

# Forces

## Forces

Forces are pushes, pulls, or twists.

Forces can:

- cause an object to start moving or change its speed
- change the direction an object is moving
- change the shape of an object.

## Friction

Friction is the force that acts when two objects rub against each other.

Friction:

- produces heat
- always slows objects down
- is sometimes useful but at other times it is not useful.

## Water resistance

Water resistance is a type of friction that slows down objects moving through water.

Streamlining reduces the effects of water resistance.

## Air resistance

Air resistance is a type of friction that slows down objects moving through air.

Friction always acts in the opposite direction to the way you are moving.

If you are moving downwards, then the friction (air resistance) acts upwards.



## Gravity...

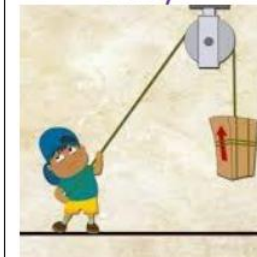
- is the pull of objects towards Earth. This is also called weight and measured in Newtons (N).
- was first described by Isaac Newton.
- keeps planets in orbit around the Sun.



## Key Vocabulary

Forces	Pushes and pulls that can change the motion and shape of an object.
Balanced forces	When opposing forces are equal so an object remains still or steady.
Gravity	A pulling force exerted by one object on another object.
Mass	A measure of how much matter or stuff that an object is made of.
Weight	A measure of the force of gravity that pulls on an object.
Friction	A pushing force resisting an object when it moves over another object.
Air resistance	Friction caused by air pushing against a moving object.
Water resistance	Friction caused by water pushing against a moving object.
Streamlined	When an object is shaped to reduce the effect of air or water resistance.
Mechanism	Parts in a machine that work together to reduce the effort needed.

## Pulleys



Pulleys can be used to make a small **force** lift a heavier load. The more wheels in a pulley, the less **force** is needed to lift a **weight**.

## Gears/Cogs



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.