

Key Facts

Forces

A force is a push, pull or twist that can make an object start moving, speed up, slow down, stop or change direction.

It takes a larger force to pull an object across a surface such as carpet than across ice. This is because the surface material is resisting the movement. This is a force known as friction. This will be explored further in Year 5 *Get moving*.

Magnets

Magnets are mostly made from iron or alloys of iron (mixtures of iron and other materials). Magnets provide a force which can push or pull over a distance. The stronger the magnet the greater the distance this force can be felt.

Magnets attract magnetic materials. Iron and materials containing iron (including steel) are the most common magnetic materials, but nickel and cobalt are also magnetic.

All magnets have two poles, the north pole and the south pole. These poles are in different places depending on the shape of the magnet. Some examples are shown below. These are not the only possibilities. Your children may discover poles different to these.

If two like poles are brought near each other they repel. If two unlike poles are brought near each other they attract.



Science

Year 3

Autumn 2

Forces

Vocabulary

Word	Definition
Attracts	To pull to or draw towards.
Force	Strength or energy as an attribute of physical action or movement.
Magnet	A magnet is a rock or a piece of metal that can pull certain types of metal toward itself.
Magnetism	The force of magnets, called magnetism, is a basic force of nature, like electricity and gravity. Magnetism works over a distance.
Material	The matter from which a thing is or can be made.
North pole	All magnets have two poles, the north pole and is one of these poles. These poles are in different places depending on the shape of the magnet.
Repel	To push back or away by a force. The north pole of one magnet will repel the north pole of another
South pole	All magnets have two poles, the south pole is one of these poles. These poles are in different places depending on the shape of the magnet.
Surface	The outside part or uppermost layer of something.

Common misconceptions:

- All metals are magnetic. Ensure that you provide enough examples of materials that are clearly metals but are not magnetic.
- The larger the magnet, the stronger it will be.
- Some children may also find it difficult to distinguish between an object that is made of metal and those that appear metallic because they have a reflective coating.

Knowledge and Understanding:

Children will learn:

- Explore how forces can make objects start to move, speed up, slow down or change direction.
- Compare how things move on different surfaces.
- Learn that some forces need contact between two objects, but that magnetic forces can act at a distance.
- Identify that magnets attract some materials and not others and that these are known as magnetic materials.

Key skills and concepts:

Children will be able to:

- **Compare** and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.
- They will **carry out comparative and fair tests** to investigate the strength of magnets and how objects move on different surfaces.
- Make **predictions** as to whether two magnets will attract or repel each other, depending on which poles are facing.

Key Questions

How do things move?

Which materials are magnetic?

What do magnets do?

How strong are magnets?

How do magnets affect each other?

Why do things slow down?