Forces and Magnets Knowledge Organiser – Year 3 - PHYSICS

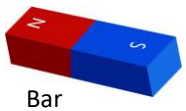
Sticky Knowledge

- ✓ Forces will change the motion of an object. They will either make it start to move, speed up, slow it down, make it stop or change direction.
- ✓ Different surfaces creates different amounts of friction. The rougher (more bumpy) a surface, the higher the friction becomes.
- ✓ Magnets have a North pole and a South pole.
- ✓ Like magnetic poles (NN and SS) repel and opposite poles (NS and SN) attract one another.
- ✓ Magnetic field lines are invisible. They are a non-contact force which causes magnets to attract of repel.
- ✓ Not all metals are magnetic. Iron, nickel and cobalt are.
- ✓ The Earth has a magnetic field which keeps us safe from many of the Sun's harmful particles.

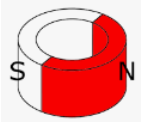
Big Idea

Forces are used to move things, usually by pushing or pulling an object. Magnets are objects which push or pull without physically touching the object, instead using magnetic fields.

Types of Magnets:



Bar



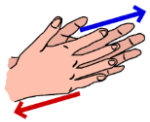
Ring


Button

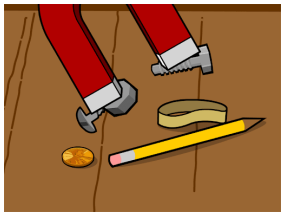
Horseshoe

Important facts to know by the end of the Forces and Magnets topic:

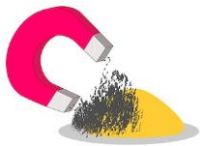
- ➢ Friction affects how things move across surfaces.



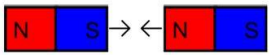
- ➢ Magnets can be used to separate magnetic materials (the metals iron, nickel and cobalt) from non-magnetic materials such as wood, glass and plastic.



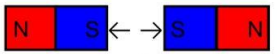
- ➢ If a magnet is cut in half, it makes two magnets, each with two poles.



- ➢ Understand that magnets can attract or repel one another.

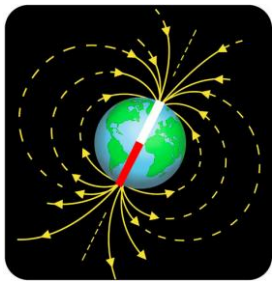


Opposite poles **attract**



Same poles **repel**

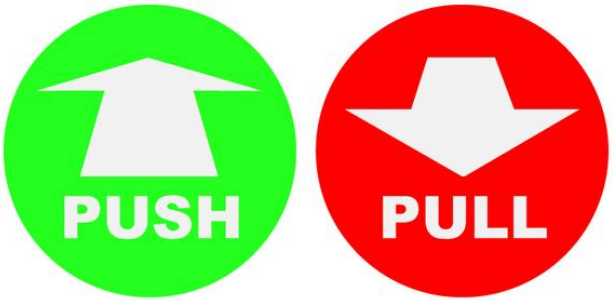
- ➢ Know that magnets have two pole (North and South)
- ➢ The Earth has a magnetic field, having a North Pole and a South Pole.



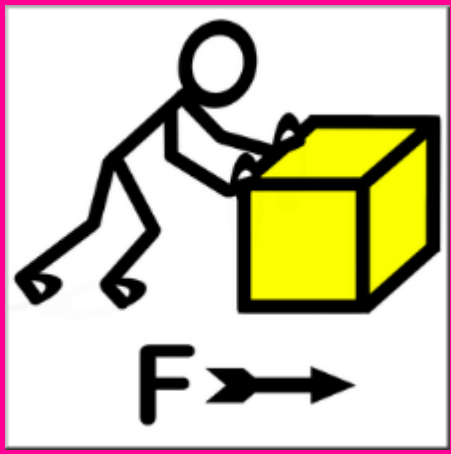
Vocabulary

Forces: Power or energy used to move something, usually by pushing or pulling.
Push: An object is moved away from something.
Pull: An object is moved towards something.
Contact Force: A push or pull which touches the object being moved.
Non-Contact Force: A push or pull which does not touch the object being moved.
Magnet: An object that has the power to pull items made of iron towards it. These can come in different shapes: bar, ring, button and horseshoe.
Attract: Pulls objects together. Opposite poles attract (North and South).
Repel: Repulsion is a force what pushes objects away from one another. Similar poles repel (North-North and South-South).
Magnetic: Objects which are attracted to a magnet are magnetic. They usually contain the metals iron, nickel or cobalt.
Magnetic Strength: The pull strength of a magnet.
Pole: The North and South poles are opposite ends of a magnet. The magnetic field flows from North to South.
Iron: A common type of metal, which is magnetic. The Earth's magnetic field is due to the core and mantel being made out of iron.
Surface: The top layer of something.
Friction: A force acting between two surfaces moving, or trying to move, past each other.

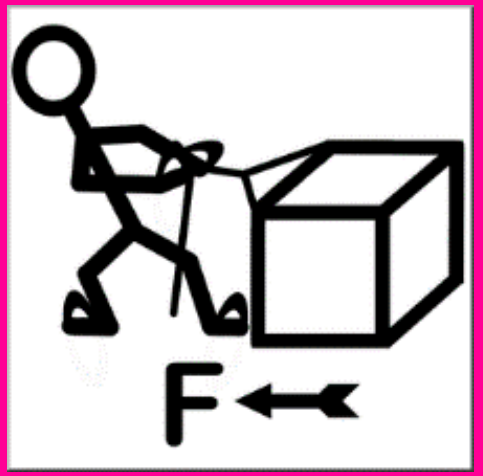
Forces



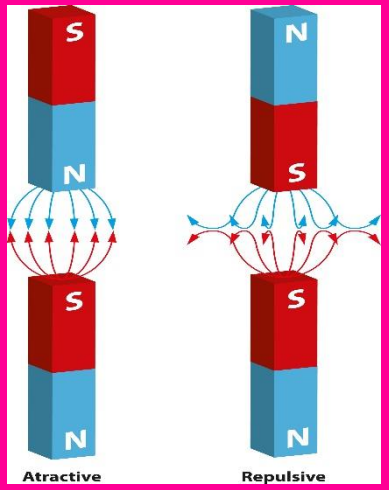
Push



Pull

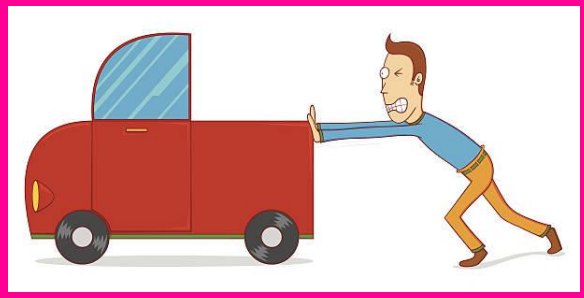


Poles (North & South)



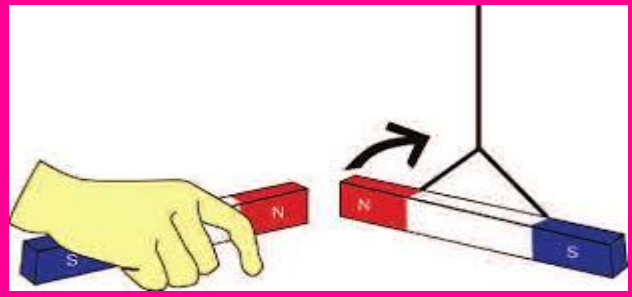
Contact force

Must physically touch the object.

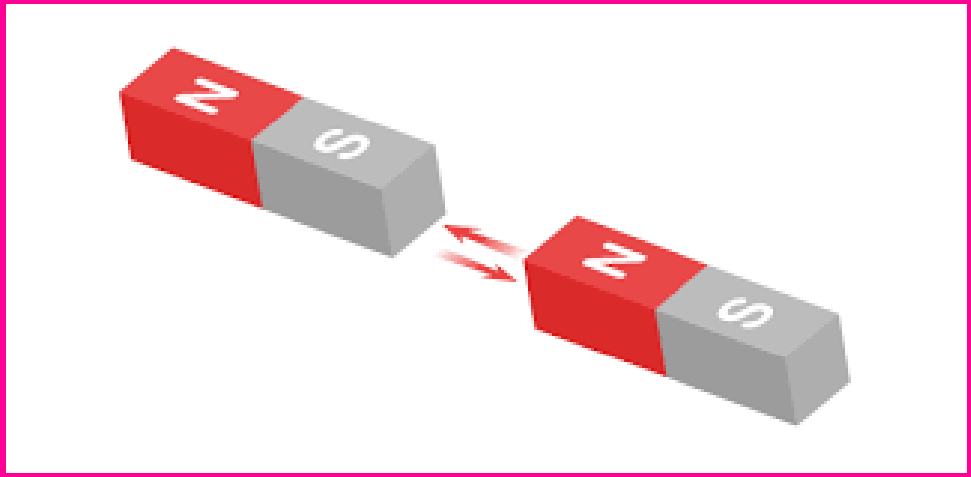


Non-contact force

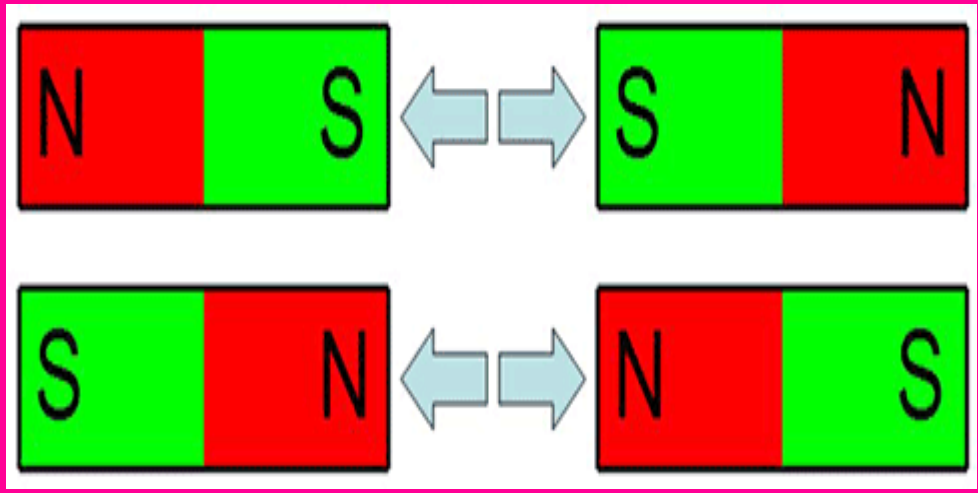
Does not physically touch the object.



Attract



Repel



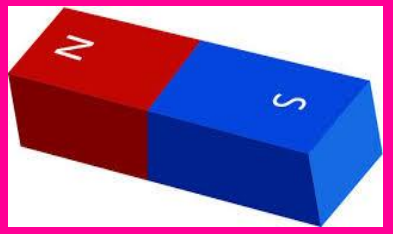
Iron

Magnetic strength

Surface

Magnetic material

Magnet



Friction