



| fSubject        | Term   | Unit               |
|-----------------|--------|--------------------|
| Science- Year 3 | Spring | Forces and Magnets |

**Intent**

At Hurst Hill, we nurture young scientists by fostering curiosity and developing strong scientific knowledge and enquiry skills. Children learn to investigate, observe and evaluate confidently, understanding how science shapes the past, present and future while building firm foundations for lifelong scientific learning.










| Prior knowledge  | National Curriculum   |
|--|---|
| <p>New learning-</p> <p>May link to materials from KS1</p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul> | <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>• notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</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 2 poles</li> <li>• predict whether 2 magnets will attract or repel each other, depending on which poles are facing</li> </ul> |

|              |   |
|--------------|---|
| <b>What?</b> | To find out how objects move and the forces acting on an object. To understand how magnets work and how they have 2 poles.  |
| <b>Why?</b>  | This unit will be the starting point for the children's work on forces so they need an understanding of forces first before they look at magnets. This will feed into the work they do in year 5. |
| <b>How?</b>  | Through observation and measurement. Through discussion and collection of information. By practically working with magnets and making predictions about what they think might happen.             |

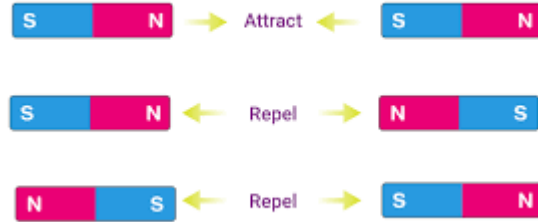
## Vocabulary

|                         |  |
|-------------------------|--|
| <b>Force</b>            | A push or pull on an object which can cause it to move, change speed, direction or shape.  |
| <b>NEWTONS (N)</b>      | The measurement of a force.  |
| <b>Magnet</b>           | A material or object that produces a magnetic field. It attracts or repels magnetic objects, including iron.                       |
| <b>Attract</b>          | To pull towards. Opposite of repel   |
| <b>Repel</b>            | To push away. Opposite of attract  |
| <b>Balanced Force</b>   | Two forces of equal size acting in opposite directions on an object so that it will stay still or continue to move in the same way |
| <b>Unbalanced Force</b> | Two forces of unequal size acting in opposite directions causing an object to move, change speed, direction or shape.              |
| <b>Push</b>             | A force to move something away.  |
| <b>Pull</b>             | A force to move something towards.   |
| <b>Poles</b>            | The ends of a magnet which attract or repel.   |

**SOME OBJECTIVES MAY BE BROKEN DOWN OVER TWO LESSONS**

| Objective   | Learning   |   |      |      |   |      |      |   |      |      |
|---|--|---|------|------|---|------|------|---|------|------|
| <p>Can I explain what a force is and identify them in our school?</p> <p>Can I identify push/pull</p> | <p>Describe what a force is and distinguishing between the 1 A force moves an object or s different objects and work d many pushes and pulls can t Record in charts/ diagrams.</p> <table border="1" data-bbox="1126 284 1547 496"> <tr> <td></td> <td>push</td> <td>pull</td> </tr> <tr> <td></td> <td>push</td> <td>pull</td> </tr> <tr> <td></td> <td>push</td> <td>pull</td> </tr> </table> <p>ing actions in photographs, direction the forces are acting in. ng. Ask the children to move e.g. scissors, doors etc. How</p> |  | push | pull |  | push | pull |  | push | pull |
|                    | push   | pull  |      |      |   |      |      |   |      |      |
|                    | push   | pull  |      |      |   |      |      |   |      |      |
|                    | push   | pull  |      |      |   |      |      |   |      |      |
| <p>Can I explain how things move on different surfaces?</p>   | <p><b>Comparative Testing</b></p> <p>Carry out an investigation to measure whether the same objects needs the same amount of force to be pulled along different surfaces. Show the children how to use a Newton meter. Explain that the higher the value, the more force is needed to pull the object. Use the ramps flat on the floor. Predict which surface will be harder to pull along. Carry out test and record the results. Ask the children to think about what this shows. It was harder to pull the object over the _____ because it took more force. CHILDREN DO NOT NEED TO USE THE WORD FRICTION AT THIS POINT BUT YOU MAY WISH TO INTRODUCE IT.</p>  |   |      |      |   |      |      |   |      |      |
| <p>Can I find out if all forces need contact?</p>   | <p><b>Pattern Seeking</b></p> <p>Do all objects need something touching it for it to move? Pose the question and ask the children to come up with their ideas. Have different stations set up. 1. move the ball from one end of the table to another. 2. drop the ball from a height. 3. Move the paper clip with a magnet. 4. Use the scissors to cut the paper. ETC. Which of these movements needed contact with another object and which didn't? Record in books. Discuss how some forces do not need contact between objects. Look at gravity and magnetism. Consider the forces being applied to use when we stand or an apple falling from a tree.</p> <p>Extra activity- children could make magnet mazes using magnets and paperclips.</p>  |   |      |      |   |      |      |   |      |      |





Remove the labels.

Can I explain how magnetic forces work?

### Pattern Seeking

How do magnets behave when they are put together. Discuss the patterns they discover. Consider ways to record observations and what is happening when the magnets repel.  
Look at practical examples of where this can be useful in everyday life.

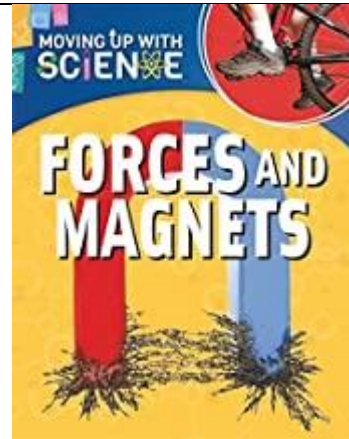
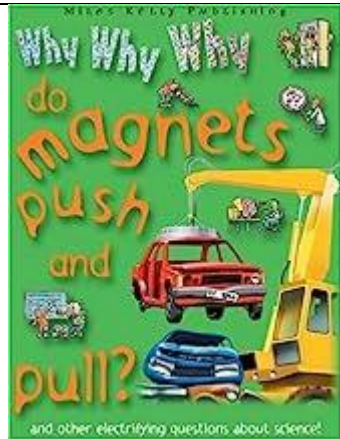
### Websites

<https://www.stem.org.uk/resources/community/collection/12391/year-3-forces-and-magnets>

[https://www.outstandingscience.co.uk/index.php?action=view\\_page&page=view\\_unit&unit=3e](https://www.outstandingscience.co.uk/index.php?action=view_page&page=view_unit&unit=3e)

<https://www.bbc.co.uk/bitesize/topics/znmnm39/articles/zhj9r2p>

### Recommended Reads



**Golden Thread**

Forces