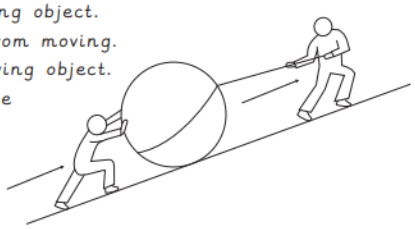
Science – Autumn 2 – Forces and Magnets

A force is a push, a pull or a twist.

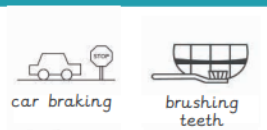
Forces can have the following effects:

- Starts an object moving.
- Changes the direction of a moving object.
- Speeds up a moving object.
- Stops an object from moving.
- Slows down a moving object.
- Changes the shape of an object.



Friction is useful when it:

- Helps a car brake.
- Lights a match.
- Rubs out mistakes.
- Opens a jar.
- Brushes teeth clean.
- Sands down wood.

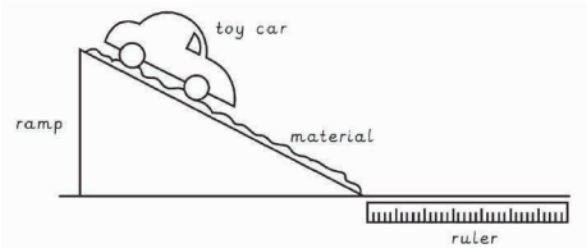


Contact forces are caused by contact between two surfaces.

Friction is a contact force that acts between surfaces that are sliding over one another.

It acts in the opposite direction to motion.

The rougher a surface is, the more bumps it has and the more points of contact there are between the two surfaces. More points of contact create more friction. More friction leads to a greater slowing effect on the object.



Friction is not useful when it:

- Slows down racing cars.
- Wears down car or bike tyres.



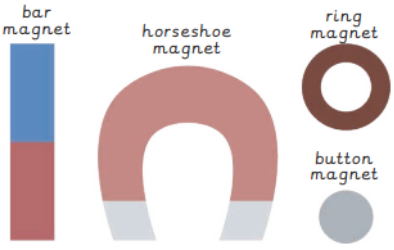
Non-contact forces can act at a distance.

Examples of non-contact forces are:

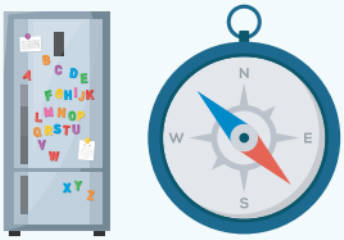
- Magnetism.
- Gravity.



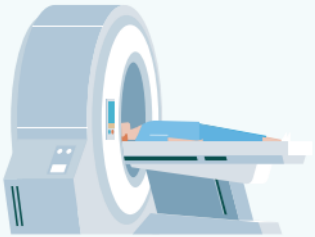
There are different types of magnets. They can have different strengths.



Magnets are used in compasses, fridge magnets, toys, jewellery, handbags, furniture, paints and polishes.



Electromagnets are magnets that can be turned on and off using electricity.

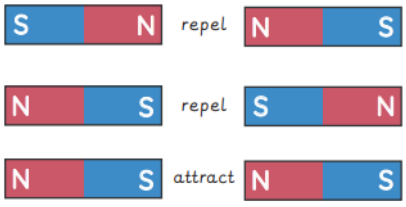


They are used in doorbells, speakers, motors, Maglev trains, MRIs and on cranes.

Magnetism is the non-contact force that comes from a magnet.



Magnets have a **north pole** and a **south pole**. The opposite poles of magnets attract and like poles repel.



Magnetic materials are attracted to a magnet. Iron and nickel are magnetic metals. Objects that contain them will be attracted to a magnet.