Reactions of Group 1 metals

Teacher / technician

YEAR 10 / LESSON 18 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Recorded teacher demonstrations. No pupil handling, live reaction recipe or gas-testing task. Reuse this evidence in Lesson 19.

Coverage and delivery

2.1–2.2: similarities of lithium, sodium and potassium with water; reactions with air and water show a reactivity trend.

Allow about 45 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 booklet	1 per student	30
Periodic table and writing tools	1 set per pair	15 sets
Computer, display and internet	1 teacher setup	1 setup

Immediate safety

Recorded/reference activity only. Do not obtain, handle, open, heat or smell the substances shown. No live reactions, gas tests or chemical waste are part of this lesson.

Preparation and delivery

Read alongside the student method

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1. Open the linked RSC reactivity-of-metals practical videos and preview the alkali-metal sections. Select footage that actually shows Li, Na and K with water and freshly exposed surfaces in air; omit unshown features from assessment.

2. This requisition is for recorded demonstrations only: one display setup and 30 booklets. Do not order or set out alkali metals, scalpels, troughs or ignition equipment for this version.

3. Allow 5 minutes to predict, 15 to view/replay, 10 to separate evidence and inference, 10 for equations and 5 to compare. Retain the completed evidence table for Lesson 19.

4. If video playback fails, use teacher-prepared notes explicitly labelled reference descriptions rather than pretending the class made observations. Do not improvise a live demonstration.

5. A separate, approved live demonstration needs trained staff, a current authoritative procedure and local risk assessment. The old pea-sized quantity and copied apparatus list are not part of this recorded lesson.

Close of lesson

• Keep evidence and corrections together. Return shared cards/counters and equipment; close the recording or reference pages. No chemical waste is generated.

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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• Typical recorded evidence includes floating/movement and bubbles. Fresh surfaces lose their shine in air. Exact observations depend on the selected footage; no mark for invented results.

• Sodium + water → sodium hydroxide + hydrogen. $2Na + 2H_2O \rightarrow 2NaOH + H_2$. Analogous balanced equations replace Na with Li or K.

• An alkaline indicator result supports hydroxide formation. Bubbles alone do not identify hydrogen; naming it requires chemical knowledge or a gas-test result.

• Reactivity increases Li < Na < K. Faster/more vigorous behaviour supports the qualitative trend, but samples and recording conditions may differ.

• Sodium may melt into a moving ball; potassium may ignite with a lilac flame. These are expected reference possibilities, not compulsory observations in every clip.

• Flame occurrence and visibility vary with conditions. A film comparison does not measure a controlled rate; matching amounts, temperature and other conditions would be needed.

References and provenance

Pearson Chemistry specification

RSC: reactivity of metals practical videos

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.