



FORCES AND MAGNETS

KNOWLEDGE ORGANISER



Y3

Overview

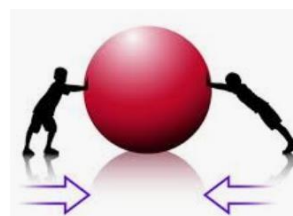


- Forces are pushes and pulls which make things move and stop moving.
- Most forces need contact between objects, but magnets can act at a distance.
- Magnets are made of materials that create a magnetic field (the area in space where the force of magnets can be detected).
- Magnets have at least one north pole and one south pole.
- Magnets can attract or repel one another. They attract some materials & not others.

Forces

What are forces?

- A force is the push or pull of an object in a particular direction.
- Forces are shown by arrows in diagrams. The bigger the arrow, the bigger the force. The direction of the arrow shows the direction of the force.



Pushes and Pulls



- A push is the force that moves an object away from something.



- A pull is the force that brings an object towards something.

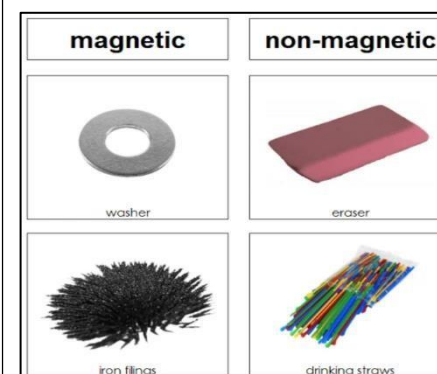
- A push and a pull are opposite forces, moving objects in different directions.

Balanced and Unbalanced Forces

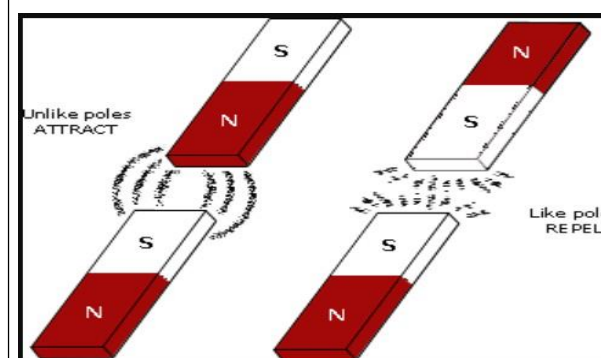
- If two forces are balanced, they are the same size but are acting in opposite directions. If the two forces are acting on an object, then its motion will not change.

- When two forces acting on objects are not equal in size, they are called unbalanced. Unbalanced forces change the way and/or speed that something is moving, e.g. they can make objects speed up/slow down.

Magnets



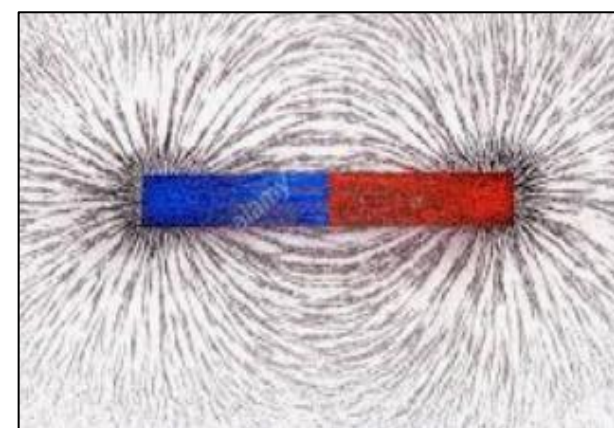
- A magnet is an object that is made of materials that create a magnetic field.
- Magnets create a 'magnetic force' - this is a force that causes objects to attract (pull closer together) or repel (push further apart).
- Unlike most other forces, 'magnetic force' does not require objects to touch one another - magnets can act at a distance.



- Magnets have two poles - a north pole and a south pole.
- The north pole of one magnet will repel the north pole of another magnet. However, it will attract 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 a magnetic object when it enters its magnetic field.



- Magnetic fields cannot be seen with the human eye. However, spreading iron filings over the magnetic field allows us to see the magnetic field, as the filings cling to it.
- Magnetic fields can pass through air. Some can even have an effect through solids and liquids (depending on the strength of the magnet).

Magnetic Materials

Non-Magnetic Materials

Iron

Steel

Nickel

Cobalt

Gadolinium

Copper

Gold

Rubber

Wood

Leather