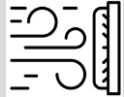

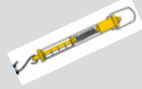











Key Vocabulary

air resistance		The friction force acting on objects moving through air.
balanced		When two forces are opposite and equal (so there is no movement).
force-meter		Instrument used to measure forces (in Newtons)
friction		The force created when two or more surfaces interact (move over each other).
gears		Mechanism used to change speed, direction of force of a movement.
gravity		The force that pulls objects towards the centre of the Earth
lever		Mechanism that rests on a pivot or fulcrum, allowing a smaller force to move a larger load.
mass		The measure of how much matter is inside an object (g/kg)
mechanism		Machines or devices which help to achieve a result.
pulley		Mechanism based on wheels used to reduce the amount of force needed to lift a load
streamlined		The shape of an object that minimises air or water resistance.
Water resistance		The friction force on objects floating or moving in water.
weight		The measure of the force of gravity on the mass of an object.

Key Knowledge:

Lots of different forces can act on objects, causing them to speed up, slow down or change direction.

If all forces acting on an object are equal (balanced), then the object will be stationary (not move).

Gravity is a force that pulls objects towards each other, e.g. people are pulled towards the centre of the Earth.

It is also the force that keeps the Earth orbiting the Sun.

The force of gravity is six times greater on Earth than on the moon.

Friction is the force created when two surfaces interact.



The rougher the surface, the greater the friction force.

Friction is helpful in certain situations but not in others.

Air resistance and water resistance are examples of friction forces that slow movement.

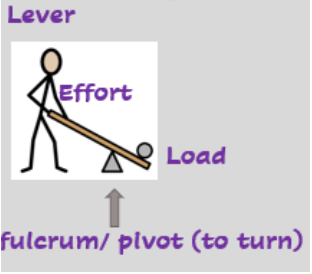
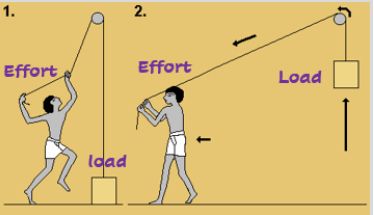
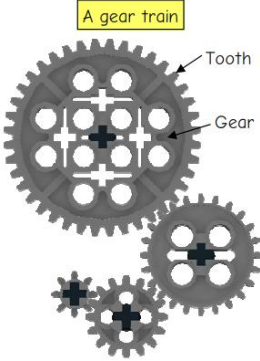
Different mechanisms, including levers, pulleys & cogs, have been invented to manage the forces involved in different tasks.

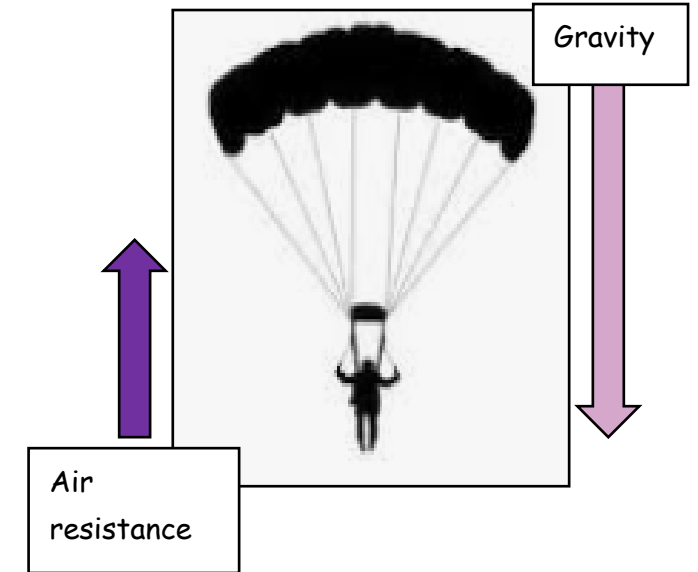
Working Scientifically

	How does the area of a parachute affect the speed at which it falls to Earth?
	How does the shape of a mass slow its sinking in water? How do gears affect the speed and direction of movement? How does using a pulley reduce the force needed to lift a load?

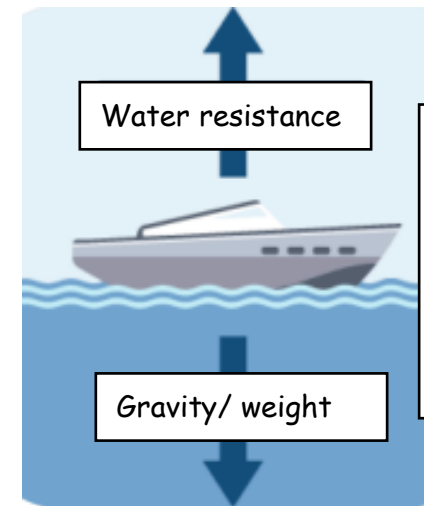
Archimedes: he was one of the earliest scientists to understand the power of the lever mechanism.



<p style="text-align: center;"><b>LEVERS</b></p>  <p style="text-align: center;">Lever</p> <p style="text-align: center;">Effort</p> <p style="text-align: center;">Load</p> <p style="text-align: center;">fulcrum/ pivot (to turn)</p>	<p>A lever is a mechanism to lift heavy weights using the least amount of effort.</p> <p>The larger the lever, the easier it is to lift the load. The fulcrum is where the lever pivots to lift the load.</p>	<p>USES:</p> <ul style="list-style-type: none"> <li>Seesaw</li> <li>Scissors</li> <li>Pliers</li> <li>Crowbar</li> </ul>
 <p style="text-align: center;"><b>PULLEYS</b></p>	<p>These are used like levers to lift loads with less effort but over longer distances.</p> <p>A rope is passed through a pulley which is anchored to a point and then returned to the ground where it is attached to the object to be lifted.</p>	<p>USES:</p> <ul style="list-style-type: none"> <li>Flagpoles</li> <li>Blinds/ Theatre curtains</li> <li>Lifts</li> <li>Construction equipment</li> </ul>
 <p style="text-align: center;"><b>GEARS</b></p>	<p>A gear is a wheel with raised parts called teeth.</p> <p>Gears are designed to work together so that by turning one gear, another gear can be made to rotate.</p> <p>The driver gear provides the power and the gear being turned by it is called the driven gear.</p> <p>Gears let us control how quickly and in what direction something rotates.</p>	<p>USES:</p> <ul style="list-style-type: none"> <li>Cars</li> <li>Windmills</li> <li>Watches</li> <li>Bicycles</li> <li>Pencil sharpeners.</li> </ul>



**Air resistance is less than the gravitational force so the parachutist continues to fall to Earth - but slow enough to land safely.**



The boat will not sink because the forces of gravity & water resistance are balanced.