

Laws of Motion

Chapter 1: Laws of Motion · Topic 1

Key Concept

Newton's First Law (inertia) states an object remains at rest or in uniform motion unless acted upon by an external force.

Newton's Second Law states force equals mass times acceleration ($F=ma$), relating the force applied to an object's resulting acceleration.

Newton's Third Law states that for every action, there is an equal and opposite reaction, explaining paired forces between interacting objects.

These laws explain everyday phenomena, from why seatbelts are necessary to how rockets propel themselves through space.

Quick Revision Notes

- First Law (inertia): object stays at rest/motion unless forced.
- Second Law: $F=ma$ (force=mass×acceleration).
- Third Law: action has equal, opposite reaction.
- This explains paired interacting forces.
- Laws explain seatbelt necessity.
- Also explain rocket propulsion.
- These are fundamental physics principles.
- They apply to all motion in classical mechanics.

Practice Questions

- 1 Give an example of Newton's First Law in daily life.
- 2 Calculate force using $F=ma$ for given values.
- 3 Give an example of Newton's Third Law in daily life.
- 4 Discuss why seatbelts relate to inertia.
- 5 Research how rockets use Newton's Third Law.
- 6 Explain all three laws in your own words.