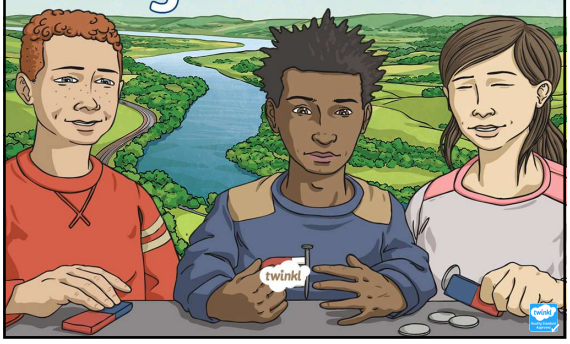
All About

Magnetic Forces



Forces

Push
A force to move something away.

Pull
A force to move something towards you.

Friction
A directly applied force that slows motion when objects rub together.

Magnetism
Magnets attract magnetic materials like metals and other magnets held close together can create pushing (repelling) or pulling (attracting) forces on one another.

Gravity
A natural force that attracts two objects to each other. Objects have weight on Earth because gravity pulls them down.

Trains

Meena, Ahmed's two-year-old sister, loved playing with trains. She had all kinds of toy trains. Some went on wooden tracks, others were pulled along and Meena even had a ride-on train which she moved with her feet.

The Wooden Train Set

Ahmed set up the wooden track of Meena's favourite trains. The train set was made up of different carriages which could be joined together with the magnets at either end of each carriage.

"Come on Meena, let's make a really long train," said Ahmed.

Meena sat down and started to try to put the carriages together.

Moving the Train

Meena placed a train carriage on the wooden track. She picked up another carriage and tried to attach it to the first carriage. However, the first carriage moved away from Meena's hand. Every time she put the second carriage near the first one, it moved further away even though she wasn't touching it.

Can you explain why the two carriages didn't stick together?

The Wrong End

"You've got the wrong end of the carriage," Ahmed explained. He turned the second carriage around and the two carriages snapped together.

Meena clapped her hands in delight. "Choo choo!" she called out as she happily moved the train around the track.

Different Forces

Seeing Meena's toy trains got Ahmed thinking about the different ways they could be moved.

Meena's ride-on train needed contact between her feet and the ground in order to move. Ahmed knew this was a pushing force.

Another toy train had a piece of string attached to it. Ahmed knew that to make that train move, you applied a pulling force.

Ahmed knew that to apply pushing and pulling forces, you have to make contact with the item.

Magnetic Forces

Unlike pushing and pulling forces, magnetic forces can work without contact being made.

Each end of a magnet is known as a pole. There is a north pole and a south pole.

Magnetic Forces

Opposite poles attract. So the north pole of one magnet will be attracted to the south pole of another one.

If you put two magnets close enough to each other, the force will pull them together without you actually putting them together.

Magnetic Forces

If you try to put poles of the same type together, they will push away from each other. This is called repelling.

So a north pole will repel another north pole. This was why Meena couldn't get her two carriages to go together. The first carriage moved away from the second because of the repelling magnetic force even though they weren't touching.