Year 3 - Science

Topic: Forces and Magnets	What can magnets do?	Physics

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

Big ideas this works towards:

Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.

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 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
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.