

Advent 2
Science Year 3: Forces and Magnets (Physics)

Scripture Link: Mark 12:28-34

National Curriculum Objective

Enquiry Question: What is a force and how do they work?

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	To explore what a force is.	To investigate movement on different surfaces.	To investigate magnets and materials.
Recall and Retrieval	That natural materials are those found in nature such as plants, rocks and water. Synthetic materials are man made describe what a magnet is can give some examples of how a magnet works	know what a force is and that there are different types. know that friction and gravity are forces and what they do. know the three main rock types: igneous, metamorphic and sedimentary	Know what a fossil is and how they are made know that there are different road surfaces and that vehicles may move differently on them. Can explain what synthetic and man-made mean.
Sequence of substantive knowledge throughout the lesson	I know what a force is and that there are different types. I know that friction and gravity are forces and what they do.	I know that there are different road surfaces I know how things move on those different surfaces I know that some surfaces are better than others and why.	I know what magnets are and what they do. I know that magnets attract or repel materials and sort a range of objects accordingly
Key Skills/disciplinary knowledge	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;

		<ul style="list-style-type: none"> identifying differences, similarities or changes related to simple scientific ideas and processes; 	<ul style="list-style-type: none"> identifying differences, similarities or changes related to simple scientific ideas and processes;
Key Vocabulary	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. Magnetic material, metal, iron, steel, poles, north pole, south pole.	Friction, speed, control, slippery, smooth, bumpy, rough, grip.	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. Magnetic material, metal, iron, steel, poles, north pole, south pole.
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	Use STEM sentences on the slide to scaffold scientific talk and vocabulary.	Mixed Groups. You may want a targeted group if there are identified children as having lots of gaps in knowledge.	Mixed groupings to test materials. You could set a more able group with laptops to research materials for the objects.
Challenge		Children to record in books. You may wish to print slide 29 for children to have in front of them to copy. If children are unable to record, they could use pictures	Challenge - to find own objects and find out the materials.
Diversity Links			
Catholic Social Teaching Principles			
British Values			
Wider links			

Advent 2
Science Year 3: Forces and Magnets (Physics)

	Lesson 4	Lesson 5	Lesson 6
Learning intention for each lesson	To investigate magnetic forces.	To explore magnetic poles.	To understand that the earth is a giant magnet
Recall and Retrieval	know that magnets attract or repel materials and sort a range of objects accordingly know that friction and gravity are forces and what they do. That the shape of some materials can be changed when they are stretched, twisted, bent and squashed.	know that some forces need contact between 2 objects. know that magnetic forces can act from a distance explain what attract and repel mean.	know that soil is made from rock and organic matter. Word quiz – explain germinate, pollinate, stigma, stamen
Sequence of substantive knowledge throughout the lesson	I know that some forces need contact between 2 objects. I know that magnetic forces can act from a distance	I Know that magnets have 2 poles I know that magnets repel or attract depending on which way around they are.	I know that magnets have different strengths and different uses. I know how a compass works – linked to Einstein’s work.
Key Skills/disciplinary knowledge	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;

Key Vocabulary	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel.	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. poles, north pole, south pole.	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. Magnetic material, metal, iron, steel, poles, north pole, south pole.
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	Children to plan in groups. Targeted children will need further questioning or demonstration to come up with variables.		Children work in mixed ability pairings. Targeted group could be taken at this point. Mixed ability groups to make their compasses. This works well in pairs if you have enough resources.
Challenge			Challenge - children to write the directions on the table when compass has aligned. LA children can cut and stick statements if writing is a barrier.
Diversity Links			
Catholic Social Teaching Principles			
British Values			
Wider curriculum links			