

Forces

Unit Vocabulary – Join them up with the correct definition once you have learned it,

force	A type of friction caused by water pushing against any moving object.
gravity	A force that pushes objects up, usually in water.
Gravitational pull	The measure of the force of gravity on an object
weight	An object is buoyant if it floats. This is because the weight of the object is equal to the upthrust.
mass	Pushes or pulls.
friction	When an object is shaped to minimise the effects of air or water resistance
Air resistance	A pulling force exerted by the Earth (or anything else which has mass).
Water resistance	A measure of how much matter (or 'stuff') is inside an object.
streamlined	A type of friction caused by air pushing against any moving object
upthrust	The pull that Earth exerts on an object, pulling it towards Earth's centre.
buoyancy	A force that acts between two surfaces or objects that are moving, or trying to move, across each other

Key Knowledge

Forces

start to move. stop moving. change direction. move faster. change its shape. move more slowly.

Forces can make an object...

Isaac Newton

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.

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).

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 Knowledge

push pull gravity air resistance water resistance

N Newtons

N mass

applied force movement stationary balanced unequal

Forces

opposing

= equal

≠ unequal

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.

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.

Scientific Enquiries

1. What forces act on objects?
2. What is gravity?
3. How does air resistance affect a falling object?
4. How does water resistance affect a moving object?

Exploring/ Problem Solving

Research

Observing over time

Identifying and classifying

Fair and Comparative testing