

Knowledge Organiser - Science - Forces and Magnets - Lower Key Stage 2 - Autumn 1 2025

Careers connected to forces and magnets: radiographer, magnetic engineer, railway engineer

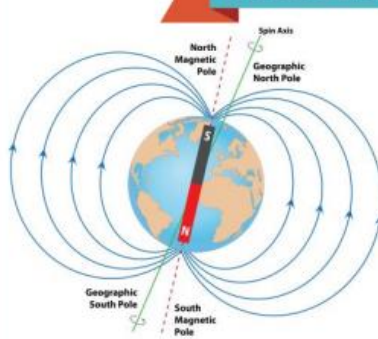


Sticky Learning

- I can distinguish between an object and the material from which it is made
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- I can describe the simple physical properties of a variety of everyday materials
- I can compare and group together a variety of everyday materials on the basis of their simple physical properties
- I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Core Learning

How do magnetic poles work?



The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole. Opposite poles attract; similar poles repel. If you place two magnets so the south pole of one faces the north pole of the other, the magnets will move towards each other. This is called attraction. If you place the magnets so that two of the same poles face each other, the magnets will move away from each other. They are repelling each other.

Forces

- Forces act in opposite directions to each other.
- When an object moves across a surface, **friction** acts as an opposite force. Friction is a force that holds back the **motion** of an object.
- Some surfaces create more friction than others, meaning that objects move across them more slowly.
- On a ramp, the force that causes the object to move downwards is gravity.
- Objects move differently depending on the **surface** of the object itself and the surface of the **ramp**.

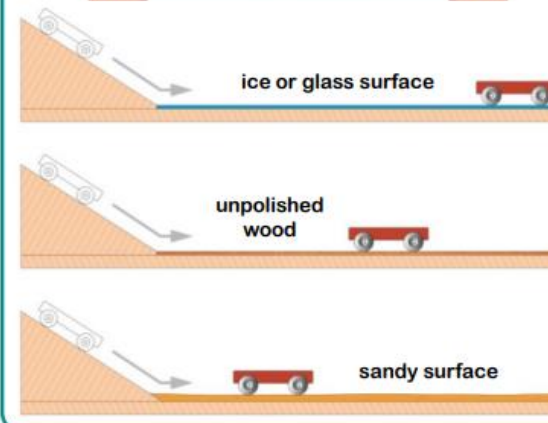
non-magnetic



magnetic

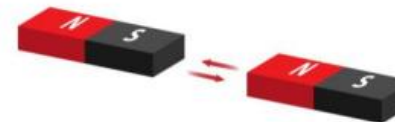


Friction

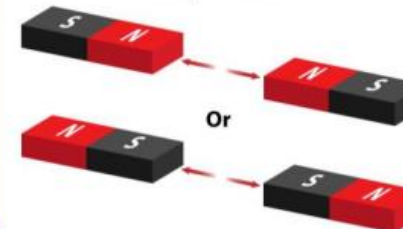


Magnetic Forces

Attraction



Repulsion



1. Explore contact and non-contact forces



2. Compare how things move on different surfaces



3. Explore different types of magnets



4. Explore the properties of magnets and everyday objects that are magnetic



5. Understand that magnetic forces can act at a distance



6. Explore the everyday uses of magnets



The pulling or pushing effect that something has on something else can be best described as a....

after

before

How can you test which materials are magnetic?

before

after

see which objects are attracted to a magnet

see which objects are repelled by a magnet

see which objects are not affected by a magnet at all

Which force pulls objects towards the ground?

before

after

resistance

magnetism

gravity

repel

What does resistance mean?

before

after

a force which slows down a moving object or vehicle

a force which speeds up a moving object or vehicle

a force that stops an object or vehicle

a force that changes the direction of an object or vehicle

Which of these surfaces would create the most friction for a cyclist riding their bike?

before

after

sand

polished wood

carpet

You design an experiment to see how far an object moves on ramps of different surfaces. What must you do to keep the test fair?

before

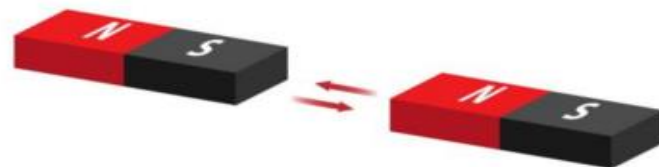
after

keep the objects the same for all ramps

the ramps must all be the same length

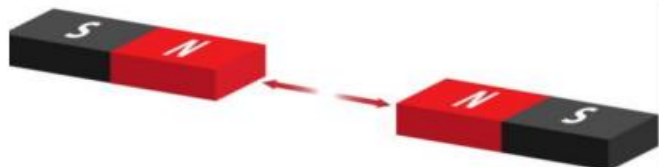
the object must have the same starting point before it

Are the magnets below attracting or repelling each other?



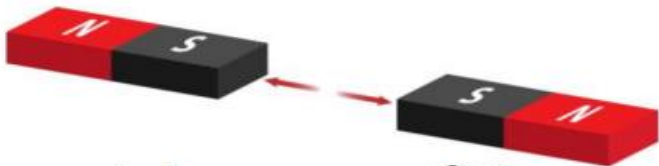
before

after



before

after



before

after



Unit Rocket Words: Year 3 – Forces and Magnets



Rocket Words

force	a power or strength that can cause an object to move
friction	the force that pulls backwards when objects rub against each other
motion	the process of movement
texture	the feel or look of a surface
magnet	an object that can pull some metal items towards it
attract	to pull towards
repel	to force back or push away
magnetic field	the force that surrounds a magnet and attracts magnetic objects
non-contact force	a force that occurs without objects touching each other
magnetism	the force of a magnet
compass	an instrument which shows direction
orienteering	a sport where you have to find your way across a route with the aid of a map and compass