

## Perryfields Primary PRU Curriculum Overview

### Science

Due to us having mixed age classes we operate a two year cycle with our curriculum. This ensures that over time all the pupils get a full entitlement. To plan the curriculum we have begun with the National Curriculum and then used resources from Twinkl, Ogden Trust and other education websites. We have supplement this with enrichment days, assemblies and offsite visits.

The following key drivers underpin our learning and are developed through the school. Our three key drivers for our school curriculum are:

1. **Aspirations** - we want our pupils to **aspire** to be the best version of themselves. We have incredibly **high expectations** and are passionate about ensuring that every pupil is exposed to a range of possibilities to broaden their **aspirations, build their confidence** and deepen their **knowledge** of the world around them.
2. **Communication** - to help our pupils to develop the knowledge and skills necessary to communicate their thoughts, ideas and feelings successfully across the curriculum through a variety of outlets – this includes through the Arts, Sports and Science, Technology, Engineering and Mechanics (STEM).
3. **Learning Powers** - we aim to develop our pupils' learning habits in order to prepare them for a lifetime of learning. Developing our pupils' learning powers is central to everything we do; it is not an addition to our curriculum but underpins the whole learning process.



## Years 1 and 2: Cycle 1

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Topic Theme</b>	<b>Everyday Materials</b>	<b>Seasonal Changes (Autumn/Winter)</b>	<b>Animals, including humans (1)</b>	<b>Plants (1)</b>	<b>The Environment</b>	<b>Scientists and Inventors (1)</b>
<p><b>Objectives</b> All pupils should be able to:</p> <p>Target Learning Outcomes:</p>	<p>To identify and name different materials</p> <p>To tell the difference between an object and the materials it is made from</p> <p>To describe the properties of everyday materials</p> <p>To identify which materials have certain properties.</p> <p>To test different materials.</p> <p>To use what I have learnt to make a decision.</p> <p>To sort objects by their properties.</p>	<p>To describe how the weather changes across the seasons.</p> <p>To describe day length in autumn.</p> <p>To collect and record data about the weather in autumn.</p> <p>To identify signs of autumn</p> <p>To describe how day length varies from autumn to winter.</p> <p>To identify changes in the trees and in clothes that we wear from autumn to winter.</p> <p>To observe and describe the weather in winter.</p>	<p>To identify and name some common animals.</p> <p>To describe and compare the structure of a variety of common animals.</p> <p>To identify, name and sort animals that are herbivores, carnivores and omnivores.</p> <p>To name and label the parts of the human body</p> <p>To name the five senses and to perform simple tests to find out more about them.</p> <p>To sort animals according to a criteria.</p>	<p>To describe and compare plants, seeds and bulbs</p> <p>To name and compare the parts of plants.</p> <p>To identify and name some common garden and wild plants.</p> <p>To identify and name some common trees.</p> <p>To name, sort and compare some common fruit and vegetable plants</p> <p>To name and compare some common plants and trees.</p>	<p>To measure the melting of ice in a comparative test.</p> <p>To perform a test and draw a conclusion.</p> <p>To sort items for recycling based on their materials.</p> <p>To suggest ways we can reduce, reuse and recycle.</p> <p>To work in a group to investigate the answer to a question.</p> <p>To take surveys and use the information to help</p> <p>To ask and answer questions about the rainforest.</p>	<p>To think about why Lego is made out of plastic.</p> <p>To ask questions about Mae Jemison and find out the answers.</p> <p>To compare the bodies of different animals.</p> <p>To sort animals into different groups</p> <p>To observe and describe the weather.</p> <p>To measure and record information about rain.</p> <p>To describe how vets look after animals.</p> <p>To identify parts of animals' bodies.</p>

		<p>To collect and record data about the weather in winter</p> <p>To explain how some animals adapt in winter.</p>			<p>To identify and classify rainforest animals.</p> <p>To set up a test and record the results.</p> <p>To accurately measure water and record my measurements.</p> <p>To ask and answer questions about endangered animals.</p>	<p>To test which items keep us warm.</p> <p>To describe the properties of materials that keep us warm.</p>
<b>Working Scientifically</b>	<p>Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways</li> <li>• observing closely, using simple equipment</li> <li>• performing simple tests</li> <li>• identifying and classifying</li> <li>• using their observations and ideas to suggest answers to questions</li> <li>• gathering and recording data to help in answering questions.</li> </ul>					
<b>Enrichment</b>						

### Years 1 and 2: Cycle 2

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Topic Theme</b>	<b>Animals, including humans (2)</b>	<b>Uses of everyday materials</b>	<b>Scientists and inventors (2)</b>	<b>Living things and their habitats</b>	<b>Plants (2)</b>	<b>Seasonal changes (Spring/Summer)</b>
<b>Objectives</b> All pupils should be able to:	To match, sort and group young animals and their adults.	To identify uses of different everyday materials.	To observe whether plants grow best inside or outside of a greenhouse.	To compare the differences between things that are living, dead and have never been alive.	To design and set up a test to find out what plants need to stay healthy.	To describe how day length varies from winter to spring.

<p>Target Learning Outcomes:</p>	<p>To find out how animals change as they grow into adults.</p> <p>To compare the stages of the human life cycle. To research and describe what animals, including humans, need to survive.</p> <p>To test the effects of exercise on the human body</p> <p>To investigate the importance of healthy eating and hygiene.</p>	<p>To identify and group the uses of everyday materials.</p> <p>To compare the suitability of different everyday materials. To explain how the shapes of objects made from some materials can be changed.</p> <p>To explain the process of recycling.</p> <p>To learn about the inventor John McAdam.</p>	<p>To identify different parts of plants.</p> <p>To explain how doctors use Science.</p> <p>To describe Louis Pasteur's life and work.</p> <p>To describe Charles Macintosh and his famous invention.</p> <p>To describe what Rachel Carson learnt about ocean Habitats</p> <p>To answer questions about the invention of wind turbines.</p>	<p>To map a habitat and identify what is in it.</p> <p>To identify animals in their habitats.</p> <p>To describe a habitat and identify animals live in it.</p> <p>To identify how an animal is suited to its habitat.</p> <p>To describe how animals get their food.</p>	<p>To look closely at the parts of a seed that will grow into a plant and explain how it will germinate.</p> <p>To describe the life cycle of a plant.</p> <p>To explain what plants need to grow and stay healthy.</p> <p>To describe what happens if plants don't get all the things they need.</p> <p>To explain how plants are suited to their habitats.</p>	<p>To observe and describe the weather in spring.</p> <p>To identify signs of spring.</p> <p>To describe how day length varies from spring to summer.</p> <p>To observe and describe the weather in summer</p> <p>To explain how to stay safe in the sun.</p>
<p><b>Working Scientifically</b></p>	<p>Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways</li> <li>• observing closely, using simple equipment</li> <li>• performing simple tests</li> <li>• identifying and classifying</li> <li>• using their observations and ideas to suggest answers to questions</li> <li>• gathering and recording data to help in answering questions.</li> </ul>					
<p><b>Enrichment</b></p>						

## Years 3 and 4: Cycle 1

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic Theme	Rocks	Forces and Magnets	Animals, including humans	Scientists and Inventors	Plants	Light
<p><b>Objectives</b> All pupils should be able to:</p>	<p>To compare different types of rocks.</p> <p>To make systematic and careful observations by examining different types of rocks.</p> <p>To explain how fossils are formed.</p> <p>To explain Mary Anning's contribution to palaeontology.</p> <p>To understand how soil is formed.</p> <p>To investigate the permeability of different soils.</p>	<p>To identify the forces acting on objects</p> <p>To investigate how a toy car moves over different surfaces.</p> <p>To sort magnetic and non-magnetic materials.</p> <p>To investigate the strength of magnets</p> <p>To explore magnetic poles.</p> <p>To observe how magnets attract some materials.</p>	<p>To sort foods into food groups and find out about the nutrients that different foods provide.</p> <p>To explore the nutritional values of different foods by gathering information from food labels.</p> <p>To recognise that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>To investigate an idea about how the human skeleton supports movement.</p> <p>To explain how bones and muscles work together to create movement.</p> <p>To identify that humans and some</p>	<p>To identify differences, similarities or changes related to simple scientific ideas and processes by finding out about the men and women who introduced new plants to our gardens.</p> <p>To understand how Marie Curie's work on x-rays helps us identify bones.</p> <p>To explain how George Washington Carver helped farmers to grow crops.</p> <p>To understand how fossils are formed.</p> <p>To describe what Inge Lehmann discovered about the Earth's core.</p>	<p>To name the different parts of flowering plants and explain their jobs.</p> <p>To set up an investigation to find out what plants need to grow well.</p> <p>To present the results of an investigation using scientific language.</p> <p>To investigate how water is transported in plants.</p> <p>To name the different parts of a flower and explain their role in pollination and fertilization</p> <p>To understand and order the stages of the life cycle of a flowering plant</p>	<p>To recognise that I need light to see things, and that dark is the absence of light.</p> <p>To investigate which surfaces reflect light.</p> <p>To use a mirror to reflect light and explain how mirrors work.</p> <p>To know that light from the sun can be dangerous and that there are ways we can protect our eyes.</p> <p>To investigate which materials block light to form shadows.</p> <p>To find patterns when investigating how shadows change size.</p>
Target Learning Outcomes:						

			other animals have skeletons and muscles for support, protection and movement.	To notice that light is reflected from surfaces by investigating concave and convex mirrors.		
<b>Working Scientifically</b>	<p>Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>					
<b>Enrichment</b>						

### Years 3 and 4: Cycle 2

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Topic Theme</b>	<b>States of Matter</b>	<b>Sound</b>	<b>Living things in their habitats</b>	<b>Electricity</b>	<b>Scientists and Inventors (2)</b>	<b>Animals, including humans (2)</b>
<b>Objectives</b> All pupils should be able to:	<p>To sort and describe materials.</p> <p>To investigate gases and explain their properties.</p> <p>To investigate materials as they change state.</p>	<p>To describe and explain sound sources.</p> <p>To explain how different sounds travel.</p> <p>To explore ways to change the pitch of a sound.</p>	<p>To use a range of methods to sort living things.</p> <p>To generate questions to use in a classification key.</p>	<p>To classify and present data, identifying common appliances that run on electricity.</p> <p>To identify circuit components and build working circuits.</p>	<p>To set up an enquiry to find out about soil erosion.</p> <p>To present my findings about Alexander Graham Bell.</p> <p>To build a solar oven and explain</p>	<p>To identify and name parts of the human digestive system.</p> <p>To explain the functions of the digestive system.</p>

<p>Target Learning Outcomes:</p>	<p>To explore how water changes state.</p> <p>To investigate how water evaporates.</p> <p>To identify and describe the different stages of the water cycle.</p>	<p>To investigate ways to absorb sound.</p> <p>To investigate ways to absorb sound.</p> <p>To make a musical instrument to play different sounds.</p>	<p>To identify vertebrates by observing their similarities and differences.</p> <p>To use a key to identify invertebrates.</p> <p>To create a classification key.</p> <p>To recognise positive and negative changes to the local environment.</p> <p>To describe environmental dangers to endangered species.</p>	<p>To investigate whether circuits are complete or incomplete.</p> <p>To investigate which materials are electrical conductors or insulators.</p> <p>To explain how a switch works in a circuit, build switches and report my findings.</p> <p>To discuss and solve problems about electricity using reasoning skills.</p>	<p>how the temperature changes inside it.</p> <p>To build a traffic light using series circuits.</p> <p>To explain how oxygen was discovered.</p> <p>To explain what Lord Kelvin called 'absolute zero'.</p> <p>To explore the impact of electrical inventions by inventors such as Thomas Edison and Lewis Latimer.</p> <p>To investigate the invention of toothpaste.</p>	<p>To identify the types and functions of teeth.</p> <p>To ask scientific questions and choose a scientific enquiry to answer them.</p> <p>To make careful observations, appropriately record my results and use them to develop further investigations.</p> <p>To construct and interpret food chains</p>
<p><b>Working Scientifically</b></p>	<p>Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>					

Enrichment						
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### Years 5 and 6: Cycle 1

Topic Theme	Autumn 1 Evolution and Inheritance	Autumn 2 Forces	Spring 1 Light	Spring 2 Animals, including humans (1)	Summer 1 Scientists and Inventors (1)	Summer 2 Living things and their habitats (1)
<b>Objectives</b> All pupils should be able to:	<p>To explain the scientific concept of inheritance</p> <p>To demonstrate understanding of the scientific meaning of adaptation.</p> <p>To identify the key ideas of the theory of evolution.</p> <p>To identify evidence for evolution from fossil records.</p> <p>To understand how human beings have evolved.</p> <p>To explain how adaptations can result in both</p>	<p>To identify forces acting on objects.</p> <p>To explore the effect gravity has on objects and how gravity was discovered.</p> <p>To investigate the effects of air resistance.</p> <p>To explore the effects of water resistance.</p> <p>To investigate the effects of friction.</p> <p>To explore and design mechanisms.</p>	<p>To explain that light travels in straight lines from light sources to our eyes, and from light sources to objects and then to our eyes.</p> <p>To understand how mirrors reflect light, and how they can help us see objects.</p> <p>To investigate how refraction changes the direction in which light travels.</p> <p>To investigate how a prism changes a ray of light.</p>	<p>To describe the stages of human development.</p> <p>To describe and explain the main changes that occur during puberty.</p> <p>To identify the changes that take place in old age.</p> <p>To report findings from enquiries.</p> <p>To identify the relationship between variables</p>	<p>To describe the life and work of David Attenborough.</p> <p>To use chromatography to separate mixtures.</p> <p>To describe Margaret Hamilton's life and work.</p> <p>To explore the sizes, surfaces and orbits of planets in our solar system.</p> <p>To describe Eva Crane and her work with bees.</p> <p>To describe Stephanie Kwolek and her work with materials.</p>	<p>To describe how some plants reproduce.</p> <p>To describe how some plants reproduce.</p> <p>describe the life cycles of different mammals.</p> <p>To explain what Jane Goodall discovered about chimpanzees.</p> <p>To compare the life cycles of amphibians and insects.</p> <p>compare the life cycles of plants, mammals,</p>



Target Learning Outcomes:	advantages and disadvantages.  To explain how human intervention affects evolution.		To investigate how light enables us to see colours.  To explain why shadows have the same shape as the object that casts them.		To choose materials for jobs based on their properties.  To identify evidence that supports or refutes scientific theories about Stonehenge.	amphibians, insects and birds.
<b>Working Scientifically</b>	Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills: <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>using test results to make predictions to set up further comparative and fair tests</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>					
<b>Enrichment</b>						

### Years 5 and 6: Cycle 2

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Topic Theme</b>	Earth and Space	Scientists and Inventors (2)	Properties and changes of materials	Animals, including humans (2)	Living Things and their Habitats (2)	Electricity
<b>Objectives</b> All pupils should be able to:	To explain why we know the Sun, Earth and Moon are spherical.  To name and describe features of the planets in our	To understand Stephen Hawking's theories about black holes and report my findings.  To understand Libbie Hyman's	To compare materials according to their properties.  To investigate thermal conductors and insulators.	To know the three main parts of the circulatory system and describe the job of the heart.  To describe the important jobs of	To give reasons for classifying animals based on their similarities and differences.	To explain the importance of the major discoveries in electricity.  To observe and explain the effects

<p>Target Learning Outcomes:</p>	<p>solar system.</p> <p>To explain how planets move in our solar system.</p> <p>To explain day and night and the apparent movement of the sun across the sky</p> <p>To investigate night and day in different parts of the Earth.</p> <p>To explain the movement of the Moon.</p>	<p>work about classification.</p> <p>To explain how diet affects the way the body functions.</p> <p>To record and interpret data on the effects of penicillin using a scatter graph.</p> <p>To understand the life of Mary Leakey and her work about fossils.</p> <p>To explain Dr Daniel Hale Williams' accomplishments.</p> <p>To understand how Steve Jobs used electronics to design computers.</p>	<p>To investigate which electrical conductors make a bulb shine brightest.</p> <p>To investigate materials which will dissolve.</p> <p>To use different processes to separate mixtures of materials.</p> <p>To identify and explain irreversible chemical changes.</p>	<p>the blood vessels and blood.</p> <p>To be able to describe the importance of exercise and how it affects the heart.</p> <p>To understand that regular exercise is important for a healthy body.</p> <p>To be able to explain how diet and exercise affect the body.</p> <p>To be able to recognise the impact of drugs and alcohol on the way bodies function.</p>	<p>To describe how living things are classified into groups.</p> <p>To identify the characteristics of different types of animals.</p> <p>To describe and investigate helpful and harmful microorganisms.</p> <p>To identify the characteristics of different types of microorganisms.</p> <p>To explain the classification of organisms found in my local habitat.</p>	<p>of differing volts in a circuit.</p> <p>observe and explain the effects of differing volts in a circuit.</p> <p>To understand variations in how components function.</p> <p>To conduct an investigation.</p> <p>To investigate my results further.</p>
<p><b>Working Scientifically</b></p>	<p>Through these topics children will be given opportunities to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• using test results to make predictions to set up further comparative and fair tests</li> </ul>					

	<ul style="list-style-type: none"><li>• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li><li>• identifying scientific evidence that has been used to support or refute ideas or arguments.</li></ul>					
<b>Enrichment</b>						