Science: Forces

1. Key words

Centre of mass	Position in the centre of the object where the force of gravity acts on the mass
Resultant force	Residual force in a given direction
Balanced forces	Opposing forces that are equal in magnitude
Unbalanced forces	Opposing forces where one force has a greater magnitude
Pressure	Force applied over a given area

2. Contact and Non-contact forces

Contact	Non-contact
Friction	Gravity
Air resistance	Magnetism
Upthrust	Electrostatic
Thrust	

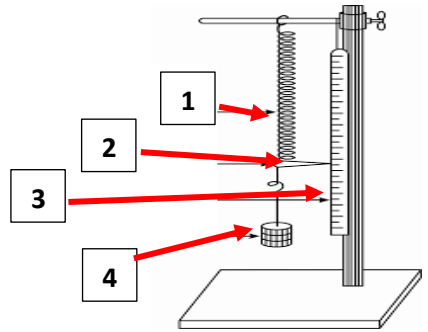
3. Newton's 3 Laws

1	If the resultant force on a stationary object is zero, the object will remain stationary or travel at a constant speed
2	The acceleration of an object is proportional to the resultant force exerted and inversely proportional to the mass of the object (F=ma)
3	For every action, there is an equal and opposite reaction

4. Hooke's Law

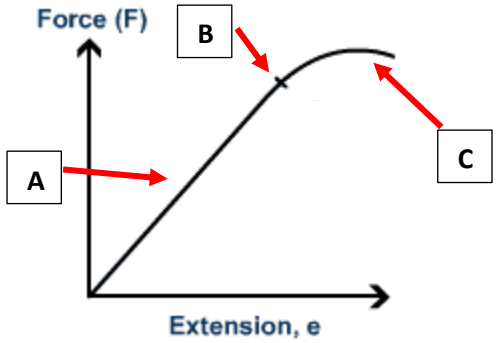
The extension of a stretched spring is directly proportional to the force applied

1	Spring
2	Pointer
3	Metre Ruler
4	Slotted masses



Force (N) = Spring constant (N/M) x extension (m)

A	Linear relation ship (obeys Hooke's Law)
B	Limit of proprtionalilty
C	Not a linear relationship (will no longer return to its original shape)



Science: Forces part 1

5. Equations

Weight	Weight (N) = gravitational field strength (N/kg) x mass (kg)
Resultant Force	Force (N) = mass (kg) x acceleration (m/s^2)
Elastic potential energy	Elastic potential energy (j) = ½ x spring constant (N/m) x extension^2 (m)

6. Pressure in fluids

Pressure = height x density x gravitational field strength

(Pa) (m) (Kg/m^3) (N/kg)

Pressure increases with depth in a liquid.

Pressure decreases with altitude in air