Science

Year 3 - Summer 2 – Forces and Magnets

National Curriculum / End Point Statement

Forces and Magnets

- compare how things move on different surfaces
- notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- 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
- describe magnets as having 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Working Scientifically

- 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
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- 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
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

Step 1	Step 2	Step 3	Step 4	Step 5
Reactivate previous knowledge – KS1 properties of materials (changing shape – squish, twist, bend etc) WALT compare how things move on different surfaces	WALT describe how objects move	WALT observe how strong a magnet is	WALT compare and group everyday materials	WALT predict whether two magnets will attract or repel each other
In Focus - https://explorify.uk/en/activities/have-you-ever/ridden-your-bike-or-scooter-off-the-pavement	In Focus - https://explorify.uk/en/activities/odd-one-out/give-it-a-pull	In Focus - https://explorify.uk/en/activities/whats-going-on/mighty-magnets	In Focus - https://explorify.uk/en/activities/what-if/you-had-magnets-for-fingers	In Focus - https://explorify.uk/en/activities/odd-one-out/pull-together
Success Criteria				

Science

Year 3 - Summer 2 – Forces and Magnets

I can make an object move I can describe how the surface affects the movement of the object I can explain how to make sure that the test is fair.	I can make an object move I can describe how the object moved using words such as push or pull I know that some forces need contact between two objects I can explain how magnets move objects	I can describe what happens if you put two magnets together I know that magnets have 2 poles I can compare the strengths of different magnets I can answer a question about magnets [Does it matter which way round your magnet is?]	I know that magnets have two poles I can describe what happens when a material is attracted to a magnet I can name some everyday materials that are magnetic	I know that magnets have two poles I can predict whether two magnets will attract each other I can identify when two magnets will repel each other
Suggested Outcome				
TAPS – Car ramps	Children can label pictures of activities using 'push' and 'pull' They then have to make an object (paperclip?) move without touching it.	Children use paperclips to measure the strength of their magnet. Keep adding a paperclip to the magnet in a long chain – how do we know which magnets are the strongest? They can select how to record their results (diagram).	Children can sort objects on the basis of whether they are magnetic or not. They can predict, test and then sort the everyday items.	Use iron filings in a petri dish to show the magnetic field. Children could use this knowledge to them make predictions about whether the magnets will attract or repel each other.

Vocabulary	NC links
push, pull, twist, force, fast, slow, slows down, material, surface, magnet, attracts, magnetic material, magnetism, non-magnetic material, metal, non-metal, strength, north pole, south pole, repel, friction	Geography

Key Learning
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. A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. 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. For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts

Possible Evidence	Common Misconceptions
• Can give examples of forces in everyday life • Can give examples of objects moving differently on different surfaces • Can name a range of types of magnets and show how the poles attract and repel • Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets • Can use their results to describe how objects move on different surfaces • Can use their results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on that surface • Can use classification evidence to identify that some metals, but not all, are magnetic	Some children may think: • the bigger the magnet the stronger it is • all metals are magnetic

Science

Year 3 - Summer 2 – Forces and Magnets

• Through their exploration, they can show how like poles repel and unlike poles attract, and name unmarked poles • Can use test data to rank magnets	

Notable Scientists

CPD opportunity
https://www.reachoutcpd.com/courses/upper-primary/forces-and-magnets/

Useful Links
• https://www.bbc.co.uk/bitesize/topics/znmmn39 • https://app.discoveryeducation.co.uk/learn/channels/channel/ec252850-ce5b-4d73-bf6f-9d64cc50a7e3?embed=false&embed_origin=false

Forces

Early learning goal	• Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.
Year 1	
Year 2	• 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)
Year 3	• Compare how things move on different surfaces. • 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. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.