

Year 3 – Science: Forces and Magnets

This term, we will learn:

- Forces are pushes and pulls in a certain direction.
- Pushes and pulls need contact between objects.
- Objects move slower or less far when the surface is bumpy than when the surface is smooth.
- Magnetic forces can act at a distance.
- Stronger magnets can attract magnetic objects from a greater distance than weaker magnets.
- Magnets can attract or repel each other.
- Magnets have a south pole and a north pole.
- North poles repel. South poles repel. A north and south pole attracts.
- Some metals are magnetic but not all are.
- Plastics, fabrics, wood, glass, rubber are non-magnetic materials.

Prior learning:

- Pupils explored a range of materials in Y1 and Y2. They know that materials have different surfaces (some are bumpy, some are smooth).

In Y5 Forces unit, pupils will learn that:

- Unsupported objects fall toward the Earth because of the force of gravity acting between the Earth and the falling object. Gravity is a non-contact force.
- Air resistance and water resistance are a type of friction.
- Air resistance is the friction between the air and the moving object. Air resistance slows the moving object down.
- Water resistance is the friction between the water and the moving object. Water resistance slows the moving object down.
(Y5)

Key facts	Key Vocabulary	Definition
<ul style="list-style-type: none"> • When two magnets come near each other, their fields create forces that attract or repel. • The Earth is a giant magnet. Its magnetic field is like a bar magnet at its center. • Forces are measured using a Newton Meter in Newton. • Many scientists believe that birds are able to find their way home by using the Earth's magnetic field to guide them on long distance flights. • Today, new trains use magnets to lift them off the ground so that they float. Floating reduces friction and allows the train to run more efficiently • Magnets have north poles and south poles. • Magnets are present in most electronic devices. In fact, anything that has a motor uses a magnet. Televisions, computers and microwave ovens all operate with magnets. 	Force	A push or a pull.
	Magnet	An object that is made of materials that creates a magnetic field.
	Friction	This occurs when two objects move past each other. Friction slows objects down.
	Magnetic field	A magnetic field is the region in space where a magnetic force can be detected.
	Magnetic poles	The two ends of a magnet are known as the north pole and the south pole.
	Attract	When a magnetic pole attracts another magnetic pole, it gives out a force that pulls the other pole to it.
	Repel	When a magnetic pole repels another magnetic pole, it gives out a force that pushes the other pole away.
	Contact force	Forces that act between objects that are touching each other. Examples include push and pull forces.

Friction

Friction is a push against a moving object. It happens when there is contact between two materials, like a brake pad on a bicycle tyre.

Friction is the force that stops or slows us when trying to move an object. If the object is already moving, friction is slowing it down.



Magnetism

Magnetism is the force that occurs when a magnet pulls a metal or another magnet towards itself.

Magnetic materials are always metals but only a few metals are magnetic.



Examples of magnetic materials include iron, nickel and cobalt.

Steel is a mixture of metals. It is magnetic because it contains iron.