

Forces and Magnets

What our children should already know

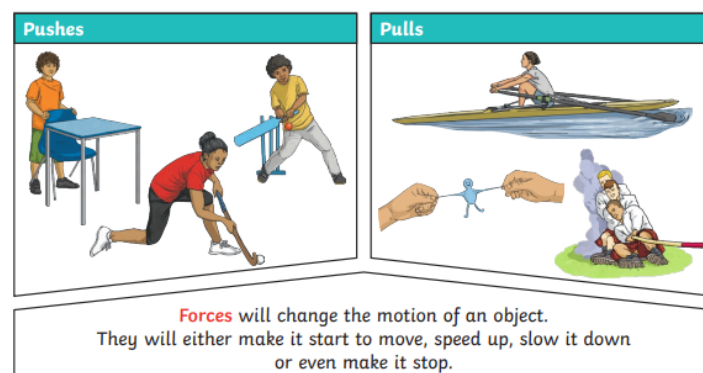
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Key Vocabulary

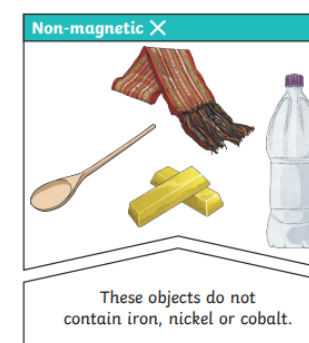
| Key Vocabulary | |
|-----------------|--|
| forces | Pushes or pulls. |
| friction | A force that acts between two surfaces or objects that are moving, or trying to move, across each other. |
| surface | The top layer of something. |

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|-----------------------|---|
| magnet | An object which produces a magnetic force that pulls certain objects towards it. |
| magnetic | Objects which are attracted to a magnet are magnetic . Objects containing iron, nickel or cobalt metals are magnetic . |
| magnetic field | The area around a magnet where there is a magnetic force which will pull magnetic objects towards the magnet . |
| poles | North and south poles are found at different ends of a magnet . |
| repel | Repulsion is a force that pushes objects away. For example, when a north pole is placed near the north pole of another magnet , the two poles repel (push away from each other). |
| attract | Attraction is a force that pulls objects together. For example, when a north pole is placed near the south pole of another magnet , the two poles attract (pull together). |

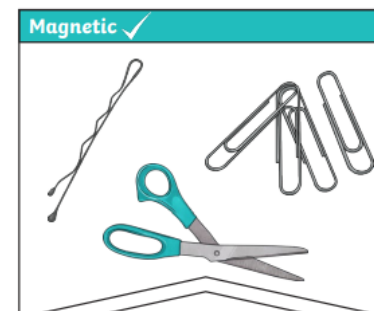
Diagrams



Forces will change the motion of an object. They will either make it start to move, speed up, slow it down or even make it stop.



These objects do not contain iron, nickel or cobalt.

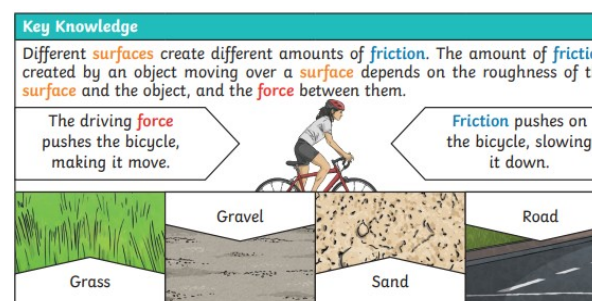
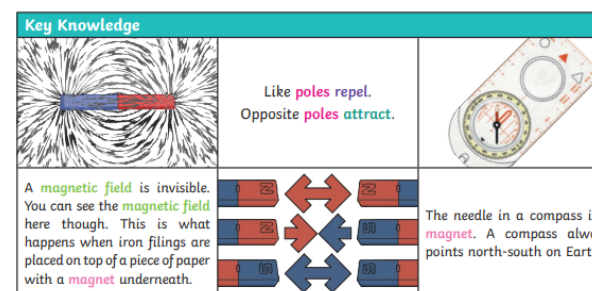


These objects contain iron, nickel or cobalt. Not all metals are **magnetic**.

Lesson Sequence

- L1 WALT: identify the forces acting on objects.
- L2 WALT: group magnetic and non-magnetic items
- L3 WALT: Investigate the poles of different magnets
- L4 WALT: Investigate the strength of magnets
- L5 WALT: uses of magnets
- L6 WALT: investigate how far a vehicle travels on different surfaces.
- L7 WALT:
- L8 WALT:

Key Knowledge



Final Outcome

Children will take part in an investigation to find out which type of magnet is the strongest magnet?

SMSC Links

Spiritual- To promote curiosity and encourage pupils' ability to respond with wonder and excitement by exploring some of the worlds marvels and mysteries

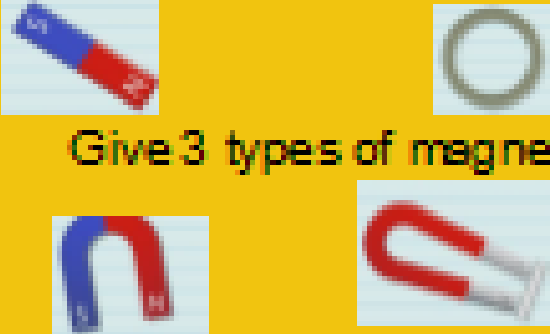
Key Milestones

- Set up simple, practical enquiries and comparative and fair tests
- Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers
- Compare how things move on different surfaces.
- Notice 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're attracted to a magnet, and identify some magnetic materials.
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing

Choices

- Pupils to give their choices about how they would test the magnetism of different objects

Forces and Magnets Retrieval Grid

| | | | |
|---|---|---|--|
| What is a force? | Would a south pole and a south-pole attract or repel? | Does friction speed up or slow down an object? | Which way does a compass always point? |
| Give 4 examples of a force P____, P____, Tw____, Tu____ | What kind of force is jumping on a trampoline? Push or pull | What metals are magnetic? I____, Ni____, Co____ | Which is the rough surface? Polished wood or carpet? |
| Give 3 types of magnets  | Can you see a magnetic field? | What kind of force is hitting a ball with a bat? Push or pull | Would a south pole and a north pole attract or repel? |
| Name 3 objects that are not magnetic | Would a north pole and a north pole attract or repel? | Forces can make an object start/stop or speed up? | What kind of force is a car taking a trailer somewhere? Push or pull |

| | | | |
|-----------|------------|--------------|-------------|
| One Point | Two Points | Three Points | Four Points |
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