

Science Knowledge Organiser

Forces

Year 5

Main Foci:

Physics



Year 5 Spring 1

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**.

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 slower.

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 force the **spring** uses to move back to its normal shape.

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 rubs 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 I should already know:

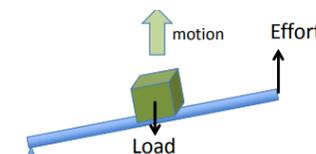
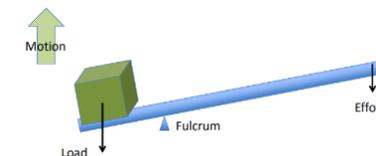
- Know what a **force** is and be able to explain that a push and pull are types of **forces**.
- That when **forces** are applied to an object, they allow them to move or stop moving.
- The strength of the **force** determines how far and fast an object moves.
- Friction** is the **resistance** of **motion** 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**.



Galileo Galilei



Isaac Newton



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