

Manor Primary School Knowledge Organiser – Lower KS2 Owls Science

Topic: Forces and Magnets

Phase: Lower KS2

Strand: Physics

What should I already know?

- How different toys move. Know what a force is and be able to explain that a push and pull are types of forces.
- Distinguish between an object and the material from which it is made.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.
- That shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

At the end of the unit, I will be able to:

- Compare how things move on different surfaces.
- Investigate that some forces need contact between two 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.
- Describe magnets as having two poles. Predict whether two magnets will attract or repel each other depending on which poles are facing.

Key Knowledge

Magnets

Magnets are objects that *pull* or *push* things with an invisible *force* called *magnetism*, which pulls on some metals such as iron and nickel. Magnets cannot pull anything made of wood or plastic, or metals such as copper or gold. Objects that are pulled by magnets are said to be magnetic. Objects that are not pulled by magnets are said to be non-magnetic.

Magnetic poles

The ends of a magnet are called its poles. One end is called the *north pole*, the other end is called the *south pole*. When two magnets are close, they create pushing or pulling forces on one another. These forces are strongest at the ends of the magnets. If you line up two magnets so the north pole of one magnet is facing the south pole of the other magnet, the magnets will pull towards each other. This is called *attraction*. If you line up the magnets so that the same poles face each other, they will pull away from each other. This is called *repulsion*. Opposite poles attract each other but same poles repel.

Natural forces

There are two types of natural forces that we have around us: magnetic forces and gravity forces. Gravity - gravity makes things fall down towards the centre of the earth. In space there is hardly any because the earth, stars and other planets are far away. That is why astronauts float in space.

We are MANOR! As Scientists we will ...

Manners

Develop a respect and understanding for the natural world, its people, animals and plants. Share ideas, celebrate good work, value others' contributions, or discussions and debates.

Aspiration

Learn by being challenged in a series of well-designed scientific enquiry and investigation tasks linked to meaningful contexts and develop a knowledge of scientists and careers to broaden our horizons. Be aspirational in developing scientific knowledge and conceptual understanding through biology, chemistry and physics.

Nurture

To recognise that we live in a wonderful world made up of many different people and living things. We will develop an appreciation and respect for the diverse world and environment in which we live, showing care and compassion for the environment around us.

Open-Mindedness

We will be open-minded so that we can conduct experiments or observe what is happening in order to see patterns that might emerge or to gain new knowledge. We will use our curiosity and learn to wonder why something behaves a certain way.

Resilience

Engage confidently with the science curriculum and learn that anything is possible and failure is not something to fear but to learn from. We will develop our scientific enquiry and investigation skills with patience and care, repeating investigations to check the accuracy of results.

Magnets

Types of Magnets

Bar



Horseshoe

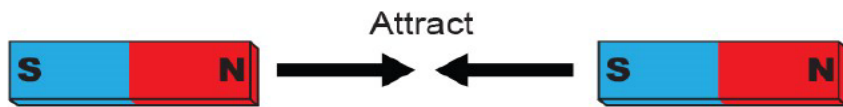


Disc



Magnetic Poles

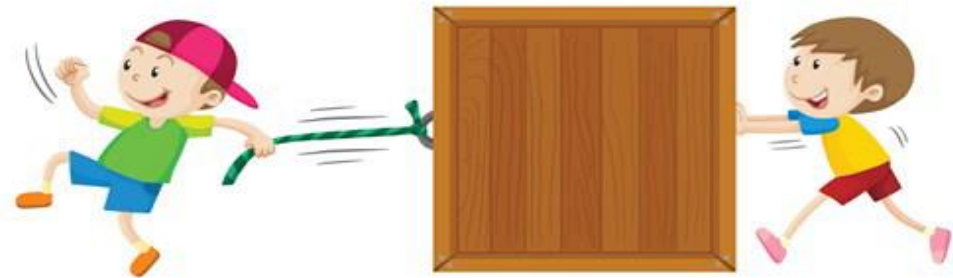
Magnets have North and South poles. Opposite poles 'attract' each other whereas the same poles 'repel' each other.



Forces



A force is a push or a pull.



It is easier to push or pull something along a smooth surface than a bumpy surface.



Forces and Magnets Quiz

1) What is a force?	
2) What are the ends of a magnet called?	
3) What do we know about magnets?	
4) What does resistance mean?	
5) Are all materials magnetic?	
6) Is it easier to push or pull something on a smooth or bumpy surface?	

Key Knowledge and vocabulary

force	A push, pull, twist or turn.
gravity	A pushing force exerted by the Earth, it attracts objects towards the centre of the Earth.
friction	The force between 2 moving surfaces.
magnet	A material or object that produces a magnetic field, it attracts or repels magnetic objects.
magnetism	The force of attraction and repelling caused by a magnet.
poles	The two sides of a magnet where the magnetism is strongest.
attract	To pull towards (opposite of repel).
repel	To push away (the opposite of attract).
compass	A device for finding directions by means of a magnetic needle pointing to the magnetic north.
surface	The top layer of something.
contact force	A force that requires physical contact to occur e.g. kicking a ball.
resistance	A force which slows down a moving object or vehicle.