

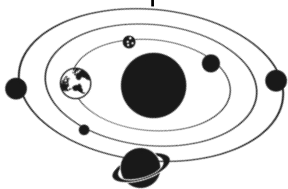
Gravity and weight



A **force** that pulls an object (or huge objects, such as the Moon) towards the centre of the Earth.



Earth's gravity pulls on the Moon and keeps it in orbit.



The Sun's gravity pulls on the Earth and other planets to keep them in orbit.

weight

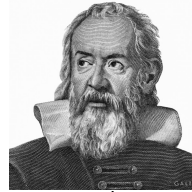
how much gravity pulls on an object
- measured in Newtons (N)

mass

amount of material in an object
- measured in grams (g) or kilograms (kg)



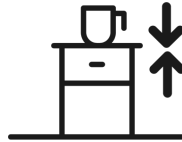
Sir Isaac Newton



Galileo Galilei

balanced forces

the effect of gravity is balanced by the table's upward force

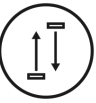


the table pushes back with equal force and the cup is stationary

Forces

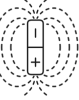
simple contact

push and pull



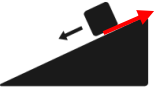
magnetism

magnetic force field



attract and repel

friction



force that opposes movement

makes it difficult for something to start moving and continue moving

air resistance

form of friction



air pushes against object and slows them down

object affected by its surface area and speed

water resistance



push occurs when an object moves through water

upthrust



force acts upwards on objects in liquid or gas

floating is when an object's weight = upthrust of the liquid

sinking is when the weight of an object is greater than the upthrust of the liquid



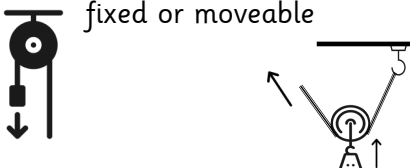
lever

see-saw | scissors | wheelbarrow



pulley

fixed or moveable



gear

driver (8 teeth)
|
follower (16 teeth)
|
ratio 1:2



multiplies the force

gives you a **mechanical advantage**

a smaller force gives a greater effect

increase the force acting on the load

arm

pivot

fulcrum

grooved wheel

axle

rope

toothed wheel

driver gear
|
follower gear