Knowledge Organiser: Forces and Magnets

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



Lesson Sequence



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

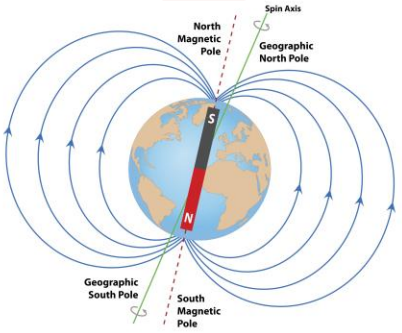


5. Understand that magnetic forces can act at a distance



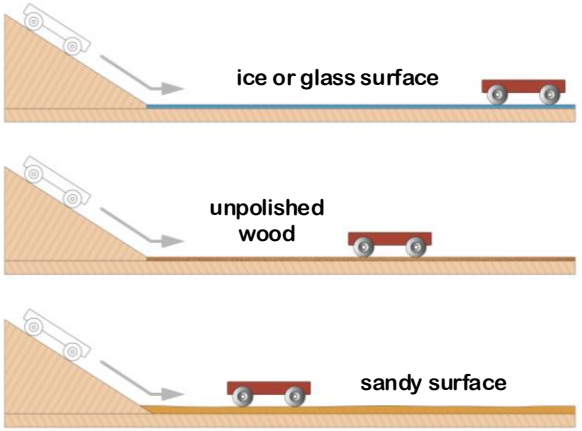
6. Explore the everyday uses of magnets

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.

Friction



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

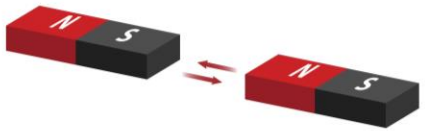


magnetic

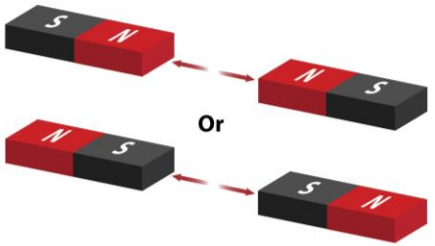


Magnetic Forces

Attraction



Repulsion



Developing Experts Copyright 2022 All Rights Reserved

Knowledge Organiser: Forces and Magnets

Before and After Test



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

Which force pulls objects towards the ground?	before	after
resistance		
magnetism		
gravity		
repel		

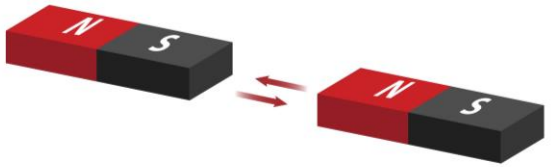
Which of these surfaces would create the most friction for a cyclist riding their bike?	before	after
sand		
polished wood		
carpet		

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		

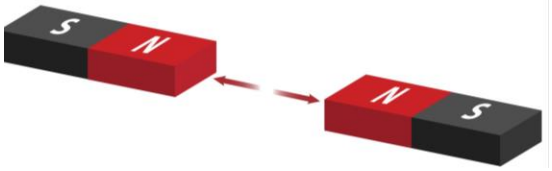
What does resistance mean?	before	after
a force which slows down a moving object or vehicle		
a force which speeds up a moving object or vehicle		
a force that stops an object or vehicle		
a force that changes the direction of an object or vehicle		

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		

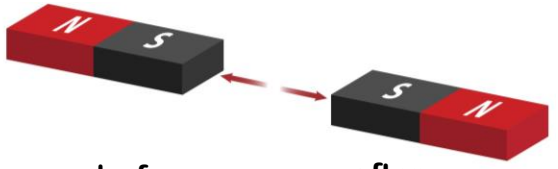
Are the magnets below attracting or repelling each other?



before | after



before | after



before | after

Developing Experts Copyright 2022 All Rights Reserved

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

Developing Experts Copyright 2022 All Rights Reserved