

**Question: What does being attractive really mean in the world of science?**

**National Curriculum Link**

**KS2 Science: Y3 Forces and Magnets**

KS2 Science Working Scientifically

**IB Learner Profile Links**

Inquirers – Nurture skills for research and curiosity

Knowledgeable – Develop conceptual understanding and engage with issues and ideas

Thinkers – Use critical and creative thinking skills

Reflective – Consider the wider world and our own ideas and experience

**Prior Skills – Y2**

- Understand that forces make things move.
- Know that forces are pushes and pulls and make things speed up and slow down.
- Recognise that when things speed up, slow down or change direction there is a cause.
- Describe how things move at different speeds, speed up and slow down, using simple comparisons, comparative vocabulary and superlative vocabulary.
- Ask questions and decide how they might find answers to them.
- Use simple scientific language to communicate ideas and describe phenomena.
- Make simple predictions based on a previous experience or learning
- Make observations linked to the test and record results in a table with support
- Learn that it is important to collect evidence by making observations when trying to answer a

**New Skills – Y3**

- 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 that magnetic forces can be transmitted/act without direct contact unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing).
- Observe how magnets attract or repel each other and attract some materials and not others
- Classify which materials are attracted to magnets and which are not?
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet
- Identify some magnetic materials
- Describe magnets as having two poles (N & S)
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.
- Use different ideas and suggest how to find something out

**Future Skills – Y5**

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- Describe and explain how motion is affected by forces (including gravitational attractions, magnetic attraction and friction)
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
- Plan and set up a simple fair test to make comparisons
- Plan a fair test and isolate variables and explain why it was fair and explain which variables have been isolated
- Suggest improvements and predictions linked to questions
- Decide which information needs to be collected and decide which is the best way for collecting it
- Use their findings to draw a simple conclusion
- Take repeated

<p>question.</p> <ul style="list-style-type: none"> <li>• Review their work and explain what they did to others.</li> <li>• Communicate findings in a variety of ways</li> <li>• Draw conclusions (find an answer to the question) from results and observations</li> </ul>	<ul style="list-style-type: none"> <li>• Make and record a prediction before testing</li> <li>• Plan a fair test and explain why it was fair</li> <li>• Set up a simple fair test to make comparisons</li> <li>• Explain why they need to collect information to answer a question</li> <li>• Report on finding from enquiries in a variety of different ways.</li> <li>• Use scientific evidence to draw conclusions to answer questions</li> <li>• Identify simple patterns from observation and data base on everyday experience.</li> </ul>	<p>measurements for accurate results</p>
---	---	--

#### **Knowledge, Skills and Understanding for topic area**

- 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 that magnetic forces can be transmitted/act without direct contact unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing).
- Observe how magnets attract or repel each other and attract some materials and not others
- Classify which materials are attracted to magnets and which are not?
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet
- Identify some magnetic materials
- Describe magnets as having two poles (N & S)
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

#### **Knowledge, Skills and Understanding for Working Scientifically**

- Use different ideas and suggest how to find something out
- Make and record a prediction before testing
- Plan a fair test and explain why it was fair
- Set up a simple fair test to make comparisons
- Explain why they need to collect information to answer a question
- Report on finding from enquiries in a variety of different ways.
- Use scientific evidence to draw conclusions to answer questions
- Identify simple patterns from observation and data base on everyday experience.

#### **Challenge**

- Can they investigate the strengths of different magnets and find fair ways to compare them?
- Can they explain why an object will move faster if it is rolling down a hill or a slope?

**Resources**

- variety of magnets (type and size)
- paper clips
- rulers or tape measures
- variety of materials for testing magnetic attraction (including iron and steel)
- springs, elastic bands
- Force meters

**Suggested Quality Texts**

Non fiction: What makes a magnet? Frank Branley

Investigating: Magnets by Janine Scott

Fiction: The Iron Man Ted Hughes

**Website/Apps**

Magnets and Electricity APP

[http://www.dowlingmagnets.com/about\\_magnets.php](http://www.dowlingmagnets.com/about_magnets.php)

Teacher background and ideas

<http://www.tooter4kids.com/Magnets/history.htm>

[http://www.bbc.co.uk/schools/scienceclips/ages/7\\_8/magnets\\_springs.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/7_8/magnets_springs.shtml)

Primary Upd8 links to all topics and investigation ideas

<http://www.primaryupd8.org.uk/activity-finder.php?pid=2>

**Extended Writing Opportunities**

Explanation text, a leaflet to explain the everyday use and importance of magnets in the world.

Instructional writing for magnetic game.

Persuasive writing to persuade someone to buy game and explain its features (links to science knowledge of how the magnets work)

**Numeracy Skills**

Standard units; km, m, cm, mm, kg, g, minutes, seconds, Newton. Measured to nearest whole or half unit or mixed units. Read scales to nearest division labelled and unlabelled. Bar charts 1:1, 1:2, 1:5 & 1:10 scale. Frequency table.

**Wow starter/ experience**

Visit the Technquest – Forces workshop activities.

Explore with a number of magnets and work out which side attracts and which side repels.

**Cross Curricular Links/ enquiry time activities:**

**DT:** Will magnets attract magnetic materials through paper, fabric etc?

Children to plan, design and make a simple game based on magnets. E.g. Make a fishing game with magnets. Make a maze game. The object has to follow the path/maze on a board with a magnet pulling the object from underneath.

**Literacy:** Create a persuasive advert (Poster or television advert) your magnetic game.

**Art:** Children have magnets and they search for magnetic materials

Make a maze game. The object has to follow the path/maze on a board with a magnet pulling the object from underneath