Year 3 Spring Term Science Knowledge Organiser

KEY QUESTION: Which forces act upon objects? What effect to the forces have on an object?

Key Knowledge

Different **surfaces** create different amounts of **friction**. The amount of **friction** created by an object moving over a **surface** depends on the roughness of the **surface** and the object, and the **force** between them.

The driving **force** pushes the bicycle, making it move.

Friction pushes on the bicycle, slowing it down.

Pushes

Pulls

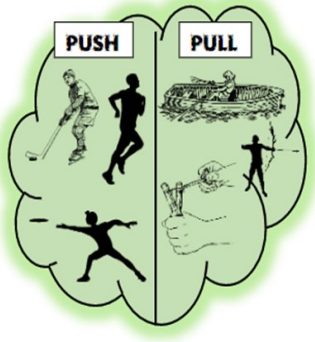
Forces will change the motion of an object.
They will either make it start to move, speed up, slow it down or even make it stop.

Forces and magnetism vocabulary

gravity	surface	North
centre	roughness	South
Earth	motion	poles
Isaac Newton	Speed up	magnet
Thermodynamics	accelerate	attract
air resistance	Slow down	repel
water resistance	decelerate	magnetic
friction	Change direction	compass

PUSHING AND PULLING

A force is a push or pull acting on an object as a result of the object's interaction with another object. Forces can make objects stop or start moving.



Isaac Newton

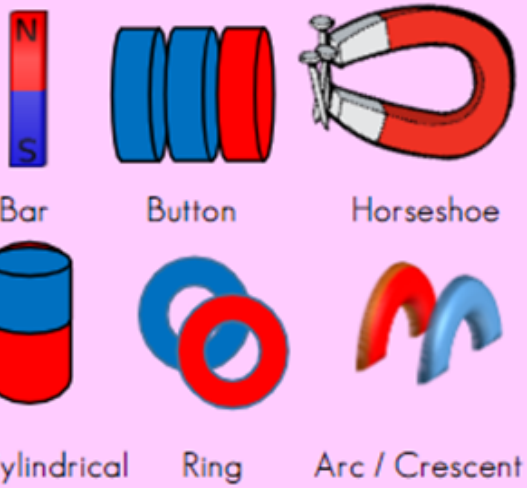
Isaac Newton is famously thought to have developed his theory of **gravity** when he saw an apple fall to the ground from an apple tree.

What is a magnet?

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 such as wood, plastic or fabric would not be attracted to it.)

Here is a range of different magnets:

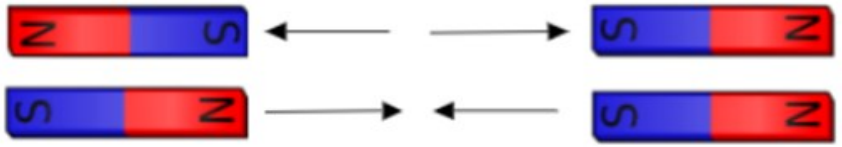


Magnetic Poles

When two magnets are close, they create pushing or pulling forces on one another. These forces are strongest at the ends of the magnets. The two ends of a magnet are known as the north pole (N) and the south pole (S).

The Same poles repel / The 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.



Inside a compass is a small magnetic pin which constantly points north.

Earth has a natural magnetic field which means the pin turns to always face north and helping people find their way.

Magnets are used in many ways all over our homes. For example, did you know that the speakers in your home contain powerful electromagnets that vibrate rapidly to create sound?

FUN FACTS ABOUT MAGNETS

- The most powerful magnet in the universe is a star called 'Magnestar'.
- Animals can be affected by magnetic pulls. Birds and turtles navigate by them and sharks are repelled by them!
- Earth's core is said to be filled with iron and nickel (metals which give it a magnetic field).

Activities to complete at home. *Bring in your work over the next 4 weeks so it can be celebrated and shared .*

1. **Research how magnets are used in everyday life and produce a poster to show what you have found out.**
2. **Design and make a game which uses magnets. *Eg Hook a fish, using a paperclip on a fish and mini magnet on a stick.***
3. **Draw a diagram of a bike and record all the different forces acting on it. *Change the size of the arrow to show bigger forces!***