Gas tests: procedure and evidence

Teacher / technician

YEAR 10 / LESSON 34 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Reference evidence task; no live gases, gas generation, bleach/acid mixtures or ignition.

Coverage and delivery

2.44: describe tests for hydrogen, oxygen, carbon dioxide, ammonia and chlorine.

Allow about 50 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
Booklet / writing tools	1 per learner	30 sets
Gas-name cards	5 per pair	75 cards
Optional recording/display	Teacher-controlled	1 setup

Immediate safety

Desk activity only. Do not smell, prepare, mix or ignite gases. Any optional video depicts a separate controlled demonstration.

Preparation and delivery

Read alongside the student method

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1. Prepare 30 booklets and 15 sets of five gas-name cards, or use the table as the card set. This edition is an evidence lesson; requisition no gas cylinders, sealed gas tubes, bleach, acid or ignition equipment.

2. Optional recordings must be previewed and attributed. A missing clip does not prevent the reference activity; do not substitute invented observations.

3. Remove the inherited unspecified sealed-gas setup and mixed bleach/acid requisition. A future live demonstration would need its own complete approved method and local assessment; it is outside this edition.

4. Spend 10 minutes on splint distinctions, 15 on the five-gas guide, 15 on evidence reasoning and 10 on correction. Do not demonstrate gas identification by smelling.

5. Emphasise that simply extinguishing a flame does not identify carbon dioxide uniquely. The paper must be damp for the expected acid/base or bleaching chemistry.

Close of lesson

• Keep the corrected guide; return cards and recycle paper.

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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• A lighted splint is held at the mouth of a small hydrogen sample; a squeaky pop is the expected positive result. This answer describes the test and is not permission to ignite an unknown mixture.

• Oxygen relights a glowing, not already flaming, splint. Hydrogen is tested with a lighted splint.

• Pass the gas through limewater; a white cloudiness/precipitate indicates carbon dioxide in this test set. Several gases extinguish flames.

• Ammonia turns damp red litmus blue. Smell is neither a required test nor a safe way to identify unknown gas.

• Chlorine bleaches damp litmus white; blue paper can first turn red. A blue result from damp red litmus instead supports ammonia.

• Water on the paper allows the relevant dissolved-gas chemistry. Reference evidence supports learning the test but does not establish the identity or purity of an actual sample.

References and provenance

Pearson Chemistry specification

RSC teaching gas tests

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.