

Subject lesson sequences - Science

Year Group: Year 3

Theme: Forces

Learning objectives:	Key resources/stimuli
<ul style="list-style-type: none"> *Group materials on the basis of testing for being magnetic. *Compare how things move on different surfaces. *Describe magnets as having 2 poles. *Notice that some forces need contact between two objects but magnetic forces can act at a distance. *Observe how magnets attract or repel each other and attract some materials and not others. *Predict whether two magnets will attract or repel each other depending on which poles are facing. *To develop a basic understanding of gravity and why we need it in the world. 	Explorify resources: Odd one out, zoom in, zoom out, audio clips and questions. Magnets Magnetic materials Non-magnetic materials Photographs Video clips Marbles Paper/Scissors/Glue/Cellotape/Cardboard
Key vocabulary	Key knowledge
Magnet, magnetic, forces, magnetic field, gravity, poles, friction, repel, attract, surface, material, push, pull, air-resistance, water-resistance, balanced, unbalanced	<ul style="list-style-type: none"> *Develop an understanding of which materials are magnetic and non-magnetic. *Develop an understanding of how objects move on surfaces and why some may be faster/slower. *Understand that magnets have 2 poles and opposite poles attract. *Understand that gravity keeps things 'grounded' and if we didn't have it, everything would be floating (link to plants in space on Explorify)

Lesson 1: Contact forces and non-contact

<https://www.bbc.co.uk/bitesize/topics/zvpp34j/articles/zywcrdm> explore what a force is. Discuss how forces can be contact and non-contact forces.

<https://www.bbc.co.uk/bitesize/topics/zn77hyc/articles/zptckqt> explore pushes/pulls, air-resistance, friction and water resistance by moving a toy car through a variety of different surfaces. Discuss what happens when forces are balanced and unbalanced. Odd one out: <https://explorify.uk/en/activities/odd-one-out/what-goes-up-must-come-down>

Lesson 2: Friction

Recap contact and non-contact forces, related to friction. <https://www.bbc.co.uk/bitesize/clips/z79rkqt> discuss friction between different objects and surfaces. Children to predict which materials/forces will make the longest marble run, thinking carefully about height and materials used. Create a marble run as class/groups: <https://explorify.uk/en/activities/mission-survive/marbles>. World's longest marble run: <https://www.youtube.com/watch?v=-IX2sYCh7ME>
 Odd One out: <https://explorify.uk/en/activities/odd-one-out/moving-propellers>

Lesson 3: Magnets

<https://explorify.uk/en/activities/whats-going-on/mighty-magnets> what do they already know about magnets? Recap contact and non-contact forces, related to magnets. <https://explorify.uk/en/activities/what-if-you-had-magnets-for-fingers> What if you had magnets for fingers? Children to explore this by testing whether a material is magnetic or non-magnetic. Look at when parts of a material are magnetic and some are not, what could they be classified into? Identify that not all metals are magnetic.

Lesson 4: Magnetic field

Recap contact and non-contact forces, related to magnetic fields. <https://explorify.uk/en/activities/listen-what-can-you-hear/scan-this-over> listen to audio clip and discuss. Explore the strength of each magnet using paper clips. Children to design an investigation looking at how close each magnet needs to be to attract the paper clips.

Lesson 5: Two magnets

<https://explorify.uk/en/activities/whats-going-on/magnets> use video to recap on their experience with magnets so far. Extend to describe magnets as having 2 poles. Predict whether two magnets will attract or repel each other depending on which poles are facing.

Lesson 6: Gravity

Linking to last half term's topic, children to explore gravity, understanding what it is and why we need it. Link to space videos and Explorify's big question 'Do plants grow differently in lower gravity?' Children to recap the conditions needed for a plant to grow and explore how this is different on Mars. <https://explorify.uk/en/activities/the-big-question/do-plants-grow-differently-in-lower-gravity>

Knowledge, Skills and Understanding breakdown for Science

Year Three

	Planning	Obtaining and presenting evidence	Considering evidence and evaluating
Expected	<ul style="list-style-type: none"> • Can they use different ideas and suggest how to find something out? • Can they make and record a prediction before testing? • Can they plan a fair test and explain why it was fair? • Can they set up a simple fair test to make comparisons? • Can they explain why they need to collect information to answer a question? 	<ul style="list-style-type: none"> • Can they measure using different equipment and units of measure? • Can they record their observations in different ways? <labelled diagrams, charts etc> • Can they describe what they have found using scientific language? • Can they make accurate measurements using standard units? 	<ul style="list-style-type: none"> • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they use a range of equipment (including a data-logger) in a simple test?
Year Three (Challenging)			
Exceeding	<ul style="list-style-type: none"> • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? 	<ul style="list-style-type: none"> • Can they explain their findings in different ways (display, presentation, writing)? • Can they use their findings to draw a simple conclusion? • Can they suggest improvements and predictions for further tests? 	<ul style="list-style-type: none"> • Can they suggest how to improve their work if they did it again?