

# NPA Knowledge Organiser: Year 5 Science - Summer 1



Force – A force is a push or pull. Forces make objects start moving, stop moving, speed up, slow down or change direction.

Gravity – A force which pulls things down towards the centre of the Earth.

Forcemeeter – Piece of equipment used to measure the size of a force.

Newton (N) - The unit for measuring force.

Air resistance - The force that slows down objects moving through the air.

Water resistance – A force that slows down objects moving through water.

Friction – When one surface moves against another, the rubbing force that tries to stop them is called friction. It gives grip.

Mechanisms – A device that allows a small force to be increased to a larger force.

Simple machines – Levers, pulleys and gears are all types of simple machines.

## Real-life examples of forces in action:



A skydiver falls fast until they open their parachute.



Dolphins have a streamlined shape.

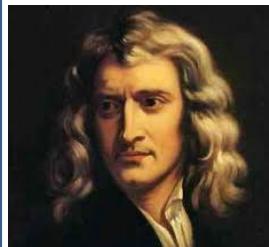


A non-slip mat uses friction.



Seeds fall to the ground because of gravity.

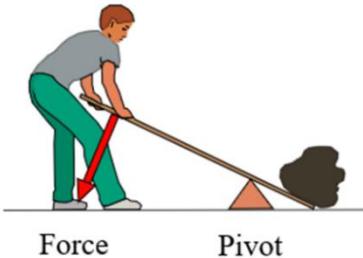
## Sir Isaac Newton (1642-1726)



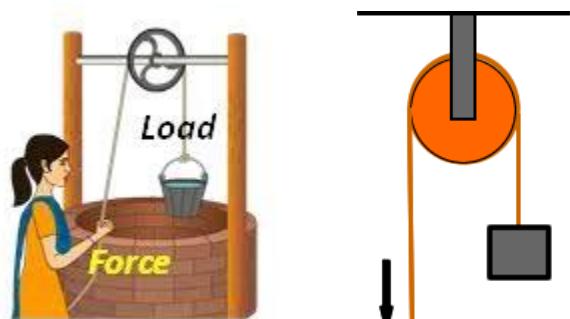
Sir Isaac Newton was an English scientist and mathematician. He discovered the concept of gravity when sitting under a tree and an apple fell to the ground near him.

## Simple machines

These are used to make tasks easier.  
This means you need to use less force.



A **lever** tilts on a pivot which is nearer to the end of the pivot with a heavy load.



**Pulleys** have a rope or cable which goes over a wheel. This is pulled to lift, lower or move heavy objects.



**Gears** are toothed wheels which lock together and turn each other to form simple machines.

By the end of this unit, you will be able to:

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

“Give me a place to stand and a lever long enough, and I will move the world.”  
- Aristotle