

What should I already know?

- The shape of some materials can be changed when they are **stretched, twisted, bent** and **squashed**.
- Know how different toys move.
- Know what a **force** is and be able to explain that a **push** and **pull** are types of **forces**.
- That when **forces** are applied to an object they allow them to move or stop moving.

Vocabulary

attract	if one object attracts another object, it causes the second object to move towards it
bendy	an object that bends easily into a curved shape
friction	the resistance of motion when there is contact between two surfaces
force	the pulling or pushing effect that something has on something else
gravity	the force which causes things to drop to the ground
magnet	a piece of iron or other material which attracts magnetic materials towards it
magnetic field	an area around a magnet, or something functioning as a magnet, in which the magnet's power to attract things is felt
metal	a hard substance such as iron, steel, gold, or lead
motion	the activity of changing position or moving from one place to another
non-magnetic	an object that is not magnetic
opposite	opposite is used to describe things of the same kind which are completely different in a particular way. For example, north and south are opposite directions
position	the position of someone or something is the place where they are in relation to other things
pull	when you pull something, you hold it firmly and force in order to move it towards you or away from its previous position
push	when you push something, you use force to make it move away from you or away from its previous position
repel	when a magnetic pole repels another magnetic pole, it gives out a force that pushes the other pole away
resistance	a force which slows down a moving object or vehicle
squash	pressed or crushed with such force that something loses its shape
stretchy	slightly elastic
surface	the flat top part of something or the outside of it
twist	turn something to make a spiral shape.

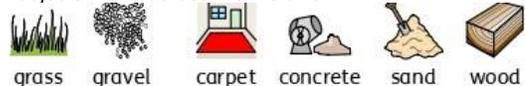
What will I know by the end of the unit?

What are forces?

- **Forces** are **pushes** and **pulls**.
- These **forces** change the **motion** of an object.
- They will make it start to move or speed up, slow it down or even make it stop.
- For example, when a cyclist **pushes** down on the pedals of a bike, it begins to move. The harder the cyclist pedals, the faster the bike moves. When the cyclist **pulls** the brakes, the bike slows down and eventually stops

How do different surfaces affect the motion of an object?

- **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 which means that objects move across them slower.



- 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.

How do magnets work?

- **Magnets** produce an area of **force** around them called a **magnetic field**.
- When objects enter this **magnetic field**, they will be **attracted** to or **repelled** from the **magnet** if they are **magnetic**.
- When **magnets repel**, the **push** each other away.
- When **magnets attract**, they **pull** together.

Which Materials are magnetic?

- Objects that are **magnetic**, are **attracted** to **magnets**.
- Iron and steel are **magnetic**.
- Aluminium and copper are **non-magnetic**.

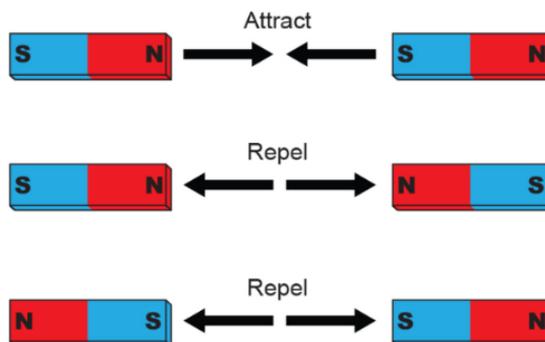
How do magnetic poles work?

- 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.

Investigate!

- Investigate the amount of **friction** created by different **surfaces**. Use measures (such as length and time) to show how far or fast and 'object travels.
- Compare how different things move and group them.
- Observe how a **magnetic field attracts** iron filings by using a bar **magnet**.
- Investigate how **magnets** are used in everyday life.
- Investigate which materials are **magnetic** and sort between objects that are **magnetic** and those that are **non-magnetic**.
- Investigate if the size of a **magnet** affects how strong it is (using chains of paper clips of varying lengths)
- Investigate if all **metals** are **magnetic**.
- Observe what happens when **magnets** with similar poles are placed next to each. Repeat this for when the poles are different.

Diagram



Question 1 – The pushing or pulling effect that something has on something else is best describes as a

	Start of unit	End of unit
position		
force		
magnet		
metal		

Question 2 – Which force pulls objects to the ground?

	Start of unit	End of unit
resistance		
magnetism		
gravity		
friction		

Question 3 – Which of these surfaces would create the most friction for a cyclist riding their bike?

	Start of unit	End of unit
sand		
concrete		
polished wood		
pebbles		

Question 4 – What is motion?

	Start of unit	End of unit
changing size		
holding still		
changing		
pebbles		

Question 5 – Which force acts as resistance when one object moves against another?

	Start of unit	End of unit
friction		
magnetism		
gravity		

Question 7 – How can you test which materials are magnetic?

	Start of unit	End of unit
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		

Question 6 - 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?

	Start of unit	End of unit
keep the object the same for all ramps		
the ramps must all be the same length		
the object must have the same		

Question 8 – For each diagram, state whether the magnets will attract or repel each other.

Start of unit	End of unit