

St Clement's Catholic Primary School - Science

Topic: Forces and Magnets

Year: 3

Strand: Physics

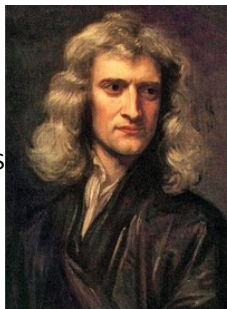
What should I already know?

- The shape of some materials can be changed when they are **stretched, twisted, bent** and **squashed**.
- How different toys move.
- That magnets can be found in everyday objects.

Vocabulary

attract	If one object attracts another object, it causes the second object to move towards it
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
non-magnetic	an object that is not magnetic
pull	When you pull something, you hold it firmly and use 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

Famous Scientists



Sir Isaac Newton (1642-1727)
 Sir Isaac Newton is one of the most influential scientists of all time. Legend has it that he was watching an apple fall from a tree in his orchard when he worked out how gravity works.

Investigate!

- Investigate the amount of **friction** created by different **surfaces**. Use measures (such as length and time) to show how far or fast an object travels.
- 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.

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.

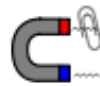
How do different **surfaces** affect the **motion** of an object?

- **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 is **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.

