ways in which nutrients and water are transported within animals. • Plan different types of scientific enquiries to answer questions. • Recognise and control variables where necessary. • Take measurements using a range of scientific equipment with increasing accuracy and precision. • Record data and results using tables, scatter graphs, bar graphs and line graphs. • Use test results to make predictions and plan further comparative or fair tests. • Report and present findings orally and in writing, including conclusions and explanations.	Plan and carry out a scientific enquiry to investigate the effects of exercise on the heart.
9			Record data accurately and draw conclusions about how exercise affects the circulatory system.
10			Understand how diet, exercise, drugs and lifestyle affect the circulatory system.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Evolution & Inheritance**	• Recognise that living things have changed over time. • Recognise that fossils provide information about living things that inhabited the Earth millions of years ago. • Identify how animals and plants are adapted to suit their environment. • Identify scientific evidence that has been used to support or refute ideas or arguments.	Understand and describe what evolution is
2			Explain how scientists use fossils to learn about living things that inhabited the Earth millions of years ago.
3			To explore Darwin's theory of evolution.
4			To explain how we inherit characteristics from our parents.
5			To describe what variation is (inheritance and environmental)
6			To investigate how variation helps a species to survive.
7			To explain how animals are adapted to their environment.
8			To recognise the different types of adaptation
9			To explain how plants around the world have adapted to their environment.
10			To know who Alfred Wallace was and understand his contribution to the theory of evolution.

Lesson	Unit	National Curriculum Statements	Learning intentions

1	**Electricity**	• Associate brightness of a lamp or volume of a buzzer with the number and voltage of cells. • Compare and give reasons for variations in components' functions. • Use recognised symbols when representing circuits	To make and draw a series circuit.
2			To predict outcomes based on scientific circuit diagrams.
3			To construct a series circuit using an on/off switch.
4			To understand the function of a parallel circuit.
5			To design a circuit for use in a toy.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Living things and their habitats – Classification system**	• Describe how living things are classified into groups. • Give reasons for classifying plants and animals based on specific characteristics	To understand what classification is and why it is used in every day life.
2			To know about scientists who began to teach us about classification.
3			To understand the classification system created by Linnaeus.
4			To know that plant and animal cells are different.
5			To know that taxonomy is used to show how organisms are related to each other.
6			To know that vertebrates are classified into five groups.
7			To understand that scientists divide invertebrates into groups.
8			To understand that scientists divide plants into groups.
9			To present my knowledge of classification in the plant and animal world.

Lesson	Unit	National Curriculum Statements	Learning intentions
1	**Light**	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain how we see things. • Explain shadows using the straight-line model of light • Plan different types of scientific enquiries to answer questions. • Recognise and control variables where necessary. • Take measurements using a range of scientific equipment with increasing accuracy and precision.	To recognise that light travels in straight lines.
2			To understand and describe how a periscope works.
3			Investigate how the position of the sun changes shadows.
4			Understand refraction.
5			Understand how rainbows are formed.

		• Record data and results using tables, scatter graphs, bar graphs and line graphs. • Use test results to make predictions and plan further comparative or fair tests. • Report and present findings orally and in writing, including conclusions and explanations. • Identify scientific evidence that has been used to support or refute ideas or arguments.	