



Knowledge Organiser

Subject: Science

Topic: Forces and Magnets

Year: 3

Key Knowledge

- 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 how magnets attract or repel each other and attract some materials and not others.
- 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.
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Common misconceptions

- The bigger the magnet the stronger it is.
- All metals are magnetic.

Key Learning

- A force is a push or a pull.
- When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement – for example, skating on ice compared to walking on ice in normal shoes.
- A magnet attracts magnetic material.
- Iron and nickel and other materials containing these (for example, stainless steel) are magnetic.
- Magnets have two poles – a north pole and a south pole. These are the strongest parts of a magnet.
- If two like poles (for example, two north poles) are brought together, they will push away or repel from each other.
- If two unlike poles (for example, a north pole and south pole) are brought together, they will pull together or attract.

Disciplinary Skills

- Carry out investigations.
- Classify materials according to whether they are magnetic.
- Devise an investigation to test the strength of magnets.

Key Concepts

Forces and Motion:

Forces, such as pushes and pulls, affect the movement of objects and different surfaces impact motion.

Magnetic Forces and Materials:

Magnetic forces can act at a distance without contact, materials can be grouped based on whether they are attracted to magnets and specific materials, like iron and nickel, are magnetic.

Properties and Behaviour of Magnets:

Magnets have two poles (north and south) and poles can attract or repel each other.

The Big Question

What is a force?

Key Vocabulary	
Force	A force is a push or pull.
push	A push is a force that often moves an object further away.
Pull	A pull is a force that often moves an object closer.
Contact force	A contact force is a type of force that occurs between two or more objects that are touching.
Non-contact force	A non-contact force is a type of force that occurs between objects that are not touching.
Friction	Friction is a type of contact force. It occurs between two touching surfaces that are either trying to move or are already moving across each other.

Names of Magnets			
			
horseshoe	ring	cylinder	bar
			
square	button	arc/crescent	

Uses of Magnets	
	
electro-magnetic cranes	computers
	
MRI machines	maglev trains

Smooth		Rough	
			
polished marble	laminated floor	artificial grass	sandpaper

Linking Thinking Across Our Learning Journey						
Early Years	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Explore and talk about different forces we can feel. Talk about the differences between materials and changes we notice. Explore the natural world around us. Describe what we see, hear and feel whilst outside.		Uses of everyday materials Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Forces and Magnets		Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between Earth and the falling object. Identify the effects of resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	