

# Edexcel IGCSE Physics

## 1 - Forces and Motion (Physics only)

### Flashcards

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State an equation linking mass, velocity and momentum.



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$$\text{Momentum}(\text{kg}\cdot\text{m/s}) = \text{Mass}(\text{kg}) \times \text{Velocity}(\text{m/s})$$

$$P = m \times v$$



Explain what is meant by conservation of momentum



# Explain what is meant by conservation of momentum

Total momentum before a collision (or explosion) is equal to total momentum after the collision (or explosion)

**Total momentum before collision = Total momentum after collision**

\*remember momentum is a vector so its direction is important for sign changes



State an equation linking force, change in momentum and time



# State an equation linking force, change in momentum and time

Force = Change in Momentum / Time Taken

$$F = \frac{mv - mu}{t}$$

$$F = \frac{\Delta P}{t}$$



Explain how safety features such as seatbelt, crumple zone and airbags reduce risk of injury in accident





Explain how safety features such as seatbelt, crumple zone and airbags reduce risk of injury in accident

All of these safety features increases the stopping time during a collision by applying a force for longer period of time. Since  $\Delta P = F \times t$  and  $\Delta P$  is constant, as stopping time increases, force applied on the driver decreases therefore risk of injury decreases.

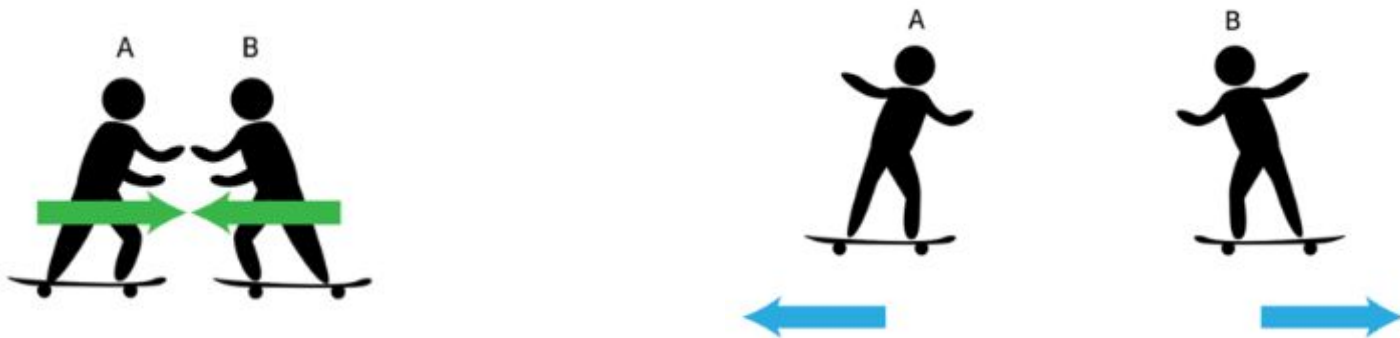


Explain what Newton's third law states about forces



## Explain what Newton's third law states about forces

Newton's third law states "for every action, there is an equal but opposite reaction". This means all forces comes in pairs. Within these pairs, two forces have equal size but they act on different bodies in opposite direction.



What does “centre of gravity” of an object mean?



## What does “centre of gravity” of an object mean?

Centre of gravity is a point where all the weight of the object acts.

For uniform objects, it's in the middle point of the object.

As centre of gravity gets lower, stability of the object increase.



- a) What is meant by “moment”?
- b) When does it occur?
- c) Is it a scalar or vector quantity?



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- b) When does it occur?
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- a) Moment is the turning effect of the force.
- b) It occurs when a force applied away from the pivot(turning point) of the object perpendicularly.
- c) It is a vector quantity. It can be in clockwise or anticlockwise directions.



How do you calculate the moment of a force?





How do you calculate the moment of a force?

Moment = Force x Perpendicular  
distance from pivot

The direction is referred to as either  
clockwise or anti-clockwise



State two conditions for an object to be considered in equilibrium

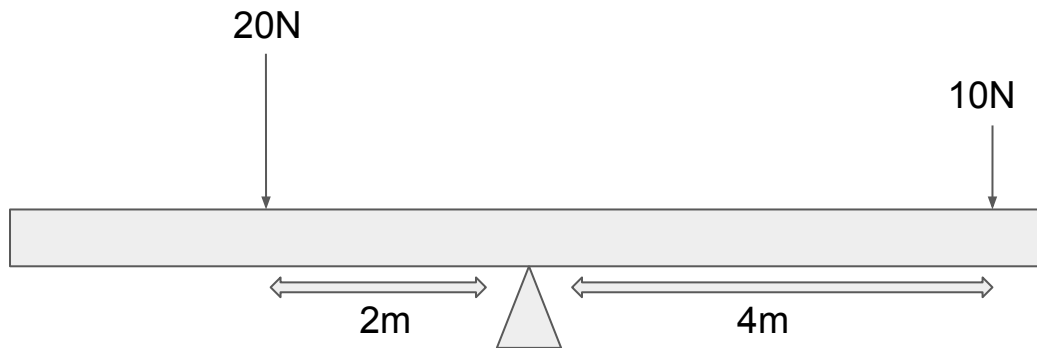


State two conditions for an object to be considered in equilibrium

- Forces must be balanced (no resultant force)
- Clockwise Moment = Anticlockwise Moment



# Will this object rotate? If so in which direction?



# Will this object rotate? If so in which direction?

No. The clockwise and anticlockwise moments are equal, therefore the object remains in equilibrium.

