Science

Read your Knowlegde Organiser.

Y3 Science Knowledge Organiser—Forces and Magnets

Key Knowledge

Learn these key facts—key points in red

FRICTION

When objects are pushed or pulled, an opposing force can be felt. This opposite force is called 'friction'. Friction causes things to slow down or stop. The grip on our shoes stops us slipping. Therefore, friction is great. Ice-skates on an ice-rink will move for a long time because there is very little friction. The rougher the surfaces, the greater the friction. This rubbing of two surfaces can release energy, causing heat.

Focus Scientists—William Gilbert

William Gilbert (1544-1603) should be much more famous than he is. He was the first person to prove that the earth was a giant magnet and to link electricity and magnets. He was also one of the first British fans of the scientific method.

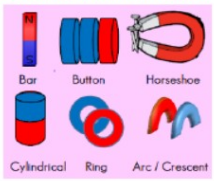
Mary Somerville

Mary Somerville (1780-1872) was fascinated by magnets and carried out lots of experiments with them. She was also one of the first popular Science writers - selling many books in her lifetime.

She was the first woman to be elected to the Royal

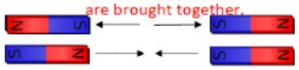
MAGNETS

A magnet is a special object which produces an area of magnetic force around itself called a magnetic field. If a metal object enters this magnetic field, they will be attracted towards the magnet and end up sticking to it - non-metallic objects would not be attracted to it. N.B. some forces need contact between two objects, but magnetic forces can act at a distance. Magnetic materials are always made of metal, but not all metals are magnetic. Iron is magnetic, so any metal with iron in it will be attracted to a magnet. Nickel and Cobalt are also magnetic. Steel contains iron, so a steel paperclip will be attracted to a magnet too. Most other metals, for example aluminium, copper and gold, are NOT magnetic.



MAGNETIC POLES

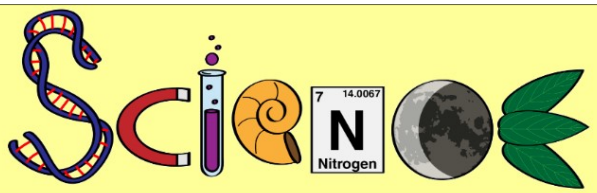
The two ends of a magnet are known as the north pole (N) and the south pole (S). The same poles repel—opposite poles attract. If you try to put two magnets together with the same poles pointing towards one another, the magnets will push away from each other. We say they repel each other. Opposite poles attract and are brought together.



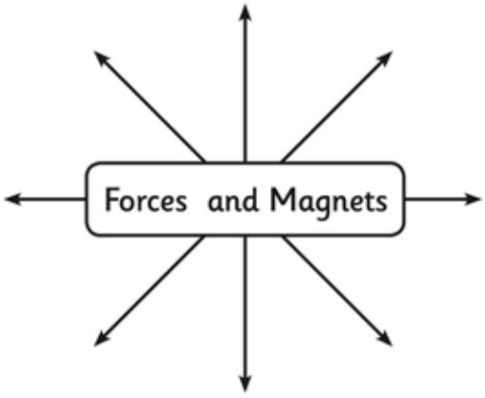
Key Vocabulary

Understand these key words

Word	Definition
forces	the pushes and pulls which act on our bodies and the things around us to make things move and stop moving.
materials	the matter or substance that objects are made from. Different materials have different features, or properties, which make them suitable for different uses.
push/pushing	any action moving an object away from you.
pull/pulling	any action moving an object towards you.
friction	a 'sticking' force – the resistance that a surface or object encounters when moving over another surface or object. E.g. Air resistance, water resistance and surface resistance.
magnet	an object that has a magnetic field (an invisible pattern of magnetism). A magnet attracts or repels other items.
magnetic force	an invisible force created by electrons. Magnetic force controls magnetism and electricity.
poles	the north pole is the end of the magnet attracted to the Earth's North magnetic pole; a magnet's south pole is the end attracted to the Earth's South magnetic pole.
attract	to pull together with physical force.
repel	to move or force back or away.
contact force	a force that must directly touch another object to affect it.
non-contact force	a force that affects something at a distance e.g. gravity or magnetism.



Draw or write about the things you already know about forces and magnets.



How do things move?

What makes things speed up or slow down?

Which materials are magnetic?

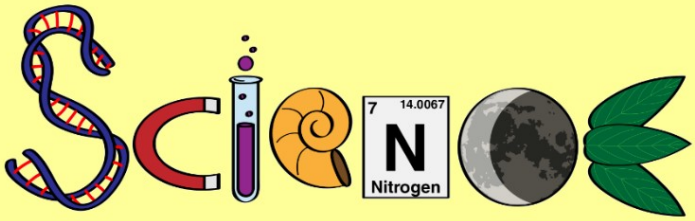
What are magnets used for?

What different forces are there?

What are some different types of magnets?

Do you have any questions about forces or magnets? What would you like to find out? Write your thoughts below.

Complete your starting point sheet.
Tell me what you know about
forces and magnets.



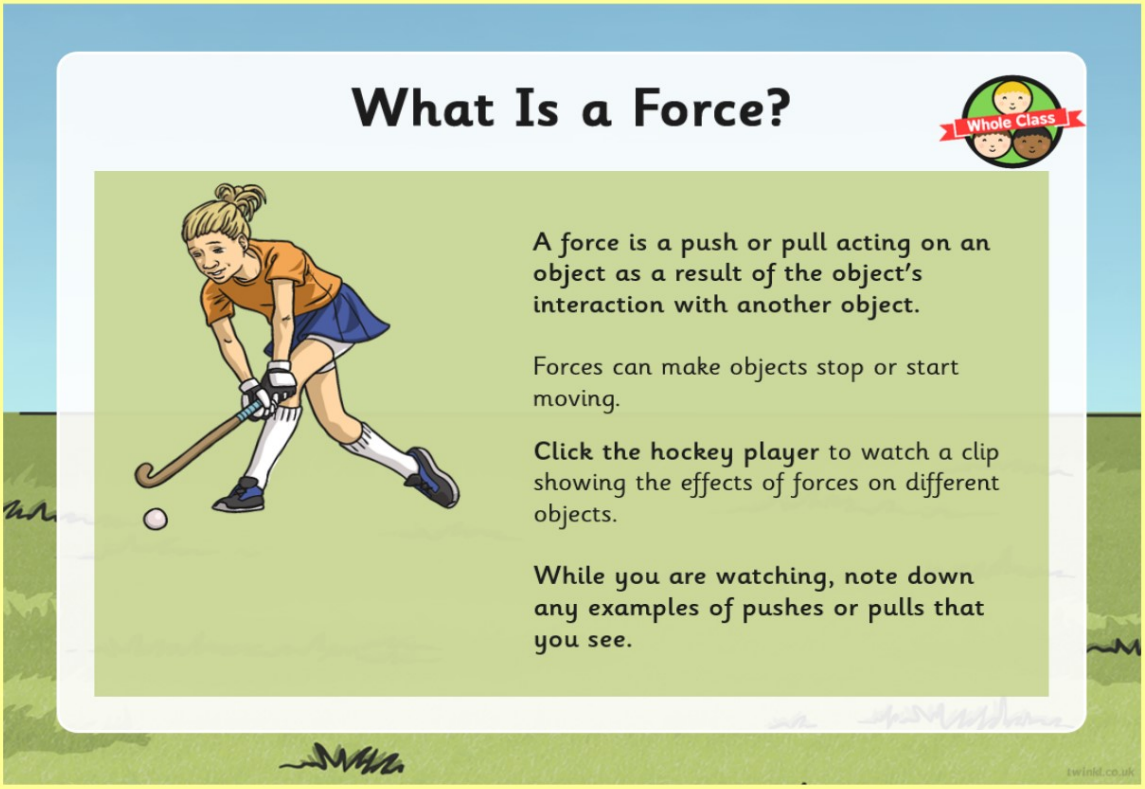
WALT: notice that some forces need contact between two objects

WALT compare how things move on different surfaces

- Push and pulls
- Forces
- Forces clip 2
- Friction
- Friction 2

We will now watch these short clips to help us understand these key terms

Look through the Force information
Click the link on the Home Learning sheet.



Tell me.....

What is contact force

What is non-contact force?

Use your knowledge organiser if you are not sure.

Answers on the next page.....

Tell me.....

What is contact force

What is non-contact force?

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