

How is the science curriculum organised?

The science curriculum is organised around Biology, Physics and Chemistry with working scientifically embedded across all of the unit of work. Working scientifically is ever present within the curriculum design ensuring the children have the disciplinary knowledge required to think and work as a scientist.

How are key strands of learning used?

The key strands within the science curriculum add a further layer of knowledge and understanding to the children's learning. Carefully selected strands provide the children with cumulative knowledge over time around key aspects. This cumulative knowledge will allow the children to understand wider themes to a greater level, being able to reason with thoughts and language. This allows the children to engage in topics of conversation and feel confident with their own knowledge and understanding of these areas. It is through these key strands of learning that the children will be able to recognise and link to other subjects.

Science						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
KS1 Cycle A	Living Things and their Habitats		Materials (y1)	Material (y2)	Plants (y1)	Plants (y2)
KS1 Cycle B	Animals, including Humans (y1)	Animals, including Humans (y2)	Animals, including Humans (y1)	Animals, including Humans (y2)	Seasonal Change	
LKS2 Cycle A	Living Things and their Habitats	States of Matter	Animals, including Humans (y3)	Animals, including Humans (y4)	Electricity	
LKS2 Cycle B	Rocks	Light	Forces and Magnets	Sound	Plants	

KS1.CA.T1	<p>Area of study: Forces and Magnets</p> <p>Unit aims / outcome:</p> <ul style="list-style-type: none"> • 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 and 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>Geographical concepts to organise knowledge: Physics- studies matter and motion and how it interacts with energy and forces.</p> <p>Working Scientifically- disciplinary knowledge required to think and work as a scientist. Physics Working Scientifically</p>		
<p>Key strands of learning:</p>		
<p>Hierarchical Strands: (see progression) e.g. plants (Build year on year)</p>	<p>Cumulative Strands: e.g. environment (key features throughout NC)</p>	
<p>Learning in Reception:</p>	<p>Tier 2</p> <p><u>New</u> Magnets Forces Attract Repel poles</p> <p><u>Review –</u> Materials Objects strength</p>	<p>Tier 3</p> <p><u>New</u> Magnetic forces Direct contact Accelerate friction <u>Review</u></p>
<p>NC objective:</p>	<p>Vocabulary and crucial knowledge:</p>	
<ul style="list-style-type: none"> • Compare how things move on different surfaces • Notice that some forces 	<p><u>Context of study:</u></p> <p>This unit of study will build upon the children’s knowledge in KS1 around identifying and grouping materials based on their properties and how to distinguish between an object and the material it is made from (KS1.CA.T2). They will have lots of knowledge around the disciplinary strand of identifying, sorting classifying through all three concepts: biology, chemistry and physics. This will be the last unit in which the children will explore the concept of physics after looking at electricity and sound in</p>	

<p>need contact between two objects, but magnetic forces can act at a distance</p> <ul style="list-style-type: none"> • Observe how magnets attract and 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 	<p>(KS2.CA.T3) and Light in (KS2.CB.T1). The children should have a good understanding that physics is about the world around us and how it interacts with energy and forces. Children will have worked as scientists through fair testing in previous physics units so will have a good understanding of the plan, do, review structure.</p> <p><u>Crucial Knowledge:</u></p> <p><u>Forces</u> To know a force is a push or pull that acts upon an object. To know that some forces need direct contact and some don't. To know that direct contact is needed between 2 objects for forces like opening doors, pushing a swing however magnets can act as forces without direct contact. To know some things can move differently on different surfaces. To compare how objects move on different surfaces and the friction between the object and the surface.</p> <p><u>Magnets</u> To know that magnets have 2 poles a north and a south. To know that magnets can attract or repel each other depending on which way the poles are facing. To know that poles that are alike repel (north and north repel and south and south repel). To know that opposite poles attract (north and south attract) To know that some materials can attract magnets (copper, metal)- objects- scissors, keys, paper clips, forks, tin cans. To know that some materials cannot attract magnets (plastic, wood)- objects- pencils, rulers, cardboard boxes, jumper. To know that materials that are magnetic means they are attracted to magnets. To know that materials that are not attracted to magnets are non-magnetic. To understand that most metals are magnetic, but not all of them e.g. iron, nickel, cobalt are, gold, silver, lead are not. To investigate and understand that the distance between the material and magnet can impact the force.</p> <p><u>Working Scientifically:</u></p> <p><u>Fair testing:</u> Investigate how different surfaces can change an objects motion based on the friction between the object and surface.</p> <ul style="list-style-type: none"> • Plan: children will plan the enquiry of how they are going to measure the friction between a toy car and the surface it runs on. • Measure: the height of the board from the ground when the car starts to move.
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each other, depending on which poles are facing.

- Observe: which materials allow the car to move quicker so have less friction and the materials that allow the car to move more slowly have more friction.
- Record: the results and conclude which surfaces had an impact on the cars motion.

Identify, sort and classify:

Group materials on the basis of whether they are attracted to a magnet or not. Explore whether the distance between the magnet and the object has an impact on the force.

How I will be a scientist?

- Ask questions: about which materials they should use, do the children need a range of objects made by different materials.
- Predict: which materials they think will attract or repel the magnets.
- Observe: what happens with each object. Does it have any impact on the distance between the magnet and the object. Can we make this fair?
- Interpret: what have we found out. Are there any similarities between the objects that attract the magnet or repel it?

Key scientists of study:

Sir Isaac Newton:

While primarily known for his laws of motion and universal gravitation, Newton's work also touches upon forces and their relationship to motion and objects in space.