Year 7 Forces – Gravity

Name of unit

Expected Outcomes

- Students will understand that gravity is a non-contact force that acts between objects with mass.
- Students will distinguish between mass and weight and know how they are measured.
- Students will use the equation **Weight = Mass × Gravitational Field Strength**.
- Students will describe how gravity affects objects on Earth and in space.
- Students will make measurements using Newton meters and scales.

Developmental Focus Opportunities

- Mathematical reasoning: Calculating weight using the formula and understanding units (N and kg).
- Scientific inquiry: Designing experiments to measure the effect of gravity on different masses.
- Critical thinking: Explaining how gravity varies on different planets.
- Practical skills: Using balances and Newton meters with precision.

Key Learning Points	**Powerful Knowledge**
• Gravity is a force that attracts all objects with mass. • Mass is the amount of matter in an object; weight is the force of gravity acting on that mass. • The gravitational field strength on Earth is approximately 10 N/kg. • Gravity keeps planets and satellites in orbit.	• Knowing how gravity governs motion both on Earth and in the universe. • Applying knowledge of gravity to explain space travel, orbits, and planetary motion. • Using numerical calculations to understand scientific phenomena. • Building understanding for future learning in physics and astronomy.
Subject-Specific Vocabulary	**Reading Opportunities**
• Gravity • Mass • Weight • Force • Newton • Newton meter • Gravitational field strength	• Fact sheets or articles about space travel and planetary gravity. • Simple texts on the differences in weight on different planets. • Profiles of scientists such as Isaac Newton.

• Orbit	
Possible Misconceptions	**Cross-Curricular Links**
• Confusing mass with weight. • Thinking gravity only exists on Earth. • Believing heavier objects fall faster than lighter ones. • Assuming gravity is the same everywhere in the universe.	• **Maths**: Calculating weight, converting units, using formulas. • **Geography**: Satellite imagery, Earth's shape and gravity. • **History**: Newton’s discovery of gravity and its historical significance.