Gravity and our place in the universe

Teacher / technician

YEAR 11 / LESSON 105 / PHYSICS + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Shared Physics / Double Award: 8.1–8.4. Cosmic structure, gravitational field strength and orbital motion.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Booklets	1 per learner	30
Cards, ruler and calculator	1 set per pair	15 sets

Immediate safety

Paper models only. No bungs, swinging masses, released strings or solar observation. Never look at the Sun through optical equipment.

Preparation and delivery

Read alongside the student method

YEAR 11 / LESSON 105 / PHYSICS + SCIENCE (DOUBLE AWARD)

1. Use explicit hierarchy labels and supplied g values.

2. Require separate force and velocity arrows; do not suggest that gravity acts tangentially.

Close of lesson

• Collect cards and retain calculations.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- The Milky Way.
- 19.6 N.
- 3.2 N.
- No.
- Toward the attracting body.
- Tangentially to the path.

References and provenance

Pearson Physics specification

NASA: stars

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.