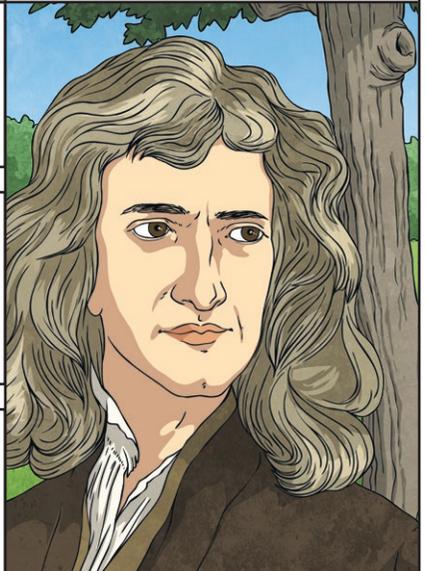


Key Vocabulary	
<b>forces</b>	Pushes or pulls.
<b>gravity</b>	A pulling <b>force</b> exerted by the Earth (or anything else which has <b>mass</b> ).
<b>Earth's gravitational pull</b>	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's <b>gravitational pull</b> which keeps us on the ground.
<b>weight</b>	The measure of the <b>force</b> of <b>gravity</b> on an object.
<b>mass</b>	A measure of how much matter (or 'stuff') is inside an object.

Key Knowledge		Isaac Newton
<b>Forces</b>		
start to move.	stop moving.	
change direction.	move faster.	
change its shape.	move more slowly.	
<b>Forces can make an object...</b>		

The Moon has a smaller **mass** than Earth so the **gravitational pull** on the Moon is smaller than it is on Earth.

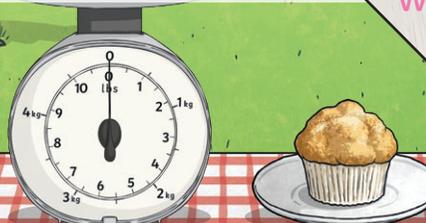


Jupiter has a greater **mass** than Earth so the **gravitational pull** on Jupiter is stronger than on Earth.





**Mass** is how much matter is inside an object. It is measured in kilograms (kg).



**Weight** is how strongly **gravity** is pulling an object down. It is measured in newtons (N).





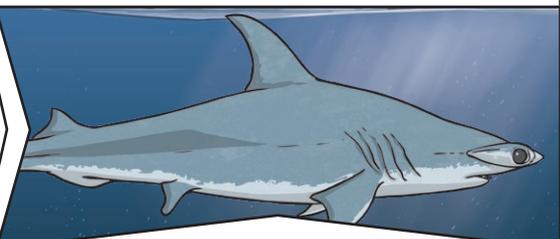
Isaac Newton is famously thought to have developed his theory of **gravity** when he saw an apple fall to the ground from an apple tree.

To look at all the planning resources linked to the Forces unit, [click here](#).

Key Vocabulary	
<b>friction</b>	A <b>force</b> that acts between two surfaces or objects that are moving, or trying to move, across each other.
<b>air resistance</b>	A type of <b>friction</b> caused by air pushing against any moving object.
<b>water resistance</b>	A type of <b>friction</b> caused by water pushing against any moving object.
<b>buoyancy</b>	An object is buoyant if it floats. This is because the weight of the object is equal to the <b>upthrust</b> .
<b>streamlined</b>	When an object is shaped to minimise the effects of <b>air</b> or <b>water resistance</b> .
<b>mechanism</b>	Mechanisms are simple machines with moving parts that change input forces and movement into a set of useful output forces. Examples of <b>mechanisms</b> are pulleys, gears and levers.
<b>upthrust</b>	A <b>force</b> that pushes objects up, usually in water.

It has a pointed nose to cut through the water, and a smooth, low, curved back to allow the water to flow over and around it.

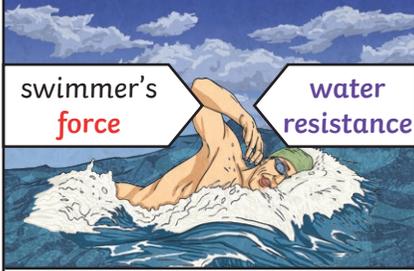
This shark is **streamlined**.



It does not create much **water resistance** so it can move through the water quickly.

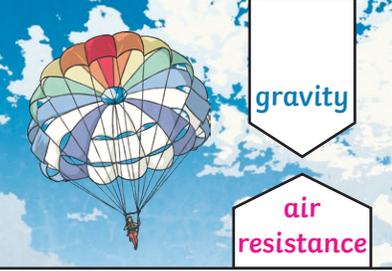
### Key Knowledge

Examples of **forces** in action:



swimmer's **force**

**water resistance**



**gravity**

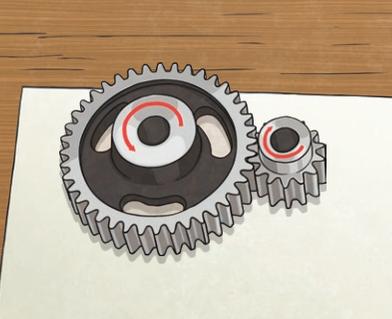
**air resistance**



cyclist's **driving force**

**friction**

**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 <b>force</b> lift a heavier load. The more wheels in a pulley, the less <b>force</b> is needed to lift a <b>weight</b>.</p>	<p>Gears or cogs can be used to change the speed, <b>force</b> 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 <b>force</b> lift a heavier load. A lever always rests on a pivot.</p>