

Upper Key Stage 2: Forces


Key Vocabulary		What can a force do?	
Gravity	The force that attracts a body towards the centre of the earth.	start to move.	stop moving.
Force	A push or pull upon an object resulting from its interaction with another object.	change direction.	move faster.
Friction	The resistance that one surface or object encounters when moving over another.	Forces can make an object...	
Weight	The measure of the force of gravity on an object.	change its shape.	move more slowly.
Mass	The weight measured by an objects acceleration under a given force or by the force exerted on it by gravity.	Isaac Newton	
Pull force	To draw or haul towards oneself or itself, in a particular direction.	<p>Isaac Newton is considered one of the most important scientists in history. Even Albert Einstein said that Newton was the smartest person that ever lived. During his lifetime Newton developed the theory of gravity, the laws of motion, a new type of mathematics called calculus.</p> <p>Isaac Newton was born in 1643 and became famous for his work on gravity and his laws of motion. The famous story of an apple falling to the ground from a tree illustrates how Newton's work on gravity was inspired by things he observed in the world around him. Newton told the story of seeing an apple fall to the ground from a tree which inspired him to wonder why it fell down, rather than up or across. This led to his work on defining gravity. Newton developed the universal law of gravitation, which states that two things will be attracted to one another and that the mass of each object will affect the amount of attraction.</p>	
Push force	To move something in a specific way by exerting force.		
Water resistance	A force that is caused by water with the force acting in the opposite direction to an object moving through the water.		
Air resistance	A force that is caused by air with the force acting in the opposite direction to an object moving through the air.		
Earth's gravitational pull	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's gravitational pull that keeps us on the ground.		
streamlined	When an object is shaped to minimise the effects of air or water resistance.		
Pulleys	A wheel with a grooved rim around that changes the direction of a force applied to the cord.		
Levers	A rigid bar resting on a pivot that is used to move a heavy or firmly fixed load.		
Gears	A toothed wheel that works with others to alter the relation between the speed of a driving mechanism (e.g. engine) and the speed of the driven parts (e.g. the wheels).		




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Newton's 3 laws of motion

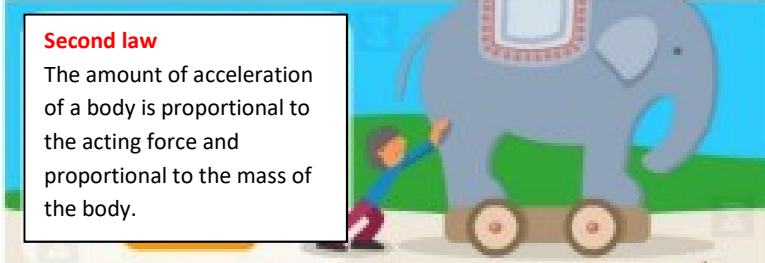
LAW'S OF MOTION



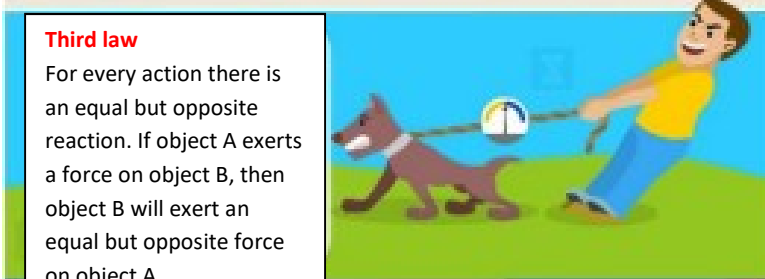
First law
Everybody remains in a state of rest or uniform motion unless acted upon by an external force.



Second law
The amount of acceleration of a body is proportional to the acting force and proportional to the mass of the body.

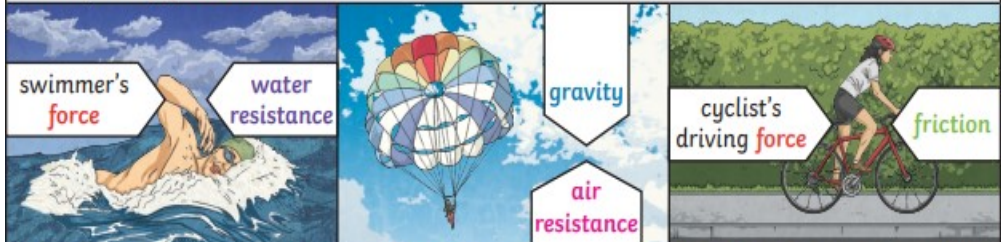


Third law
For every action there is an equal but opposite reaction. If object A exerts a force on object B, then object B will exert an equal but opposite force on object A.


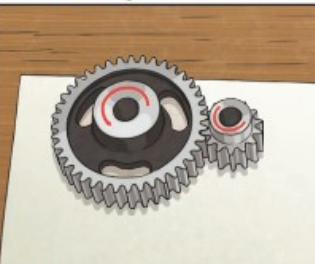



Forces

Examples of **forces** in action:



Water resistance and **air resistance** are forms of **friction**. **Friction** is sometimes helpful and sometimes unhelpful. For example, **air resistance** is helpful as it stops the skydiver hitting the ground at high speed. **Friction** on a bike chain can make the bike harder to pedal so it is unhelpful.

Pulleys	Gears/Cogs	Levers
 <p>Pulleys can be used to make a small force lift a lighter load. The more wheels in a pulley, the less force is needed to lift a weight.</p>	 <p>Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.</p>	 <p>Levers can be used to make a small force lift a lighter load. A lever always rests on a pivot.</p>

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