

Year	3	SCIENCE	Forces and Magnets Does the distance of a magnet affect how strong it is?
Pupils should be taught to: <ul style="list-style-type: none"> <li>compare how things move on different surfaces</li> <li>notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>observe how magnets attract or repel each other and attract some materials and not others</li> <li>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</li> <li>describe magnets as having two poles</li> <li>predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>			
<b>Prior Learning</b> <ul style="list-style-type: none"> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)</li> </ul>		<b>Future Learning</b> <ul style="list-style-type: none"> <li><b>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Y5)</b></li> <li><b>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Y5)</b></li> <li><b>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Y5)</b></li> </ul>	
<b>What Pupils Need To Know Or Do To Be Secure</b>			
<b>Key Substantive Knowledge</b> <ul style="list-style-type: none"> <li>A force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.</li> <li>A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.</li> <li>Understand that different types of magnets vary in strength</li> <li>The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole.</li> <li>If two like poles, e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract.</li> <li>Gravity is described as a pulling force</li> <li><b>SCIENTIST:</b> Isaac Newton (1643 - 1727). Newton described gravity as a pulling force that keeps people on the ground rather than floating off. He also noted that gravity keeps the moon in orbit. Newton told the story of seeing an apple fall to the ground from a tree which inspired him to wonder why it fell down, rather than up or across. This led to his work on defining gravity. Newton developed the universal law of gravitation, which states that two things will be attracted to one another and that the mass of each object will affect the amount of attraction.</li> </ul>		<b>Key Disciplinary Skills/ Knowledge</b> <p><u>Working Scientifically:</u></p> <p><b>Asking relevant questions and using different types of scientific enquiries to answer them</b> - children consider their prior knowledge when asking questions. Given resources, children decide themselves how to gather evidence to answer the question.</p> <p><b>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment</b> – They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.</p> <p><b>Setting up simple practical enquiries, comparative and fair tests</b> – They follow their plan to carry out observations and tests.</p> <p><b>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</b> – The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts.</p> <p><b>Using straightforward scientific evidence to answer questions or to support their findings</b> – Children answer their own and others' questions and their answers are consistent with the evidence seen/presented.</p> <p><b>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</b> – identify how they would do it differently if they repeated the enquiry.</p>	
<b>Lesson Sequence</b> <ol style="list-style-type: none"> <li>What are contact and non-contact forces?</li> <li>Who is Isaac Newton? (Super Scientist)</li> <li>How can friction be increased or decreased?</li> <li>What are the different types of magnets?</li> <li>What are the properties of magnets and everyday objects that are magnetic?</li> <li>Does the distance of a magnet affect how strong it is?</li> <li>Assessment</li> </ol>		<b>Curriculum Drivers</b> <p><b>Oracy-</b> Pupils will be given opportunities to discuss their scientific findings in a structured way. They will be given prompts to help develop their skills in structuring their responses.</p> <p><b>Diversity-</b></p> <p><b>Social Intelligence-</b></p>	
<b>Common Misconceptions</b>			
		Some children may think: <ul style="list-style-type: none"> <li>the bigger the magnet the stronger it is</li> <li>all metals are magnetic.</li> </ul>	
<b>Key Vocabulary</b>			
attract	bar magnet	force	friction
horseshoe magnet	magnetic	poles	repel