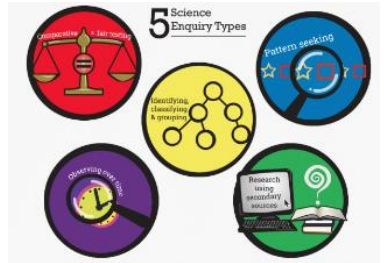


Year 3 Autumn Term

Forces




Prior knowledge learned in year 2

Not covered – new learning

National Curriculum for year 3

compare how things move on different surfaces - notice that some forces need contact between 2 objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others - compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials - describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Overview

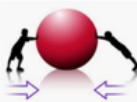


- Forces are pushes and pulls which make things move and stop moving.
- Most forces need contact between objects, but magnets can act at a distance.
- Magnets are made of materials that create a magnetic field (the area in space where the force of magnets can be detected).
- Magnets have at least one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

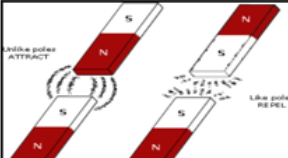
Balanced and Unbalanced Forces

- 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

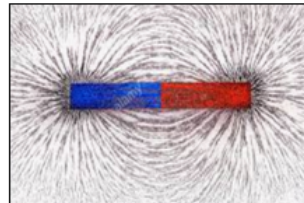
magnetic	non-magnetic
	
	

- 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).

Key vocab

Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull

Key texts

(Foxton) Magnets and friction

Scientists to consider

Andre Marie Ampere-Electro-magnetism
The Wright Brothers- Airplanes
Henry Ford- Cars

What is meant by 'attract' and 'repel' when using magnets?

Can you name magnetic and non-magnetic materials?

Describe what a force is.

Can you give examples?

What is a magnetic field?

Magnetic Materials

Iron Steel Nickel Cobalt Gadolinium

Non-Magnetic Materials

Copper Gold Rubber Wood Leather