

Forces

SCIENCE KNOWLEDGE ORGANISER

What can a force change?

What I will learn (sticky knowledge)

- A **force** causes an object to start moving, stop moving, speed up, slow down or change direction. **Gravity** is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.
- Air resistance, water resistance** and **friction** are contact forces that act between moving surfaces. The object may be moving through the air or water or the air and water may be moving over a stationary object.
- A **mechanism** is a device that allows a small **force** to be increased to a larger **force**. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover. **Pulleys, levers and gears** are all **mechanisms**, also known as simple machines.

An example of a gear, a lever and a pulley



Key Vocabulary

force	A push or pull upon an object resulting from the object's interaction with another object.
gravity	Gravity is the natural force that causes things to fall toward the earth.
Earth	Earth is our home planet, the third from the sun.
air resistance	The action of friction that slows something moving through air.
water resistance	A type of force that uses friction to slow things down that are moving through water.
friction	A force that is created whenever two surfaces move or try to move across each other
mechanisms	A device consisting of a piece of machinery; has moving parts that perform some function
levers	A handle, sticking out at an angle, that allows you to operate a machine
pulleys	A pulley is a basic device or machine made of a wheel with a rim that a cord or rope fits around
gears	A simple machine with teeth that increases the force needed to push or pull something.

What I should already know

- You will have compared how things move on different surfaces.
- You will have noticed that some **forces** need contact between two objects, but magnetic forces can act at a distance.
- You will have observed how magnets attract or repel each other and attract some materials and not others.
- You will have compared and grouped together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- You will predict whether two magnets will attract or repel each other, depending on which poles are facing.

What I will learn next

- In year 7 you will learn that forces as pushes or pulls, arise from the interaction between two objects
- How to use force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces
- Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and **friction** between surfaces, with pushing things out of the way; resistance to motion of air and water
- Forces are measured in newtons, measurements of stretch or compression as force is changed.