

Magnetic Moves – Stage 2

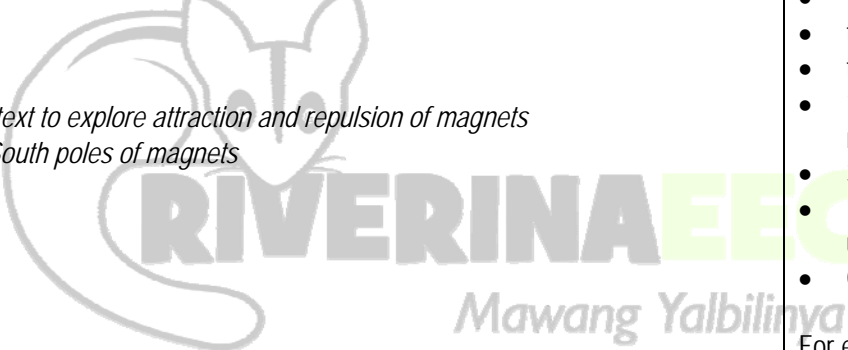
Physical World Strand


Term	1	2	3	4	Weeks	1	2	3	4	5	6	7	8	9	10	11
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Outcome	Lesson Sequence – Overview	Resources	Word Wall
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> • discuss ideas about why objects move • suggest how an object can move without direct contact • list ideas about magnets and magnetic force <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> • understand the purpose and features of a science journal • understand the purpose and features of a TWLH chart • understand the purpose and 	<p>Lesson 1</p> <p><u>Mystery Moves – Lesson focus p 1</u></p> <ul style="list-style-type: none"> • To capture students' interests and find out what they think about how forces can be exerted by one object on another through direct contact or from a distance <p><u>Students:</u></p> <ul style="list-style-type: none"> • <i>observe an object moving without an obvious push or pull</i> • <i>list ideas about magnets and magnetic force</i> 	<p>For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall • 1 small table • 1 cloth to cover table • 1 large magnet • 1 large paperclip or magnetic object <p>For each student</p> <ul style="list-style-type: none"> • science journal • 1 large magnet per pair of students • 1 large paperclip or magnetic object per pair of students 	<p><i>attraction</i></p> <p><i>contact</i></p> <p><i>distance</i></p> <p><i>Earth</i></p> <p><i>force</i></p> <p><i>friction</i></p> <p><i>gravity</i></p> <p><i>investigate</i></p> <p><i>iron</i></p> <p><i>journal</i></p> <p><i>like</i></p> <p><i>magnet</i></p> <p><i>magnetic</i></p> <p><i>materials</i></p> <p><i>motion</i></p>


<p>features of a word wall</p> <ul style="list-style-type: none"> contribute to discussions about magnets and magnetic force 			<p><i>non-contact</i></p> <p><i>non-magnetic</i></p> <p><i>observation</i></p>
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> predict which materials will be attracted to a magnet and give reasons for their predictions observe and explain which objects a magnet attracts observe the distance of attraction between objects and a magnet identify how people use magnets in their work <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> understand the purpose and features of a table 	<p>Lesson 2</p> <p><u>A magnetic attraction – Lesson focus p5</u></p> <ul style="list-style-type: none"> To provide students with hands on, shared experiences of how magnets exert a pull of objects at a distance. <p><u>Students:</u></p> <ul style="list-style-type: none"> <i>explore whether objects made of different materials are attracted to a magnet</i> <i>measure how close an object is before attracted to a magnet</i> <i>find objects around the house which are attracted to a magnet</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal TWLH chart word wall team roles chart team skills chart 1 bar magnet 1 paperclip 1 enlarged copy of 'a strong attraction' (Resource sheet 1) 1 enlarged copy of 'information note for families' (Resource sheet 2) collection of objects made from different magnetic and non-magnetic materials (see 'Preparation') collection of different sized and shaped magnets <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Director, Manager and Speaker each team member's science journal 1 magnet (bar, ring or horseshoe) 1 ruler 1 copy of 'information note for families' (Resource sheet 2) 1 magnet for home task (see 'Preparation') 	<p><i>opposing</i></p> <p><i>plastic</i></p> <p><i>poles</i></p> <p><i>prediction</i></p> <p><i>procedure</i></p> <p><i>pull</i></p> <p><i>push</i></p> <p><i>record</i></p> <p><i>repel</i></p> <p><i>repulsion</i></p> <p><i>science</i></p> <p><i>steel</i></p> <p><i>unlike</i></p>

<ul style="list-style-type: none"> • make a list of objects attracted to a magnet • discuss and compare results to form common understandings 			
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> • identify how a magnetic force attracts objects through sheets made of different materials • discuss how the thickness of the sheet affects whether the magnetic force affects the paperclip • describe how friction affects the movement of objects across different surfaces <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> • represent forces, including the force of 	<p>Lesson 3 <u>Feeling the force – Lesson focus p14</u></p> <ul style="list-style-type: none"> • To provide students with hands-on, shared experiences of how a magnetic force attracts objects through different materials, and the effect of friction on the movement of a magnet. <p>Session 1 – Bumping along <u>Students:</u></p> <ul style="list-style-type: none"> • <i>explore moving a paperclip across sheets made of different materials</i> • <i>relate their observations to the force of friction</i> <p>Session 2 – Very gripping <u>Students:</u></p> <ul style="list-style-type: none"> • <i>represent their understanding of friction through force-arrow diagrams</i> • <i>explore everyday examples of friction at work in the school</i> 	<p>Session 1 For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall • team roles chart • team skills chart • 1 enlarged copy of 'Passing through' (Resource sheet 3) <p>For each team</p> <ul style="list-style-type: none"> • role wristbands or badges for Director, Manager and Speaker • each team member's science journal • 1 magnet (bar, ring or horseshoe) • 1 paperclip • sheets of different material (see 'Preparation') • 1 copy of 'Passing through' (Resource sheet 3) per student <p>Session 2 For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall • team roles chart 	

<p>friction, using a force-arrow diagram</p> <ul style="list-style-type: none"> record their observations in a table discuss and compare ideas about friction 		<ul style="list-style-type: none"> team skills chart <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Manager and Speaker each team member's science journal 	
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> identify the sides (poles) of each ring magnet and how they react to each other discuss attraction and repulsion of magnets depending on the orientation of their poles measure the distance between repelling magnets to observe strength of magnets <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> understand the purpose and 	<p>Lesson 4 Pushed and pulled – Lesson focus p23</p> <ul style="list-style-type: none"> To provide students with hands-on, shared experiences of how magnets attract and repel each other <p>Students:</p> <ul style="list-style-type: none"> <i>follow a procedural text to explore attraction and repulsion of magnets</i> <i>discuss North and South poles of magnets</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal TWLH chart word wall team roles chart team skills chart 1 bar magnet with poles marked 30 cm length of cotton thread 1 enlarged copy of 'All lined up' (Resource sheet 4) Optional: magnetic compass <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Manager and Speaker each team member's science journal 1 clothes peg 1 straw 4 ring magnets (24 mm diameter) 1 ruler 2 bar magnets with poles marked 1 copy of 'All lined up' (Resources sheet 4) per team member 	

<p>features of a procedural text</p> <ul style="list-style-type: none"> • follow a procedural text • create a labelled diagram • participate in class discussions 			
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> • describe the different forces acting on a paperclip • identify the paperclip's movement changes (it falls) when the magnetic force is removed • identify that gravity pulls objects to the Earth <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> • understand the purpose and features of an annotated drawing 	<p>Lesson 5 <u>From a distance – Lesson focus p31</u></p> <ul style="list-style-type: none"> • To provide students with hands-on, shared experiences of how gravity and magnetic forces act from a distance <p><u>Students:</u></p> <ul style="list-style-type: none"> • <i>create a floating paperclip model represent their understanding through force-arrow diagrams</i> 	<p>For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall • team roles chart • team skills chart • 1 enlarged copy of 'A floating paperclip?' (Resource sheet 5) <p>For each team</p> <ul style="list-style-type: none"> • role wristbands or badges for Director, Manager and Speaker • each team member's science journal • 30 cm length of cotton thread • 1 paperclip • adhesive tape • 1 large bar magnet • 1 copy of 'A floating paperclip?' (Resource sheet 5) per student 	

<ul style="list-style-type: none"> record their thinking in an annotated drawing discuss and compare ideas to form common understandings 			
<p>ST2-9PW-ST describes how contact and non-contact forces affect an object's motion</p> <ul style="list-style-type: none"> support with evidence claims about forces explain their ideas about friction, gravity and magnetic forces <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> represent their ideas through movement and discussion understand the purpose and features of a factual text read and discuss a factual text 	<h2>Lesson 6</h2> <p><u>Do you agree? – Lesson focus p37</u></p> <ul style="list-style-type: none"> To support students to represent and explain their understanding about forces that can be exerted by one object on another through direct contact or from a distance To introduce current scientific views <p><u>Students:</u></p> <ul style="list-style-type: none"> <i>discuss their thoughts on different claims about forces</i> <i>read a factual text on contact and non-contact forces</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal TWLH chart word wall 1 enlarged copy of 'Forces all around' (Resource sheet 6) <p>For each student</p> <ul style="list-style-type: none"> student science journal 1 copy of 'Forces all around' (Resource sheet 6) 	
<p>ST2-9PW-ST describes how contact and non-</p>	<h2>Lesson 7</h2> <p><u>Forces at work – Lesson focus p42</u></p> <p>To support students to design and make a game that uses forces, including magnetic force, to work.</p>	<p>Session 1</p> <p>For the class</p> <ul style="list-style-type: none"> class science journal TWLH chart 	

<p>contact forces affect an object's motion</p> <ul style="list-style-type: none"> • generate and develop ideas to make a game • produce a game that uses magnetic force to work • make changes to the game based on shared ideas and feedback <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> • record ideas as an ideas map • create an annotated drawing of their ideas • develop a procedure and labelled diagram of how to make their game • engage in discussions to compare ideas 	<p>Session 1 – Game plan Students:</p> <ul style="list-style-type: none"> • <i>plan and develop a procedure to make a game that uses magnetic force to work</i> <p>Session 2 – Game production Students:</p> <ul style="list-style-type: none"> • <i>follow their procedure to construct a game that meets agreed criteria</i> 	<ul style="list-style-type: none"> • word wall • team roles chart • team skills chart • 1 enlarged copy of 'Making plans' (Resource sheet 7) <p>For each team</p> <ul style="list-style-type: none"> • role wristbands or badges for Director, Manager and Speaker • each team member's science journal • 1 copy of 'Making plans' (Resource sheet 7) per student <p>Session 2 For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall • team roles chart • team skills chart • equipment to make a game (see 'Preparation') <p>For each team</p> <ul style="list-style-type: none"> • role wristbands or badges for Director, Manager and Speaker • each team member's science journal 	
<p>ST2-9PW-ST describes how contact and non-</p>	<p>Lesson 8 <u>All together – Lesson focus p49</u></p>	<p>For the class</p> <ul style="list-style-type: none"> • class science journal • TWLH chart • word wall 	

contact forces affect an object's motion

- describe how gravity and magnetic force are exerted on an object from a distance
- describe how friction exerts a force on another object when in contact
- evaluate a game using established criteria
- reflect on their learning and understanding about the designing and production process of building a game

ST2-1WS-S
questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations

- create an annotated drawing of their game
- share and discuss their ideas
- reflect on their learning journey

- To provide opportunities for students to represent what they know about how forces can be exerted by one object on another through direct contact or from a distance, and to reflect on their learning

Students:

- review their understanding of contact and non-contact forces through creating an annotated force arrow-diagram of their game
- evaluate the games and their design process
- reflect on their learning during this unit



- team roles chart
- team skills chart
- 1 enlarged copy of 'Game check' (Resource sheet 8)

For each team

- role wristbands or badges for Director, Manager and Speaker
- each team member's science journal
- their completed game (see Lesson 7)
- 1 enlarged copy of 'Game check' (Resource sheet 8)