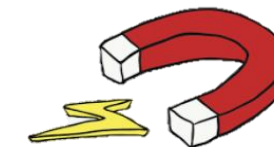




FORCES AND MAGNETS

YEAR 3 KNOWLEDGE ORGANISER



Overview



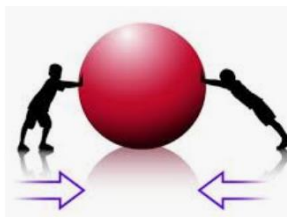
- Forces are pushes and pulls which make things move and stop moving.
- Most forces need contact between objects, but magnets can act at a distance.
- Magnets are made of materials that create a magnetic field (the area in space where the force of magnets can be detected).
- Magnets have at least one 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

magnetic	non-magnetic
 washer	 eraser
 iron filings	 drinking straws

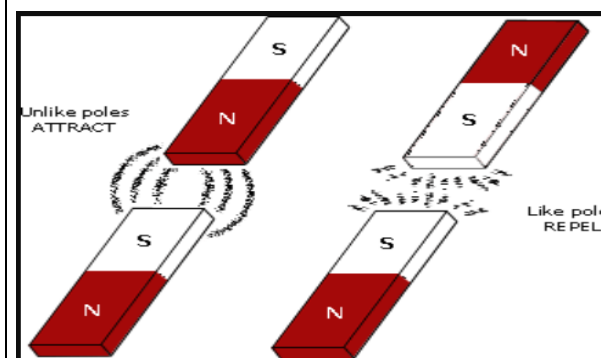
-A magnet is an object that is made of materials that create a magnetic field.

-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.

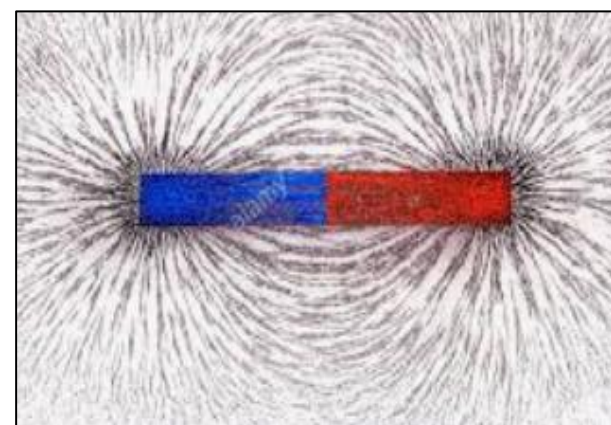
-Magnets have two poles – a north pole and a south pole.

-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

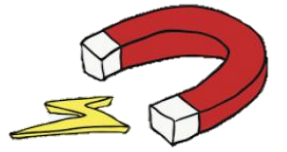
Wood

Leather



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Key Vocabulary

attract	If one object attracts another object, it causes the second object to move towards it	pull	When you pull something, you hold it firmly and use force in order to move it towards you or away from its previous position
friction	the resistance of motion when there is contact between two surfaces	push	When you push something, you use force to make it move away from you or away from its previous position
force	the pulling or pushing effect that something has on something else	repel	When a magnetic pole repels another magnetic pole, it gives out a force that pushes the other pole away
gravity	the force which causes things to drop to the ground	squash	pressed or crushed with such force that something loses its shape
magnet	a piece of iron or other material which attracts magnetic materials towards it	stretchy	slightly elastic
Magnetic field	an area around a magnet , or something functioning as a magnet , in which the magnet's power to attract things is felt	surface	the flat top part of something or the outside of it
opposite	Opposite is used to describe things of the same kind which are completely different in a particular way. For example, north and south are opposite directions	twist	turn something to make a spiral shape