

Forces and Magnets

Knowledge

Forces and Magnets

I can compare how things move on different surfaces

I can notice that some forces need contact between two objects, but magnetic forces can act at a distance

I can observe how magnets attract or repel each other and attract some materials and not others

I can 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

I can describe magnets as having two poles

I can predict whether two magnets will attract or repel each other, depending on which poles are facing.

Working Scientifically

comparing how different things move and grouping them

raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions

exploring the strengths of different magnets and finding a fair way to compare them

sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another

identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.

Hook into a Book



Activate Prior Knowledge

EY

- Explore and talk about different forces they can feel.
- Describe what they see, hear and feel whilst outside
- Understand the effect of changing seasons on the natural world around them.



KS1

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

Future Learning

KS2

- I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.



Investing in

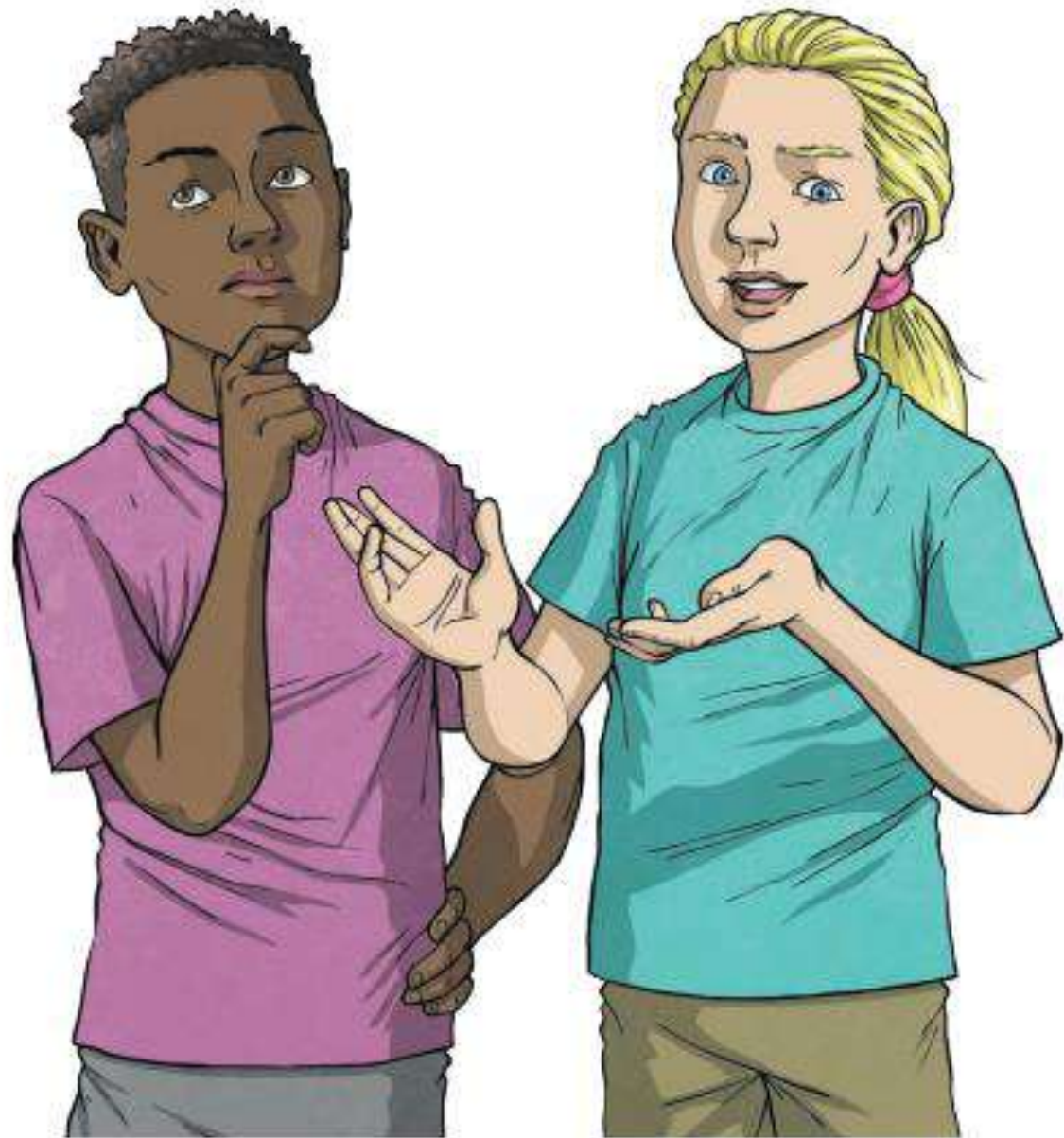
the **UNIQUENESS**

of each individual

"I Am Fearfully And Wonderfully Made"
– Psalms 139 v14



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.

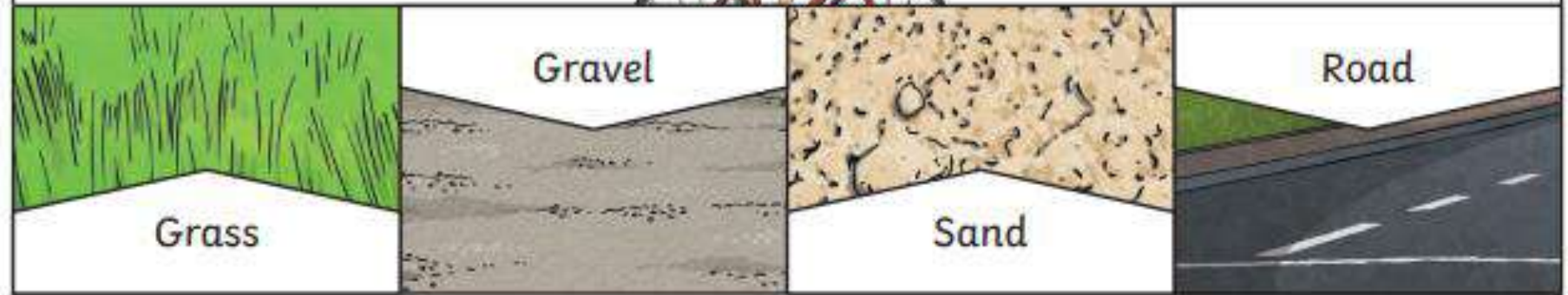


Key Knowledge

Different **surfaces** create different amounts of **friction**. The amount of **friction** created by an object moving over a **surface** depends on the roughness of the **surface** and the object, and the **force** between them.

The driving **force** pushes the bicycle, making it move.

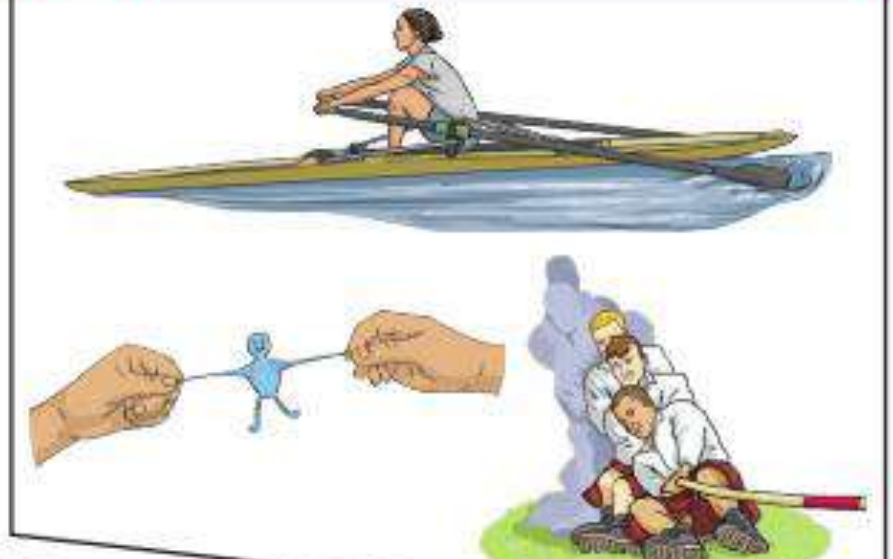
Friction pushes on the bicycle, slowing it down.



Pushes

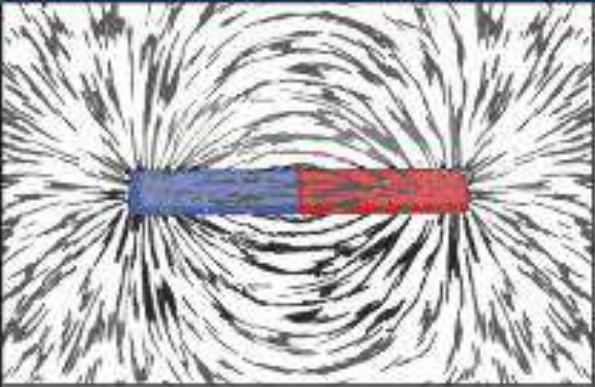

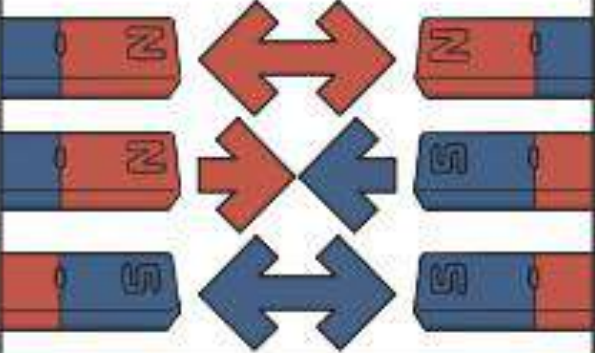



Pulls




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.

Key Vocabulary	
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).

Key Knowledge		
	Like poles repel . Opposite poles attract .	
A magnetic field is invisible. You can see the magnetic field here though. This is what happens when iron filings are placed on top of a piece of paper with a magnet underneath.		The needle in a compass is a magnet . A compass always points north-south on Earth.

Magnetic ✓

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

Non-magnetic ✗

These objects do not contain iron, nickel or cobalt.