

# 8 The Periodic Table – Part 1

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Vocabulary 词汇

*Write each word three times. 把每个单词抄写三遍。*

| English        | 中文  | Write it 3 times (English) |       |       |
|----------------|-----|----------------------------|-------|-------|
| Periodic Table | 周期表 | _____                      | _____ | _____ |
| elements       | 元素  | _____                      | _____ | _____ |
| proton number  | 质子数 | _____                      | _____ | _____ |
| periods        | 周期  | _____                      | _____ | _____ |
| groups         | 族   | _____                      | _____ | _____ |
| period         | 周期  | _____                      | _____ | _____ |
| metals         | 金属  | _____                      | _____ | _____ |
| non-metals     | 非金属 | _____                      | _____ | _____ |
| group          | 族   | _____                      | _____ | _____ |
| alkali metals  | 碱金属 | _____                      | _____ | _____ |
| soft           | 柔软  | _____                      | _____ | _____ |
| reactivity     | 活泼性 | _____                      | _____ | _____ |
| melting point  | 熔点  | _____                      | _____ | _____ |
| density        | 密度  | _____                      | _____ | _____ |

## Recall

The **Periodic Table** 周期表 arranges all the **elements** 元素 in order of **proton number** 质子数. It is the chemist's map.

- The rows are **periods** 周期; the columns are **groups** 族.
- Elements in the same group behave alike.

Nothing here is hard — it just reads the table.

## New ideas

Read these first, then do the Practice.

### ■ 1 The layout

- across a **period** 周期 (a row): **metals** 金属 on the left → **non-metals** 非金属 on the right.
- in a **group** 族 (a column): elements have the **same number of outer electrons**, so they react in similar ways.

The **group number** equals the charge of the ions: Group I → +1, Group II → +2, Group VII → -1.

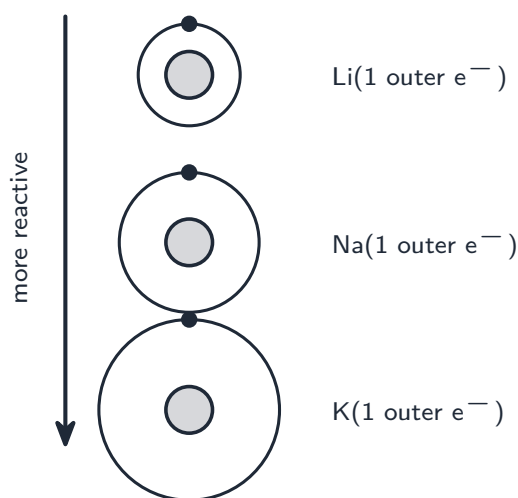
| I | II |  |  |  |  | VIII |  |
|---|----|--|--|--|--|------|--|
|   |    |  |  |  |  |      |  |
|   |    |  |  |  |  |      |  |
|   |    |  |  |  |  |      |  |
|   |    |  |  |  |  |      |  |

metals                      non-metals

### ■ 2 Group I — the alkali metals

The **alkali metals** 碱金属 (lithium, sodium, potassium) are **soft** 柔软 metals with **one** outer electron. Going **down** the group:

| Property         | Trend down the group |
|------------------|----------------------|
| reactivity 活泼性   | increases            |
| melting point 熔点 | decreases            |
| density 密度       | increases            |



**Watch out:** elements in a group share properties because they have the **same number of outer electrons** (the group number), not the same total. Group I gets **more** reactive *down* the group — the opposite of Group VII.

## Practice

Try these in order.

**8.1** In what order are the elements arranged in the Periodic Table? [1]

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**8.2** What are (a) the rows, (b) the columns called? [2]

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**8.3** Why do elements in the same group have similar chemical properties? [2]

**8.4** What charge of ion does a Group I element form? [1]

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**8.5** State the trend in reactivity going down Group I.

[1]

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**8.6 Challenge.** Potassium is below sodium in Group I. Predict whether potassium is more or less reactive than sodium, and explain why in terms of the outer electron. [3]