

Universal Law of Gravitation

Chapter 9: Gravitation · Topic 1

Key Concept

This universal force explains why the Moon orbits the Earth (Earth's gravity constantly pulls the Moon towards it, creating a curved orbital path rather than a straight line), why objects fall towards the ground, and why planets orbit the Sun. Gravitational force also explains ocean tides, caused primarily by the Moon's gravitational pull creating bulges in Earth's oceans on the side facing the Moon and, to a lesser extent, on the opposite side.

Quick Revision Notes

- Newton's law of gravitation: force is proportional to the product of masses, inversely proportional to distance squared.
- Gravitational force explains why the Moon orbits Earth, and why objects fall.
- Gravitational force weakens with distance but never reaches exactly zero.
- Ocean tides are caused primarily by the Moon's gravitational pull on Earth's oceans.

Practice Questions

- 1 State the universal law of gravitation in your own words.
- 2 Explain how the Moon's gravity causes ocean tides on Earth.
- 3 Why does the Moon continuously orbit Earth instead of flying off in a straight line?