



Prior knowledge—N/A

# Forces and Magnets Year 3/4



## Forces

A force is a push or pull of an object in a certain direction. In diagrams, forces are shown by arrows. The size of the arrow shows the size of the force. The bigger the arrow, the bigger the force. The direction of the arrow shows the direction of the force.



## Key vocabulary

attract - to pull towards

contact - when objects touch

different - not the same

distance - the length between two objects

force - a push or pull that acts upon an object that can cause it to move, change shape or change direction

friction - the force that acts upon one surface when it moves against another

magnet - a piece of iron that attracts and repels

magnetic force - when a magnet pulls objects towards it or pushes objects away

magnetic pole - each end of the magnet where the force is the strongest

pull - to move something towards

push - to move something away

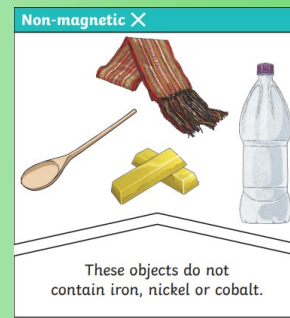
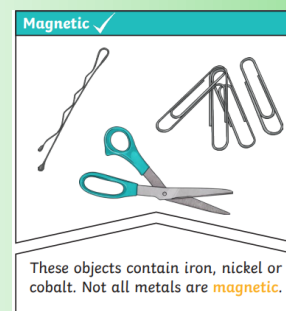
repel - to push away

same - identical, not different



## Magnets

- A magnet is an object made of materials which create a magnetic field.
- Magnets create a magnetic force called magnetism. This is a force that causes magnets to attract (pull closer together) or repel (push further apart).
- Most forces must be touching, however magnetic forces do not need objects to touch because magnets can act at a distance.
- Magnets have 2 poles, a north pole and a south pole.
- The south pole and the north pole attract to one another. However the north pole of one magnet will repel the north pole of another magnet and the south pole of one magnet will repel the south pole of another magnet.



## Magnetic fields

A magnetic field is the area in which a magnetic force can be felt. A magnet will only attract or repel an object when it is in the magnetic field. Magnetic fields cannot be seen by the human eye. Magnetic fields can pass through air and sometimes even liquids and solids.

### 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.



## Sequence of Learning

- 1) Pushes and Pulls—identify the force acting on an object.
- 2) Faster and Slower—An investigation into how a toy car moves over different surfaces.
- 3) Scrapyard Challenge—sorting magnetic and non magnetic materials
- 4) Marvellous magnets - investigation into the strength of magnets.
- 5) To observe how magnets attract some materials.

### friction

A force that acts between two surfaces or objects that are moving, or trying to move, across each other.