

8.2 Group I properties

Name: _____ Class: _____ Date: _____

Total: 8 marks

Objective

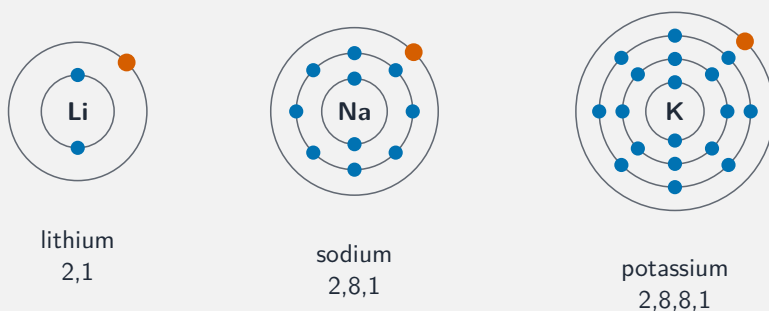
Build the skills to answer exam questions on **Group I —the alkali metals** 碱金属—their properties, **trends** 趋势 down the group, and reaction with water.

You must be able to:

- describe the alkali metals (soft, one outer electron)
- state the trends in melting point, density and reactivity down the group
- predict the properties of an unfamiliar Group I element

1 Worked examples

■ Trends down Group I



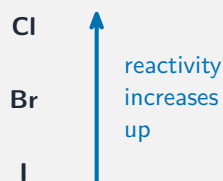
every Group I atom has **one** electron in its outer shell (shown in orange), so they react in similar ways

Every Group I atom has one outer electron —why they react similarly

Group I



Group VII



Down Group I: melting point decreases, density increases, reactivity increases

- react with water → metal hydroxide + hydrogen (more violent down the group).

2 Practice

2.1 State the number of outer-shell electrons in a Group I atom. [1]

2.2 State the trend in reactivity going down Group I. [1]

3 Exam-style questions

3.1 Going down Group I, the melting point: [1]

- **A** increases
 - **B** decreases
 - **C** stays the same
 - **D** increases then decreases
-

3.2 Rubidium is below potassium in Group I.

(a) Predict how its reactivity compares with potassium. [1]

(b) Predict how its melting point compares with potassium. [1]

3.3 Sodium reacts with water.

(a) Name the two products. [2]

(b) Explain why potassium reacts more violently than sodium. [1]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **8.2 Group I properties** past-paper sheet in the Library, or try these in **Practice mode**:

- 0620/21 N25 —Q24 (Group I)
- 0620/22 N25 —Q23 (alkali metals)

Solutions

2.1 one.

2.2 reactivity increases.

3.1 B. Melting point decreases down Group I.

3.2 (a) more reactive than potassium.

(b) lower melting point than potassium.

3.3 (a) sodium hydroxide; hydrogen.

(b) reactivity increases down the group, so potassium is more reactive than sodium.