

Forces and Magnets

Year 3 Science Summer

What we should know at the end of the unit:

A force is a push or pull acting on an object. Forces can make objects speed up, slow down, stop or start moving. For some forces to act, there must be contact. Some forces can act at a distance, such as magnetism.

When an object moves on a surface, the texture of the surface and the object will affect how it moves. This is friction. It is easier to push or pull something along a smooth surface than a bumpy surface. Magnets have two poles - north and south. The strongest parts of the magnet are the poles.

What we are going to learn (LOs)

To explore how a force is required to make something start to move.

To explore how air can make things move.

To explore how objects move on different materials.

To explore which materials are magnetic.

To measure the strength of a magnet in different ways.

To carry out an investigation comparing the strength of different magnets.

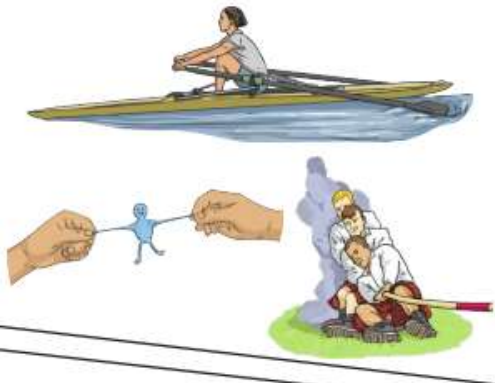
Key vocabulary

Forces	Pushes or pulls.
Friction	A force that acts between two surfaces or objects that are moving, or trying to move, across each other.
Surface	The top layer of something
Magnet	A material or object that produces a magnetic field, it attracts or repels magnetic objects
Magnetism	The force of attraction and repelling caused by a magnet.
Poles	Two sides of a magnet where the magnetism is strongest.
Attract	To pull towards (opposite of repel).
Repel	To push away (the opposite of attract).

Pushes

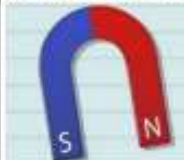


Pulls



Forces will change the motion of an object. They will either make it start to move, speed up, slow it down or even make it stop.

DIFFERENT TYPES OF MAGNETS



U-shaped magnet



Bar magnet



Ring magnet

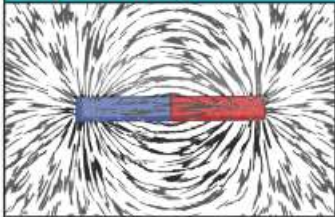


Horseshoe magnet

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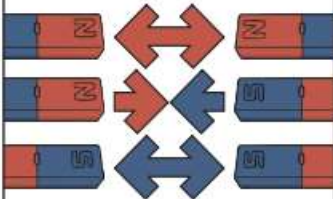
Key Knowledge



Like **poles** repel.
Opposite **poles** attract.



A **magnetic field** is invisible. You can see the **magnetic field** here though. This is what happens when iron filings are placed on top of a piece of paper with a **magnet** underneath.



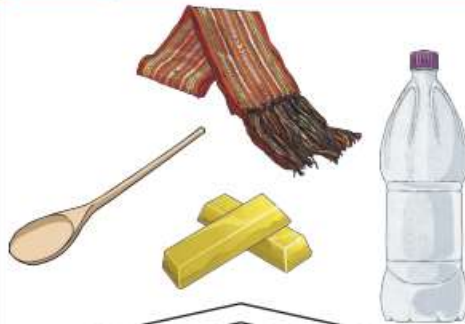
The needle in a compass is a **magnet**. A compass always points north-south on Earth.

Magnetic ✓



These objects contain iron, nickel or cobalt. Not all metals are **magnetic**.

Non-magnetic ✗



These objects do not contain iron, nickel or cobalt.

Key skills:

- Identifying differences, similarities or changes related to simple scientific ideas and processes.
- Setting up simple practical enquiries, comparative and fair tests.

Scientific enquiry:

- Grouping and classifying.
- Comparative and fair tests.
- Exploration.

Here are some examples of **pushing** forces:

The runner's feet push off the ground.



A person pushes the piano keys down.



The hockey stick pushes the ball.



The golf club pushes the golf ball.



The bat pushes the ball.



The woman pushes the pram.



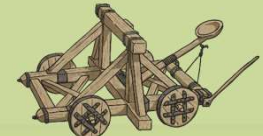
Here are some examples of **pulling** forces:



The rower pulls the oar.



The tug of war teams pull the rope.



A catapult is pulled back.

The string of the bow is pulled back.



Pulling the sledge.

The bell ringers pull the ropes.

