Year 3 – Forces and magnets

Magnets always have two poles – even if you cut them in half!

Some items can be magnetised by stoking a magnet along them in one direction. This can be useful for magnetising things like a screwdriver.

Vital Vocabulary

Key Word	Definition
forces	Pushes, pulls or twists
friction	A force that acts between two surfaces or objects that are moving or trying to move, across each other
magnet	An object that exerts a force on other magnetic materials
magnetic	Objects that are attracted to a magnet are magnetic.
poles	The ends of a magnet are called poles (North Pole and South Pole).
attract	If one object attracts another object, it causes the second object to move towards it.
repel	When a magnetic pole repels another magnetic pole, it gives out a force that pushes the other pole away.

Magnetic materials

Objects containing **iron, nickel** or **cobalt** are **magnetic**.

magnetic ✓	not magnetic ✗
	

Forces

Forces act on all objects **all the time**.
When an object is not moving, the forces are balanced. Unbalanced forces change the motion of an object. They will make it **speed up** (or start moving**), slow down** (or stop), **change direction** or **change shape**.

Most **forces** need contact between objects…

Contact makes the player's foot change the direction of the ball.

…but **magnetic forces** can act at a distance.

For every force in nature, there is an opposite force.

The engine **force** moves the car forwards.

Friction between the road and the tyres slows the car down.

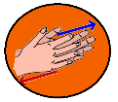
Friction

Different surfaces create different amounts of **friction**.

Rough surfaces create lots of **friction**.
Moving objects **slow down quickly** on rough surfaces. Roads are rough to help bikes and vehicles **grip** the road and stop easily.

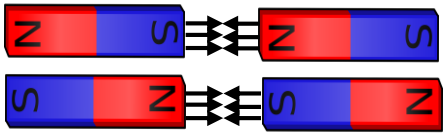
Smooth surfaces **don't** create much **friction**. Moving objects **don't** slow down much on smooth surfaces. That's why skis move **fast** on snow and ice.

Friction generates heat energy.

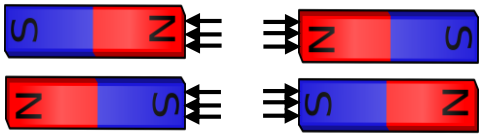


That's why your hands get warm when you rub them together.

Facts about magnets



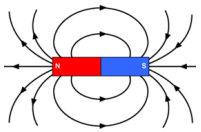
Opposite poles attract each other and so will stick together.



Like poles are not attracted to each other and will **repel**.

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

The area around magnet where there is a **magnetic** force is called a **magnetic** field. You can use iron fillings to see the **magnetic** field around a bar **magnet**.



William Gilbert discovered that our planet has two **magnetic** poles and behaves like a giant **magnet.** (This is because of the iron-rich molten rocks under its surface.)