



Knowledge Organiser

SCIENCE : Magnetism

Year 3 SPRING TERM 1

Magnetism is a force all around us. You can't see it, but you can see the way it acts in the world. We will learn about the different types of forces, including how people use magnetic forces in everyday life, how magnets attract or repel each other (and how this relates to the magnetic poles) and which materials are attracted to magnets. We will also learn about how a compass works.

Enquiry Questions

Question 1

What are the different types of forces and how they are used in everyday life?

Answer:

A force is a push or pull. You can't see forces, but you can see how they affect things. A force can make something speed up, slow down or change direction.

Examples in our everyday lives:

Push: a shopping trolley, lawn mower, buttons, friends on swings in the park.

Pull: opening a door, tug of war, pulling laces tight, pulling something behind us (e.g. cart).

Question 2

Investigation: How do objects move on different surfaces?

Answer

- If the surface is smoother, there is less friction, so the object is able to travel further. E.g. ice skaters can glide along because there's low friction between the blades on the skates and the smooth ice.
- If the surface is rough, there is high friction which means they won't be able to slide past each other easily. E.g. a rock climber uses the rough soles of a climber's shoes to grip the cliff face.

Question 3

Why do magnets attract or repel each other?

Answer

- Unlike poles attract, but like poles repel.
- Repel means 'push away.'
- The north pole of a magnet pulls or attracts the south pole of another magnet. But if you bring two north poles together, or two south poles together, they repel each other – they push apart!

Question 4

Investigation: Which materials are attracted to magnets?

Answer

- Some materials are magnetic and some are non-magnetic.
- Not all metals are magnetic. Iron, cobalt and nickel are all magnetic.

Question 5:

How does a compass work?

Answer

- A magnetic compass is a small magnet balanced on a point, and is used to show which way is magnetic North. Whichever way you turn a compass, the magnet (called a needle) will swing around so that one end is always point North. Calling a magnet's pole the North Pole is a short way of saying that it is the "North seeking pole."

Important Facts

- Forces can affect objects in different ways.
- Magnetism is a force all around us.
- Unlike poles attract, like poles repel.
- Not all metals are magnetic.
- A compass is a tool for finding direction. It uses a magnetic needle which always points north.

Key Vocabulary

Key vocabulary: magnets magnetism forces attract repel magnetic poles compass

Related vocabulary: balanced unbalanced push pull twist Newton force meter variable surface gravity fair test gradient friction compare attract repel forces of attraction magnetic field magnetic non-magnetic materials iron compass four cardinal points north east south west

Useful websites

Forces:

<https://study.com/academy/lesson/push-pull-forces-lesson-for-kids-definition-examples.html>

<https://www.youtube.com/watch?v=dj27RwnUopQ>

<https://www.youtube.com/watch?v=8AysbEMEv50>

Magnetism:

<https://www.youtube.com/watch?v=zKUetTDGNoM>

Useful resources:

Experiments with Magnets by Helen J.Challand (Children's Press) 1986

Now You Know Science: Magnet Magic by Terry Jennings (Franklin Watts) 2009

All about Magnets by Stephen Krensky (Scholastic) 1993

Useful pictures:

