AQA Physics GCSE

4.5.7 - Momentum (Higher)

Flashcards

State the equation used to calculate an object's momentum. (Higher)

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Momentum = Mass x Velocity

What is the unit used for momentum? (Higher)

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kg m/s

kilogram metres per seconds

In a closed system, what can be said about the momentum before and after a collision? (Higher)

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The total momentum before is equal to the total momentum afterwards.

State an equation linking change in momentum, force and time. (Higher)

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Force x Time = Change in Momentum

$$F \Delta t = m \Delta v$$

What quantity is equal to the force experienced in a collision? (Higher)

What quantity is equal to the force experienced in a collision? (Higher)

The rate of change of momentum.

If an object's change of momentum is fixed, what is the only way to reduce the force that the object experiences? (Higher)

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Increase the length of time over which the change of momentum occurs.

Explain how a seatbelt improves a passenger's safety during a collision. (Higher)

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- Passenger must decelerate from the vehicle's velocity at impact to zero, meaning they undergo a fixed change of momentum
  - The force they experience is equal to the rate of change of momentum
  - Seatbelts increase the time over which the force is applied, reducing the rate of change of momentum and therefore reducing the force experienced