Orbits: direction, radius and period

Teacher / technician

YEAR 11 / LESSON 106 / 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, 8.4–8.6. Orbital paths and $v = 2\pi r/T$ for circular 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 and graph paper	1 each per learner	30 of each
Drawing tools and calculators	1 set per pair	15 sets

Immediate safety

Paper models only. No swinging bungs, strings, rotating masses or released projectiles. Use compasses carefully or a circle stencil.

Preparation and delivery

Read alongside the student method

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1. Check radius versus altitude in every diagram and state the circular-orbit assumption.

2. Use the same inertial reference frame for force arrows and distinguish a typical comet example from every possible comet path.

Close of lesson

- Return drawing tools 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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- Tangent to the circle.
- Toward the central body.
- Its direction changes.
- About 7.33×10^3 m s^{-1}.
- The centre of the attracting body.
- No.

References and provenance

Pearson Physics specification

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.