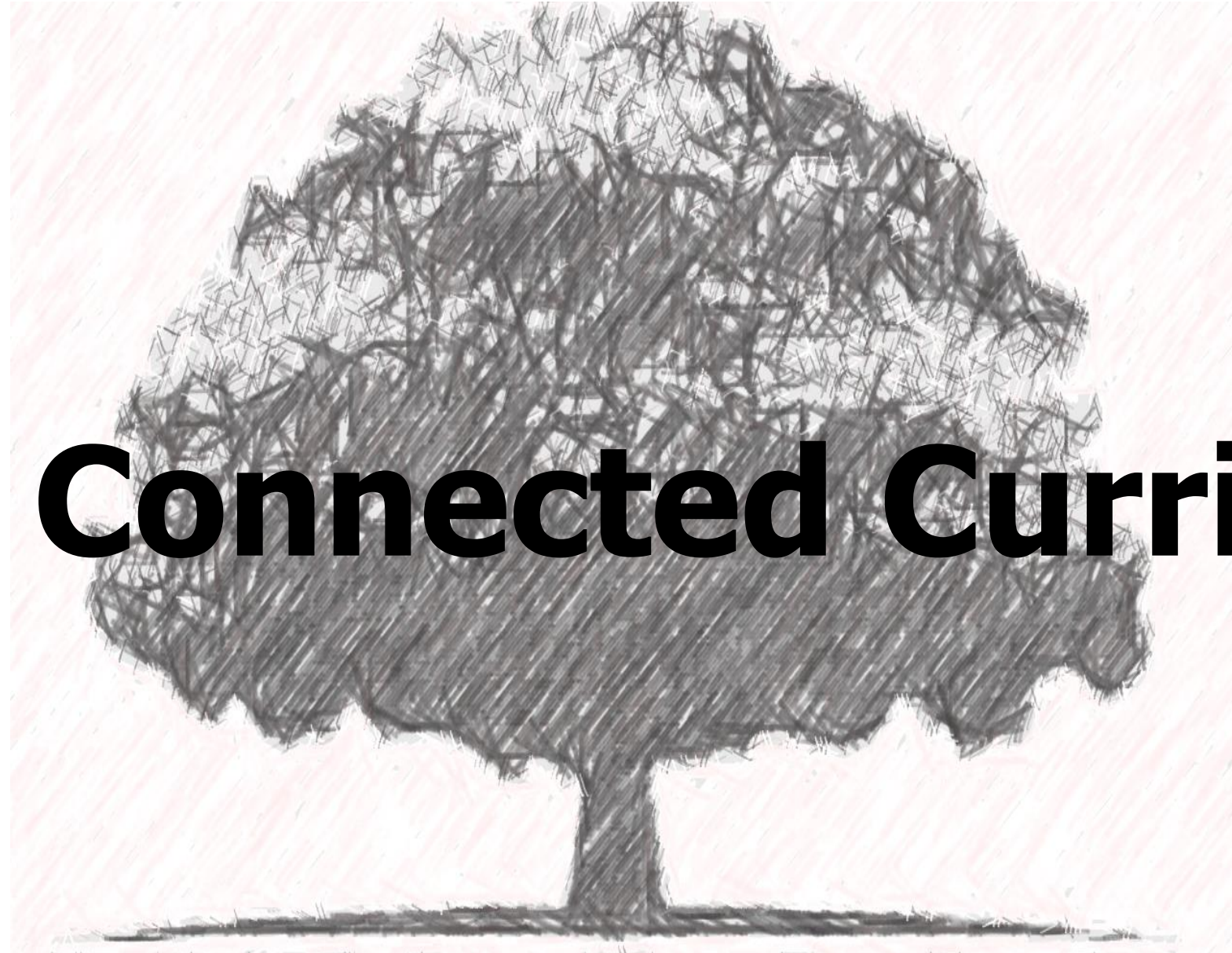


Kelsall Connected Curriculum



'A Love for Learning'

Kelsall Primary & Nursery School

Science Overview



Cheshire Academies Trust
Inspiring hearts and minds



Science Curriculum at Kelsall Primary School

Intent

Our high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. We want children to learn how science has changed and influenced our lives and is vital to the world's future prosperity. All pupils are taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Through our study of Science, we aim to ensure all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Implementation

We structure our Science curriculum by using the National Curriculum. This allows all our children, in every year group, to have a full and in depth understanding of the biology, chemistry and physics strands. In each year group, all children have the opportunity to study a scientist who links with a taught topic that year.

Our aim is to ensure that our Science curriculum consists of more than simply learning scientific concepts and factual information. In each unit, teachers plan for multiple opportunities for children to actively participate within their learning, through a range of individual activities and investigations. At the start of each unit, teachers make sure that pupils are confident with prior learning to ensure all learning is progressive.

At Kelsall, all children have a range of enrichment opportunities. We assess Science in a variety of ways, giving pupils the opportunity to explain their reasoning and metacognition of a topic as well as their accumulation of knowledge. This may be done through practical exercises, group tasks, quizzes or discussion. We value developing scientific oracy and place great emphasis on children being able to explain how, and why; understanding the knowledge and skills within scientific learning.

Impact

At Kelsall, we believe that the impact of cross curricular teaching and linking it to our class text encourages children to make familiar links. Kelsall prides itself on high expectations and quality evidenced work presented in books.

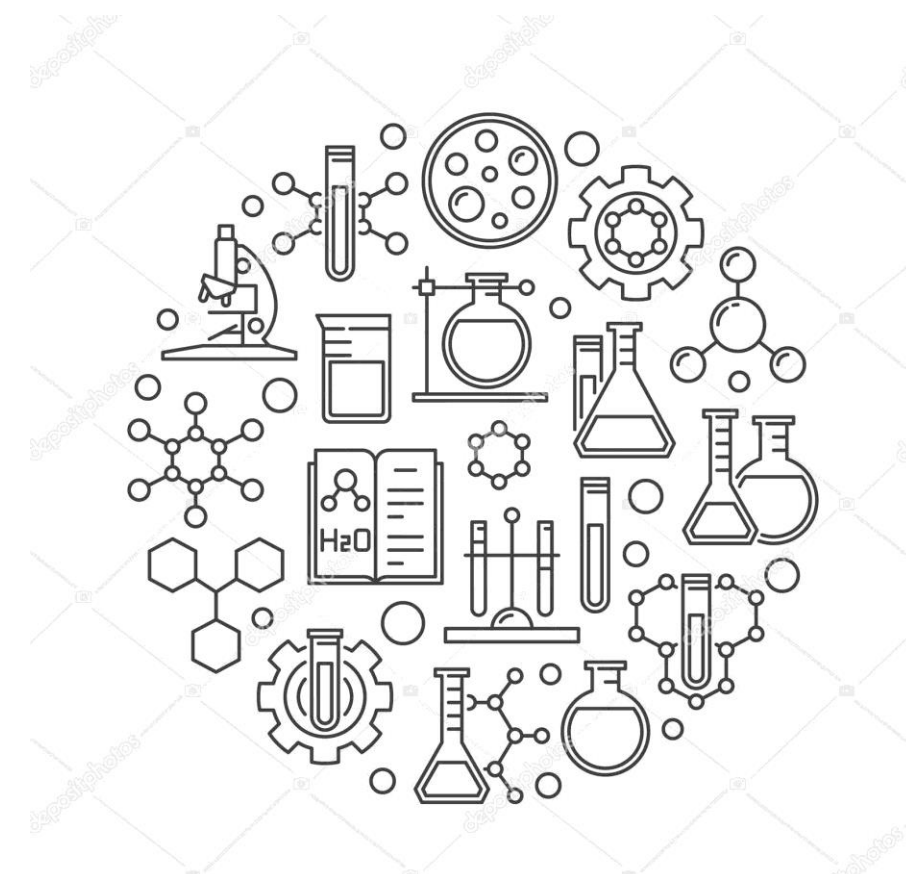
Children will begin to make relevant links from geography to other curriculum subjects, such as history and science. They will improve their enquiry skills and curiosity about the world around them, and their impact on the world and the human and physical processes.

Inclusive Practice

When we are getting things right for our learners with SEND, we are getting it right for all learners. Inclusive Practice means we use approaches that are effective for learners with SEND. This will provide all learners with opportunities to learn in small steps and carefully build upon their prior knowledge. This is done through a range of approaches including:

- creating a language rich environment which is vital to closing the gap between learners with SEND and their peers and enabling future attainment.
- demonstrating what we want learners to do and show them what we mean.
- using physical resources to help abstract concepts become more accessible and meaningful and recognise the value of Dual Coding.
- reducing Cognitive Load and activate children's prior knowledge/schema through a connected curriculum that builds of prior learning, knowledge and skills and provides regular opportunities for learners to practise recalling what they have learnt, to help them easily access this information when it is needed.

‘With reference to **‘Embedding Inclusive Practice’**, NASEN



By the time they leave, pupils will:

- Have a positive attitude to, and interest in, science
- Plan and carry out range of scientific enquiries that combine detailed observation, research and fair-testing
- Plan different types of scientific investigations, explaining the variables that will remain constant, and the impact this will have on the investigation
- Ask questions and seek answers through collecting, analysing and presenting data
- Make their own decisions about what observations to make, the measurements that will be made, how long to make them for and whether they should be repeated
- Use a wide range of scientific vocabulary and technical terminology accurately and precisely
- Have good scientific knowledge of: seasonal changes; animals, including humans; plants; living things and their habitats; materials; sound, light; electricity; forces; rocks; earth and space






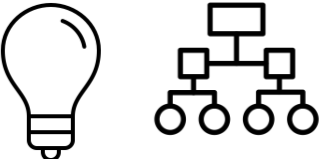
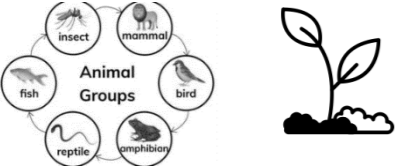
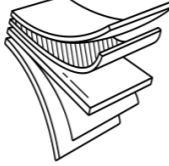

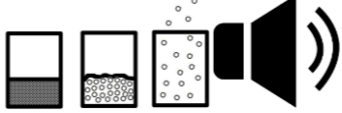
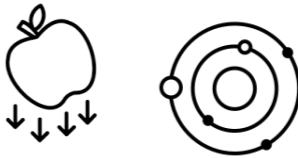

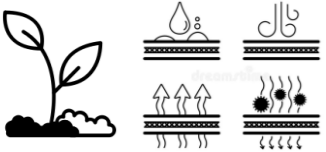

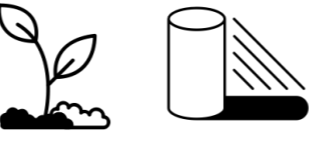


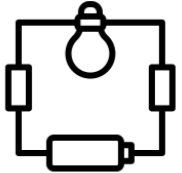
EYFS Links**Understanding the World**

- 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

The Natural World ELG

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities & differences between the natural world around them and contrasting environments, drawing on their experiences & what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Kelsall Primary & Nursery School Curriculum Road Map –Science Endpoints

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					
<p>To observe and describe weather associated with the seasons and how day length varies through observation and recordings.</p> <p>To describe the basic parts of the human body. To observe the seasons through observation.</p>	<p>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.</p>	<p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans</p>	<p>Children can describe the main changes in humans as they age, giving reasons for and implications of these changes.</p>	<p>Recognise that light travels in straight lines, and use this concept to explain why objects are seen when they give out or reflect light into the eye, how we see things, and why shadows have the same shape as the objects that cast them.</p> <p>Describe the classification of living things based on observable characteristics and similarities, including micro-organisms, plants, and animals, and provide reasons for classifying plants and animals based on specific traits.</p>
					
<p>To describe and compare the structure of a variety of common animals through photographs and readings.</p> <p>To identify the structure of a plant and the different varieties through observation, planting and research. To observe the seasons through observation.</p>	<p>To identify and compare the suitability of a variety of everyday materials for particular uses.</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>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</p>	<p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p>	<p>Children can identify forces acting on an object and suggest ways to increase/decrease these forces as needed.</p> <p>Children can explain the features and movement of a range of objects in the Solar System, explain how the moons phases are seen and identify evidence the Earth is spherical.</p>	<p>Identify and name the main parts of the human circulatory system, and their functions, understand how diet, exercise, drugs and lifestyle impact bodily functions and describe how nutrient and water are transported in animals, including humans.</p> <p>Recognise the changes of living things over time, the variation of offspring, and the adaptation of animals and plants to their environment, which may lead to evolution.</p>
					
<p>To identify the structure of a plant and the different varieties through observation, planting and research. To observe the seasons through observation.</p> <p>To identify different types of materials and their properties through observation and experiments.</p>	<p>To detail how plants need water, light and a suitable temperature to grow and stay healthy</p> <p>To describe the basic needs of animals, including humans, for survival (food, water and air)</p>	<p>Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p>	<p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p>	<p>Children can identify properties of a range of materials, identifying states of matter and changes to state including reversible and irreversible changes.</p> <p>Children can sequence the stages of a lifecycle in a range of plants and animals, explain the process of reproduction in some species.</p>	<p>Recognise and compare the effects of different numbers and voltages of cells on the brightness of a lamp or the volume of a buzzer, explain variations in component function, and use standard circuit symbols to represent simple circuits</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	<p>Animals including humans</p> <ul style="list-style-type: none"> 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. <p>Plants</p> <ul style="list-style-type: none"> 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. <p>Seasonal Changes</p> <ul style="list-style-type: none"> Observe changes across the four seasons <p>Observe and describe weather associated with the seasons and how day length varies.</p>	<p>Animals including humans</p> <p>Notice that animals, including humans, have offspring which grow in to adult</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (food, water, air).</p> <p>Describe the importance of exercise to humans, eating the right amounts of different types of foods, and hygiene.</p> <p>Living things and their habitats</p> <p>Explore and compare the differences between living, dead and non-living things.</p> <p>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.</p> <p>Identify and name a variety of plants and animals in their habitats including micro-habitats.</p> <p>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.</p> <p>Plants</p> <p>Observe and describe how bulbs and seeds grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow</p>	<p>Animals including humans</p> <ul style="list-style-type: none"> Identify that animals need the right types and amount of nutrition and that they can't make their own food. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Plants</p> <ul style="list-style-type: none"> Identify and describe functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. <ul style="list-style-type: none"> 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 how 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. 	<p>Animals including humans</p> <ul style="list-style-type: none"> 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. <p>Living things</p> <ul style="list-style-type: none"> 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 	<p>Animals including humans</p> <p>Describe the changes as humans develop to old age (including during gestation).</p> <p>Living things</p> <ul style="list-style-type: none"> 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. 	<p>Animals including humans</p> <ul style="list-style-type: none"> 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. <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Living things and their habitats</p> <ul style="list-style-type: none"> 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. Identification and classification. Give reasons for classifying plants and animals based on specific characteristics. Identification and classification-pattern seeking. <p>Evolution and inheritance</p> <ul style="list-style-type: none"> 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.

Chemistry	<p>Everyday materials</p> <ul style="list-style-type: none"> • 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. 	<p>Uses of everyday materials</p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Rocks</p> <ul style="list-style-type: none"> • 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. 	<p>States of Matter</p> <ul style="list-style-type: none"> • 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 (oC). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<p>Properties and changes of materials</p> <ul style="list-style-type: none"> • 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. 	
Physics			<p>Light</p> <ul style="list-style-type: none"> • Recognise that they need light in order to see things and darkness 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 light from a light source is blocked by a solid object. • Find patterns in the way the size of shadows change. 	<p>Sound</p> <ul style="list-style-type: none"> • 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 produce it. 		<p>Light</p> <ul style="list-style-type: none"> • 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 research. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

			<p>Forces and magnets</p> <ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects but magnet 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 two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>Electricity</p> <ul style="list-style-type: none"> • 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 buzzes. • 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. 	<p>Forces</p> <ul style="list-style-type: none"> • 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. <p>Earth and Space</p> <ul style="list-style-type: none"> • 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. 	<p>Electricity</p> <ul style="list-style-type: none"> • Planning different types of scientific enquires to answer questions including recognising and controlling variables where necessary.
<p>Working Scientifically</p>	<ul style="list-style-type: none"> • Asks a few simple questions about what they notice. • Observes things closely. • Performs a simple test. • Identifies things in the natural and humanly-constructed world. • Uses one or two basic observations and ideas to suggest an answer to a question. • Gathers and records some simple data. 	<ul style="list-style-type: none"> • Ask a range of simple questions about what is noticed. • Observe things closely using simple equipment. • Perform a range of simple tests. • Identify and classify things in the natural and humanly constructed world. • Use a range of observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. 	<ul style="list-style-type: none"> • Asks questions about what they notice. • Observes things closely using simple equipment. • Sets up simple practical enquiries and tests. • Identifies differences, similarities or changes relating to things in the natural and humanly-constructed world. • Uses test results to draw simple conclusions and make simple predictions. • Gathers, records and classifies data to help in answering questions. 	<ul style="list-style-type: none"> • Ask relevant questions about what they notice. • Makes systematic and careful observations using a range of equipment. • Sets up simple practical enquiries, comparative and fair tests. • Identifies differences, similarities or changes related to simple scientific ideas and processes. • Uses test results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Gathers, records and classifies data in a variety of ways to help in answering questions. 	<ul style="list-style-type: none"> • Ask relevant questions about what they notice. • Makes systematic and careful observations using a range of equipment. • Uses test results to ask further questions. • Identifies differences, similarities or changes related to simple scientific ideas and processes. • Uses test results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Gathers, records and classifies data in a variety of ways to help in answering questions. 	<ul style="list-style-type: none"> • Ask relevant questions about what they notice. • Makes systematic and careful observations using a range of equipment. • Uses test results to set up further enquiries, comparative and fair tests. • Identifies differences, similarities or changes related to simple scientific ideas and processes. • Uses test results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Gathers, records and classifies data in a variety of ways to help in answering questions