



Year 5
Topic: Forces
Strand: Physics

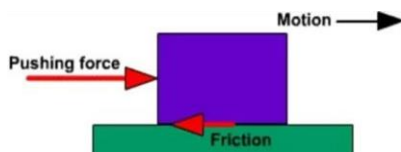
What I should already know.

- 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.
- **Friction** is the **resistance of motion** when there is contact between two **surfaces**.
- The **force** that causes objects to move downwards towards the ground is **gravity**.
- That **magnets** have poles, and that opposite poles **attract**, while similar poles **repel**.

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.
- **Friction** is a **force** - it is the **resistance of motion** when one object rubs against another.



- Other **forces** that create **resistance of motion** include **water resistance** and **air resistance**.

Vocabulary

Attract	If one object attracts another object, it causes the second object to move towards it.
Friction	The resistance of motion when one object rub against another.
Force	The pulling or pushing effect that something has on something else.
Gear	A part of a machine that causes another part to move because of teeth which connect the two moving parts.
Gravity	The force which causes things to drop to the ground.
Lever	A basic tool used to lift or pry things open.
Motion	The activity of changing position or moving from one place to another.
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.
Pulley	A simple machine that makes lifting something easier. A pulley has a wheel or set of wheels with grooves that a rope or chain can be pulled over.
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.
Spring	A spiral of wire which returns to its original shape after it is pressed or pulled.
Streamlined	A streamlined vehicle, animal, or object has a shape that allows it to move quickly or efficiently through air or water.
Surface	The flat top part of something or the outside of it.

What are examples of mechanisms?



What will I know by the end of the unit?

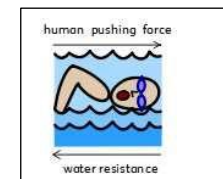
What is gravity and air resistance?

Gravity is the **force** that pulls objects to the centre of the Earth.
Air **resistance** pushes up on the parachute, **opposing** the force of **gravity**. This makes the parachute land more slowly.



What is water resistance?

Water **resistance** is the **friction** that is created between water and an object that is moving through it.
Some objects can move through water with less **resistance** if they are **streamlined**.



What are examples of mechanisms?

Levers allow us to do heavy work with less effort. For example, trying to pick up a large heavy box is difficult, however if a **lever** is used it becomes much easier to move it.
Pulleys also allow us to do heavy work - objects are attached to ropes and **pulley** wheels, and so instead of lifting heavy object upwards, we can pull on the **pulley** rope downwards.
Gears are toothed wheels. Their 'teeth' can fit into each other so that when the first wheel turns, so does the next one. This allows **forces** to move across a **surface**.
Springs can be stretched by pulling them or squashed by pushing them. The greater the **force** pulling or pushing the **spring**, the greater the **spring** uses to move back to its normal shape.