



Y5 Knowledge Organiser – Forces

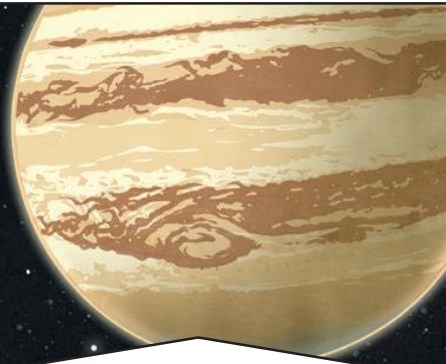
What should I Know by the end of the unit?

- 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.

What I should already know

- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.

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.

Key Vocabulary

forces	Pushes or pulls.
gravity	A pulling force exerted by the Earth (or anything else which has mass).
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 which keeps us on the ground.
weight	The measure of the force of gravity on an object.
mass	A measure of how much matter (or 'stuff') is inside an object.



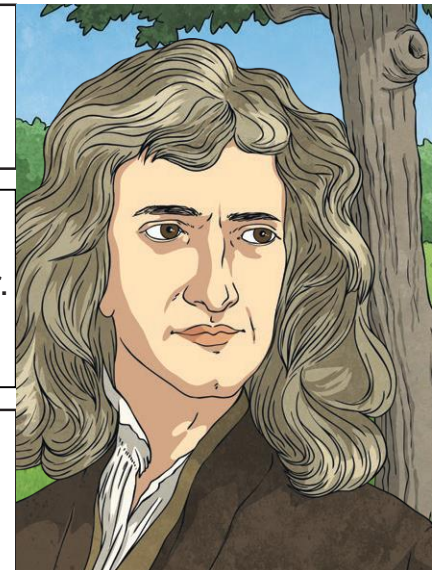
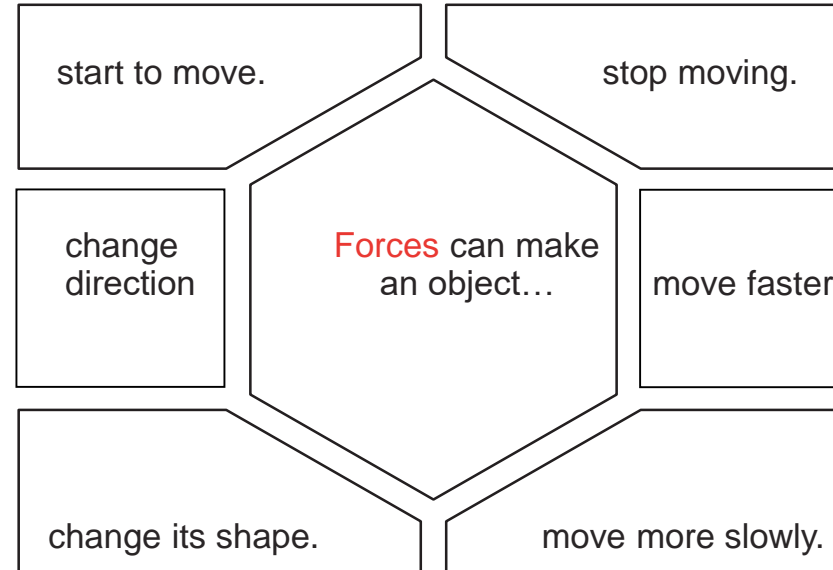
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Forces

Isaac Newton



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 famously thought to have developed his theory of gravity when he saw an apple fall to the ground from an apple tree



Key Vocabulary

friction	A force that acts between two surfaces or objects that are moving, or trying to move, across each other.
air resistance	A type of friction caused by air pushing against any moving object.
water resistance	A type of friction caused by water pushing against any moving object.
buoyancy	An upward force that a liquid applies to objects.
streamlined	When an object is shaped to minimise the effects of air or water resistance.
mechanism	Parts which work together in a machine. Examples of mechanisms are pulleys, gears and levers.

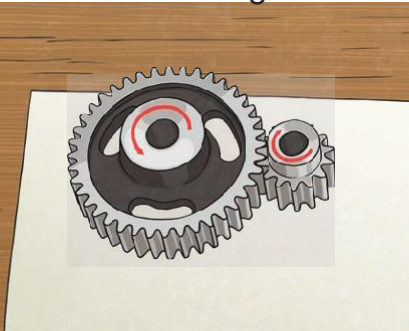
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Pulleys



Gears/Cogs

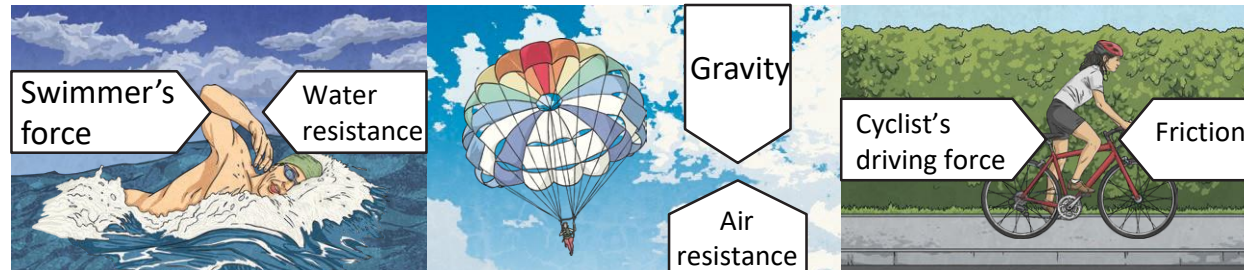


Lever



Key Knowledge

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 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.

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.

Lever can be used to make a small force lift a lighter load. A lever always rests on a pivot.

Pre and Post Assessment

Statement	Pre Assessment response	Post Assessment response
<ul style="list-style-type: none">• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.		
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