

KNOWLEDGE ORGANISER

PHYSICS: FORCES

Force	Forces can make things speed up, slow down, change direction or change shape.
Contact force	These forces only act when two things are touching.
Non-contact force	These forces can act when things are not touching
Newtons	The units for measuring forces
Gravity	The force that earth uses to pull things towards it
Air resistance	The force that slows something down because air particles hit it.
Magnetic force	The force that magnets use to attract magnetic materials
Friction	The forces that slows things down when they move on a surface e.g. a car on a road.
Upthrust	The force on an object in liquid or gas that pushes them up
Thrust	A pushing force
Elastic	Something which stretching and springs back to its normal shape
Deform	When something changes shape
Compress	When an object is squashed
Streamlined	When something is shaped to reduce friction or air resistance
Mass	The amount of matter something is made of
Weight	The force that acts on a mass because of gravity
Equilibrium	When all of the forces on something are balanced and cancel out.

$Weight (N) = mass (kg) \times gravitational\ field\ strength (N/kg)$

Gravitational field strength on Earth is 10 N/kg

Hooke's law

As the force on a spring gets bigger, it extends more.

If the force doubles, the extension doubles.

Force (N)	Extension (cm)
1	2
2	4
3	6
4	8
5	10
6	12

Unbalanced forces

An object can either:

- Speed up
- Slow down
- Change direction
- Change shape

Balanced forces

An object can either:

- Stop
- Move at a steady speed

Force diagrams

- Draw arrows from the middle of the object using a pencil and ruler.
- The arrow shows the direction of the force.
- The size of the arrow shows the size of the force.