Food tests: proteins and lipids

Teacher / technician

YEAR 10 / LESSON 8 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Qualitative tests only. An emulsion is evidence for lipid in a suitably controlled clear extract; cloudiness alone is not sufficient.

Coverage and delivery

Shared Biology / Double Award: 2.7–2.9. Proteins, lipids 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
Tubes / racks / droppers	10 tubes and 1 rack per pair	150 tubes; 15 racks; dedicated droppers
Biuret reagent	8 cm^3 per pair	150 cm^3 including spare
Ethanol	up to 6 cm^3 per pair	120 cm^3 including spare
Protein standard / food extract / water	small labelled portions	60 cm^3 each sample; 250 cm^3 water
Oil	small drop per test	10 cm^3 class stock
Solvent and copper waste containers	separate labelled containers	1 of each

Immediate safety

Wear eye protection. Biuret reagent is alkaline: avoid skin and eye contact and report splashes immediately. Ethanol is highly flammable: no ignition sources or heating. Use small quantities, keep stock capped, and do not taste any sample.

Preparation and delivery

Read alongside the student method

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1. Select a known protein standard and declare any allergens; staff prepare samples and provide ready-made Biuret reagent. Check all current supplier labels.

2. Run positive and negative controls beforehand. Keep ethanol at a separate cool station with ignition sources removed; dispense only small class portions.

3. Provide clearly separate copper and solvent waste containers. Do not reuse the hot-water-bath arrangement from Lesson 7.

Close of lesson

• Keep ethanol-containing waste in the designated solvent-waste container, away from ignition sources.

• Collect copper-containing Biuret waste separately as directed; do not mix waste streams. Clean equipment 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

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• Amino acids.

• Fatty acids and glycerol.

• A violet/lilac colour.

• Pre-existing suspended solids could be mistaken for a lipid emulsion; the control checks that the solvents themselves remain clear.

• Ethanol is highly flammable, including its vapour.

• Yes. Foods are mixtures; separate aliquots can show different constituents.

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.