

Practice and Revision - Gravitation

Chapter 1: Gravitation · Topic 2

Key Concept

Newton's law of universal gravitation states that every object attracts every other object with a force proportional to their masses and inversely proportional to the square of the distance between them.

The formula $F=G(m_1 \times m_2)/r^2$ calculates gravitational force, where G is the gravitational constant, m1 and m2 are masses, and r is distance.

Gravity causes objects to fall towards Earth's centre, with acceleration due to gravity (g) being approximately 9.8 m/s^2 near Earth's surface.

Gravitation also explains planetary motion, keeping planets in orbit around the sun and moons in orbit around planets.

Quick Revision Notes

- Gravitation: universal attraction force.
- Proportional to masses, inversely to distance squared.
- Formula: $F=G(m_1 \times m_2)/r^2$.
- G = gravitational constant.
- Gravity: acceleration $\sim 9.8 \text{ m/s}^2$ near Earth.
- Causes objects to fall towards Earth's centre.
- Explains planetary motion, orbits.
- Keeps planets around sun, moons around planets.

Practice Questions

- 1 Calculate gravitational force between two given masses.
- 2 Discuss why objects fall towards Earth.
- 3 Research the value of g on the Moon versus Earth.
- 4 Discuss how gravitation keeps planets in orbit.
- 5 Explain Newton's law of gravitation in your own words.
- 6 Discuss what would happen without gravity.