



# Medium Term Unit Planning

**Topic Name: Science Amazing Magnets**

**Learning outcome:**

*By the end of this topic the children will have a good understanding of the different forces that act on us and other objects on earth and how these effect one another. The children will be able to describe and show these through personal experiences after completing a series of experiments.*

**Hook:** Zaden the alien wants to use force to propel him to Earth to meet the humans and we need to help him.

**Topic Showcase (e.g. display, museum, performance, presentation)**

Presentation of technology they have designed to help Zaden

**Oracy:** The children will have the opportunity to stand and deliver and present their work.

**Key Vocabulary:** Force, push, pull, theory, fair test, investigate, measure, gravity, magnets, magnetism, poles, friction

**Key Texts (whole class reading/end of the day book/Talk for Writing Texts etc.):**

**Forces whole class reading: Sir Isaac Newton and the Apple Story, Egg Drop by Mini Grey, Magnets The Shepherd and the discovery of magnets.**

**Citizenship/Community Opportunities:**

**(Focus – change in attitude/increase knowledge and awareness/make a difference)**

**The children can talk about how the forces effect us.**

**There's the opportunity to discuss whether aliens should come to earth.**



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Experiences/Visits/Visitors

Main Subjects covered: Science (physics)

## Subject 1 Threshold concepts

- Work scientifically  
This concept involves learning the methodologies of the discipline of science.
- Understand movement, forces and magnets  
This concept involves understanding what causes motion.

Notes:



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Lesson title and learning Intention	Threshold concepts (success criteria)	Milestones (success criteria)	Lesson structure/differentiation
<p>1. May the Force be with you</p> <p>Understand that forces are pushes and pulls which can make things move, stop or change shape.</p> <p>Set up and conduct a comparative fair test, record measurements and discuss results.</p>	<ul style="list-style-type: none"> <li>• Work scientifically</li> </ul> <p>This concept involves learning the methodologies of the discipline of science.</p> <ul style="list-style-type: none"> <li>• Understand movement, forces and magnets</li> </ul> <p>This concept involves understanding what causes motion.</p>	<ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>○ Introduce the children to Zaden and explain his problem with getting to earth.</li> <li>○ Activities</li> <li>○ Play a game in teams to explore all the different ways forces can act on a variety of everyday objects.</li> <li>○ Classify each action as either a push, a pull or both.</li> <li>○ Plan and conduct an investigation to compare the amount of force needed to move a toy vehicle on different surfaces making choices about whether to measure push or pull and how to keep it fair.</li> <li>○ Evaluate, review and discuss findings (e.g. were predictions correct? Were tests fair?).</li> </ul>



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		<ul style="list-style-type: none"> <li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>• Identify differences, similarities or changes related to simple, scientific ideas and processes.</li> <li>• Use straightforward, scientific evidence to answer questions or to support their findings.</li> <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> </ul>	
<p>2. Acting forces</p> <p>Ask questions and answer them by planning and carrying out a fair test. Explore forces and discover that gravity and magnetism can act without contact.</p>	<ul style="list-style-type: none"> <li>• Work scientifically</li> </ul> <p>This concept involves learning the methodologies of the discipline of science.</p> <ul style="list-style-type: none"> <li>• Understand movement, forces and magnets</li> </ul> <p>This concept involves understanding what causes motion.</p>	<ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Make accurate measurements using standard</li> </ul>	<ul style="list-style-type: none"> <li>○ Can our sports help Zaden? What forces do we use in sports that could be used?</li> <li>○ Activities</li> <li>○ Play a game in teams to explore and show the different ways forces can act in different sports.</li> </ul>



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		<p>units, using a range of equipment, e.g. thermometers and data loggers.</p> <ul style="list-style-type: none"><li>• Gather, record, classify and present data in a variety of ways to help in answering questions.</li><li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li><li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li><li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li><li>• Identify differences, similarities or changes related to simple, scientific ideas and processes.</li></ul>	<ul style="list-style-type: none"><li>○ Actively investigate how some forces can act without contact (gravity and magnetism).</li><li>○ Explore magnetism, ask questions and attempt to answer them by planning and carrying out a fair test.</li><li>○ Tabulate results and use them to draw conclusions and raise further questions.</li></ul>
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		<ul style="list-style-type: none"> <li>• Use straightforward, scientific evidence to answer questions or to support their findings.</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>	
<p>3. Magnetic attraction</p> <p>Develop scientific method and thinking, using curiosity to generate questions.</p> <p>Answer questions by testing and sorting items using magnets.</p>	<ul style="list-style-type: none"> <li>• Work scientifically</li> </ul> <p>This concept involves learning the methodologies of the discipline of science.</p> <ul style="list-style-type: none"> <li>• Understand movement, forces and magnets</li> </ul> <p>This concept involves understanding what causes motion.</p>	<ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Make accurate measurements using standard units, using a range of</li> </ul>	<ul style="list-style-type: none"> <li>○ How could magnets help Zaden get to earth?</li> <li>○ Activities</li> <li>○ Play a guessing game to encourage theories and predictions on which items will be magnetic.</li> <li>○ Turn their theories into questions that can be</li> </ul>



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<p>4. Friction</p> <p>Explore how magnets behave towards each other and form theories to explain it.</p> <p>Understand that magnets have 2 poles and that opposite poles attract and like poles repel.</p>	<ul style="list-style-type: none"> <li>• Work scientifically</li> </ul> <p>This concept involves learning the methodologies of the discipline of science.</p> <ul style="list-style-type: none"> <li>• Understand movement, forces and magnets</li> </ul> <p>This concept involves understanding what causes motion.</p>	<ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Make accurate measurements using standard units, using a range of</li> </ul>	<ul style="list-style-type: none"> <li>○ Could Zaden use a vehicle to help him get to earth?</li> <li>○ Can he use them if there's lots of friction?</li> <li>○ Conduct a friction experiment outside to see if hot wheels cars are affected by friction.</li> </ul>





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		<ul style="list-style-type: none"> <li>• Use straightforward, scientific evidence to answer questions or to support their findings.</li> <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> </ul>	
<p>5. Poles apart</p> <p>Revise and reinforce knowledge of attraction and repulsion between magnetic poles through participation in an active game.</p> <p>Devise and prepare activities (for visitors to a science fair, that use magnetic force.</p>	<ul style="list-style-type: none"> <li>• Work scientifically</li> </ul> <p>This concept involves learning the methodologies of the discipline of science.</p> <ul style="list-style-type: none"> <li>• Understand movement, forces and magnets</li> </ul> <p>This concept involves understanding what causes motion.</p>	<ul style="list-style-type: none"> <li>• Ask relevant questions.</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,</li> </ul>	<ul style="list-style-type: none"> <li>○ Would a magnets poles effect Zaden's travel?</li> <li>○ Activities</li> <li>○ Play a game to revise and reinforce prior learning on magnetic forces.</li> <li>○ Explore how magnets behave towards one another in a wide variety of different situations.</li> <li>○ Form theories and seek to explain findings.</li> <li>○ Learn that magnets have 2 poles and that same poles repel whilst opposite poles attract.</li> </ul>



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		depending on which poles are facing.	<ul style="list-style-type: none"><li>○ Consider and explain their exploratory findings in terms of this scientific knowledge.</li></ul>
6. Get Zaden to Earth	<ul style="list-style-type: none"><li>• Work scientifically This concept involves learning the methodologies of the discipline of science.</li><li>• Understand movement, forces and magnets This concept involves understanding what causes motion.</li></ul>	<ul style="list-style-type: none"><li>• Ask relevant questions.</li><li>• Set up simple, practical enquiries and comparative and fair tests.</li><li>• Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li><li>• Gather, record, classify and present data in a variety of ways to help in answering questions.</li><li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li><li>• Report on findings from enquiries, including oral and written explanations, displays or</li></ul>	<ul style="list-style-type: none"><li>○ Making Zaden's transport</li><li>○ Activities</li><li>○ Play a game to revise and reinforce knowledge of how magnets attract and repel depending on which poles are facing.</li><li>○ Design a transport for Zaden that uses different forces to transport himself to earth!</li></ul>



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		<p>presentations of results and conclusions.</p> <ul style="list-style-type: none"><li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li><li>• Identify differences, similarities or changes related to simple, scientific ideas and processes.</li><li>• Use straightforward, scientific evidence to answer questions or to support their findings.</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></ul>	
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7.			
8.			