

Pudsey Bolton Royd Primary School Science Long-Term Plan

Year 5

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>
Enquiry Questions		
Are all planets like Earth?		What happens when materials change?
Outcomes		
Is there a pattern between the size of a planet and the time it takes to travel around the Sun? Pattern seeking Line graph showing their research.		(Identifying and classifying) Pupils form their own investigation based on questions from previous investigation. Pupils write prediction for investigation.
Linked Texts		
Hidden figures My first book of the cosmos		Why is ice slippery?
Linked Experiences		
N/A		
Overview		
During this unit, pupils will use a range of different sources to collect data and answer questions, commenting on the reliability of the sources. Through the main enquiry type of pattern seeking, pupils will investigate whether the size of a planet affects the time it takes to orbit the sun, presenting their result as a line graph. They will use their knowledge of rotation and orbiting to describe phenomena such as night and day. Pupils will also investigate the effects of gravity, linking it to their knowledge of space landings and life on the International Space Station.		Building on their knowledge of materials from Year 3 and Year 4, pupils will explain the properties of materials, commenting conductivity, solubility and magnetism, as well as less complex properties taught lower down school. As well as this, pupils will investigate a range of changes in materials, exploring reversible and irreversible changes and beginning to comment on the reasons for these. Pupils will use filtering, sieving and evaporating to separate substances from a solution. Pupils will then set up their own investigation based on their questions from the unit, making a clear reasoned prediction.
Knowledge and/or Skills Covered		
Select, organise and use information from more than one source to construct an informed response and/or opinion. Explain the usefulness and reliability of different sources. Make more complex links between the differences and changes they see and the scientific content they have learnt Use labelled diagrams, tables, classification keys, simple scatter graphs)		Start to refer to concepts like reliability, significance, replicability. Plans make links to previous investigations, and consider the relative merits of different types of scientific enquiry* in a context that is given to them (e.g. explaining which might be useful) Take repeat readings if appropriate Make clear records of observations and other aspects of the enquiry process (e.g. sketched but labelled diagrams, on-the-cuff calculations) Start to make comments about levels of accuracy (e.g.

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		not measuring a ball throw in mm)
National Curriculum Attainment Targets		
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 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.		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 though filtering, sieving and evaporating. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, woods and plastics. 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. Use test results to make predictions to set up further comparative and fair tests.
Important Vocabulary		
Axis/axes, sphere/spherical, rotation, elliptical orbit, evolve, galaxy, equator, gravity, force.		Soluble, solution, solute, solvent, suspension, filter, mixture, residue, separation, buoyancy, (ir)reversible, change, conductor, thermal, insulator, insulation, combustion, reaction

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<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
Enquiry Questions		
Can forces be useful?	Do all living things change in the same way as they get older?	What happens to our bodies as we get older?
Outcomes		
How does the surface area of a parachute affect the time it takes to fall to the ground? (Fair test) Written conclusion.	How does a seed change as it germinates? (Observing over time) Series of labelled scientific diagrams.	Why do people get grey/white hair when they get older? (Research) Double page spread showing the timeline of a human.
Linked Texts		
Fantastic forces and incredible machines	Life cycles	
Linked Experiences		
Building on their knowledge from Year 3 and linking closely to their unit on space, pupils will investigate the force of gravity and its effect on all objects. Pupils will predict whether two objects of the same mass (such as a piece of paper and a coin) will fall at the same speed. As part of this, pupils will develop their understanding of forces that act against gravity such as air resistance, water resistance and friction. Using this knowledge pupils will create their own parachute to prevent an egg from cracking. Pupils will justify the construction of their parachute to their peers. Finally, pupils will investigate the link between the size of the parachute and the time it takes to fall to the ground.	In this unit, pupils will investigate the life cycles of a variety of living things. Pupils will plant seeds and observe the changes that happen over time, documenting the changes that occur. Pupils will then compare the lifecycles of insects, birds, reptiles and amphibians, commenting on the fact that they all produce eggs. They will then contrast this to mammals which give birth to live young. Pupils will observe as many life-cycles as possible, whether that be first hand, videos or images, allowing them to develop high-quality, scientific vocabulary.	Following on from the previous unit, pupils will look specifically at the life-cycle of humans. Pupils will research the life-cycles of humans, presenting their finding as a clear information text, using high-quality scientific vocabulary.
Overview		
Knowledge and/or Skills Covered		
Work collaboratively by building on others' observations Ask/answer valid questions (e.g. significance, confidence, replicability) Start to organise evaluations (e.g. breaking it down into manageable steps) Show some sensitivity/selection in their evaluations (e.g. when critiquing others, or by considering scientific ethics)	Use labelled diagrams, tables, classification keys, simple scatter graphs) Use scientific vocabulary (see below), explaining how it differs from everyday usage, or from near-synonyms	Draw on other evidence to inform their predictions (e.g. own experience, reading, media) Justify their interpretations with evidence, from their own enquiry but also external sources (e.g. from famous experiments in the past, or from other curriculum areas)
National Curriculum Attainment Targets		

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Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object. Recognise that some 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, taking repeat readings where appropriate. Explain degree of trust in results. Identify and evaluate scientific evidence (their own and others') that has been used to support or refute ideas or arguments.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life processes of reproduction in some plants and animals.	Describe the changes as humans develop into old age.
Important Vocabulary		
air & water resistance, levers, pulleys, gears, cams, drag forces	sexual and asexual reproduction, interdependence, seed formation, runners, transpiration, fertilisation, birth, embryo, chromosomes	Infancy, gestation, adolescence