

## Year 3 Science Curriculum

Working scientifically links   Rubric/PCMD opp.   Key Vocabulary

### Forces and Magnets

**What's the big picture?** Forces effect everything around us. If we didn't have forces, most things would not exist - children to generate own questions for investigation

**Prior learning:**

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)

National Curriculum Principles	Objectives	Knowledge and key Vocabulary	Reading opportunities	Technology
Compare how things move on different surfaces	I know about and describe how objects move on different surfaces	A <b>force</b> is a <b>push</b> or a <b>pull</b> . Children to investigate ( <b>comparative test</b> ) how cars travel on ramps of different <b>surface</b> . Introduce the words <b>friction and contact</b>	The Iron Man (Ted Hughes)  Mrs Armitage: Queen of the Road (Quentin Blake)	
Notice that some forces need contact between 2 objects, bit magnetic forces can act at a distance	I know how some forces require contact and some do not, giving examples	Children to know that <b>forces</b> are <b>pushes and pulls</b> . Forces will decide the motion of an object. Push and pull forces can make things start and stop moving. Some forces need contact between objects - eg friction. Some forces act at a distance eg <b>magnetism, gravity</b> .  Ch give example of forces in everyday life.	Mr Archimedes' Bath (Pamela Allen)	
Observe how magnets attract or repel each other and attract some	I know about and can explain how objects	A magnet attracts magnetic materials. <b>Magnetism</b> is the force of <b>attraction</b> or <b>repulsion</b> between substances made of certain materials. Eg iron, nickel, steel.		

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materials but not others	attract and repel in relation to objects and other magnets	Children to test a range of materials to see if they are magnetic - predict this first. Children to know that not all metals are magnetic. Children to group materials according to whether that are magnetic		
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	I can predict whether objects will be magnetic and carry out an enquiry to test this out.	Draw diagrams using arrows to show attraction and repulsion between the poles of magnets,		
Describe magnets as having 2 poles	I know how magnets work	Children to explore and predict how magnets attract/repel other magnets.  The strongest part of a magnet are the poles. Children to know that a magnet has a <b>north and South Pole</b> and to know that similar poles <b>repel</b> , whilst opposite poles <b>attract</b> . Children to know that a magnet has an area around it where <b>magnetic forces</b> work. This is called a <b>magnetic field</b> .		
Predict whether 2 magnets will attract or repel each other, depending on which poles are facing	I can predict whether magnets will attract or repel and give a reason	Demonstrate/investigate magnetic fields using iron filings. Children to design an investigation into the strength of different magnets - predict, test and conclude. E.g. how many paper clips can a magnet hold.		

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### Famous scientists

Andre-Marie Ampere - founder of electro-magnetism

William Gilbert - theories on magnetism

### Common misconceptions

Some children may think:

- the bigger the magnet the stronger it is
- all metals are magnetic.

### Enquiry ideas

<u>Comparative tests</u>	<u>Identify and classify</u>	<u>Observations over time</u>	<u>Pattern seeking</u>	<u>Research</u>
On which surface does a toy car travel furthest?	Classify materials according to whether they are magnetic.	If we magnetise a pin how long does it stay magnetic for?	Do magnetic materials always conduct electricity?	How does the compass work?
Which trainers have the strongest grip/most friction?			Does the size and shape of a magnet affect how strong it is?	
Which magnet is the strongest?				