Food tests: starch and reducing sugars

Teacher / technician

YEAR 10 / LESSON 7 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Qualitative comparison. A negative result means not detected under these conditions; it does not establish complete absence. Do not interpret Benedict's colour as an exact concentration.

Coverage and delivery

Shared Biology / Double Award: 2.7–2.9. Carbohydrates and food tests.

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 / eye protection	2 of each per pair	30 of each
Tube / holder / rack / tile set	4 tubes, 1 holder, 1 rack, 1 tile per pair	60 tubes; 15 of each accessory
Four sample stocks	about 3 cm^3 each per pair	60 cm^3 each including spare
Benedict's reagent	8 cm^3 per pair	150 cm^3 including spare
Dilute iodine / droppers	small dropper bottle per pair	15 bottles; about 30 cm^3 total
Controlled hot-water baths	shared, with stable tube support	3–5 stations; confirm capacity

Immediate safety

Wear eye protection. Do not taste food or reagents. Hot water and tubes burn: use holders and a rack, keep tubes open, and let them cool. Report splashes immediately and rinse affected skin with water. Avoid food allergens and follow the teacher's spill instructions.

Preparation and delivery

Read alongside the student method

YEAR 10 / LESSON 7 / BIOLOGY + SCIENCE (DOUBLE AWARD)

1. Prepare known glucose and starch standards, water and one food extract; identify allergies and use no tasting. Verify controls with the actual reagent batch before class.

2. Provide ready-to-use qualitative Benedict's reagent and dilute iodine. Check supplier labels and local risk assessment; students do not prepare stocks.

3. Set and verify the 80 °C baths, arrange stable racks and safe access, and pilot the five-minute heating period. Retain copper-containing waste for the approved disposal route.

Close of lesson

- Collect copper-containing Benedict's mixtures in the labelled waste container; follow the school's disposal route.
- Return iodine mixtures as directed, rinse apparatus, clean the bench and wash hands.

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

YEAR 10 / LESSON 7 / BIOLOGY + SCIENCE (DOUBLE AWARD)

- Carbon, hydrogen and oxygen.
- Blue-black.
- Water checks for contamination/negative response; glucose checks that the heated reagent gives the expected positive response.
- No. Other reducing sugars can also give a positive result.
- It makes comparisons more consistent; this still does not turn the test into a calibrated concentration assay.
- They are large carbohydrates made from many glucose units.

References and provenance

Pearson Biology specification

Pearson lab-book sample: food-test principles

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.