

Year 3 Forces and magnets (Physics)



Prior and future learning

Prior Knowledge	What's next?
<ul style="list-style-type: none"> Explore how things work. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. Explore the natural world around them. Describe what they see, hear and feel whilst outside. (Reception) Link to Y2 Materials	<ul style="list-style-type: none"> I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Y5 – Forces)

Track your learning

How I will show what I have learned			
I can compare how things move on different surfaces.			
I can notice that some forces need contact between two objects, but magnetic forces can act at a distance.			
I observe how magnets attract or repel each other and attract some materials and not others.			
I can 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 describe magnets as having two poles.			
I can predict whether two magnets will attract or repel each other, depending on which poles are facing.			

Key knowledge I need to understand

- 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 e.g. ice skater compared to walking on ice in normal shoes.
- A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.
- The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract.
- For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.

Possible texts to read:

Mr Archimedes' bath – *Pamela Allen*
 Mrs Armitage-Queen of the road – *Quentin Blake*

Scientist: William Gilbert

(Doctor who developed the theory of magnetism)

Link to maths curriculum:

Measurement:

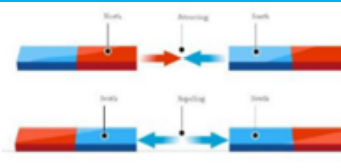
- Measuring the distance a ball moves on different surfaces, measuring the distance magnets attract a paperclip, measuring the distance a paperclip is attracted by a magnet on different surfaces (*Measure, compare, add and subtract: lengths (m/cm/mm)*).
- Measuring the amount of time a spinning top spins on different surfaces. (*Compare durations of events*)

Statistics:

- Presenting data gathered when exploring the above investigations. (*Interpret and present data using bar charts*).

Working scientifically assessment:

Magnet labs, show grip



Vocabulary

Force	A push or pull on an object which can cause it to move, change speed, direction or shape. Measured in Newtons (N).
Magnet	A material or object that produces a magnetic field. It attracts or repels magnetic objects, including iron.
Contact force	A force that requires physical contact to occur e.g. kicking a ball.
Attract	To pull towards. Opposite of repel.
Repel	To push away. Opposite of attract.
Friction	The resistance of motion when one object rubs against another. Friction causes objects to slow down and the energy becomes heat
Weight	The force due to gravity on objects. This force pulls on all objects near the earth. Measured in Newtons (N).
Mass	The amount of matter contained in an object. Measured in units such as g, kg.
Acceleration	Increase in the rate or speed of something.