Year 3 Science — Physics: Forces and Magnets

What we 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.
- The strength of the force determines how far and fast an object moves.

What I will know by the end of the unit:

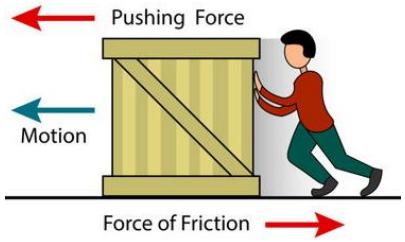
- What forces are.
- How different surfaces affect the motion of an object.
- How a magnet works.
- What materials are magnetic.
- How magnetic poles work.

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.

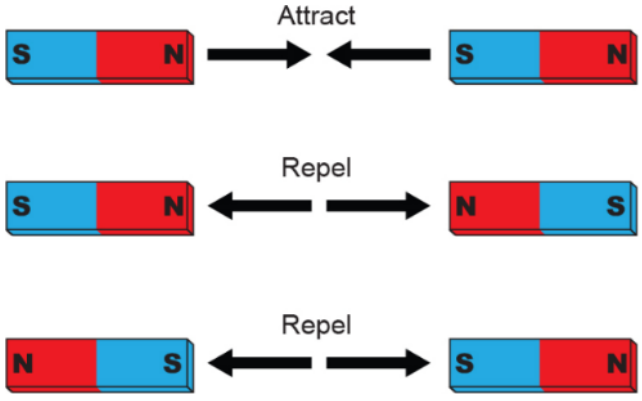
How do different **surfaces** affect the **motion** of an object?

- **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 **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.

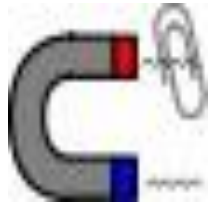


Which materials are **magnetic?**

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

How do **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.



Vocab

attract
bendy
friction
force
gravity
magnet
magnetic field
metal
motion
non-magnetic
opposite
position
pull
push
repel
resistance
squash
stretchy
surface
twist