From filtrate to urine

Teacher / technician

YEAR 11 / LESSON 71 / BIOLOGY ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Original learning tasks; no supplied numerical example represents class measurements.

Coverage and delivery

Biology only: 2.78B–2.79B. Urine composition and water regulation.

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
Student booklets	1 per learner	30
Paper model sets / rulers	1 per pair	15 of each

Immediate safety

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Preparation and delivery

Read alongside the student method

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1. Provide 30 booklets and 15 sets of paper or reusable modelling materials.

2. Keep answers separate until learners have attempted the tasks; discuss the reasons for corrections.

Close of lesson

• Return models and keep the corrected work.

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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- Water, urea and ions.
- The proximal convoluted tubule.
- No; it may be more concentrated.
- Water volume can decrease.
- Increasing collecting-duct water permeability.
- No; tubular processes modify filtrate.

References and provenance

Pearson Biology 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.