

# 8.1 Arrangement of elements

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

Total: 7 marks

**KEY WORDS** periodic table 周期表 • elements 元素 • groups 族 • ions 离子 • electrons 电子

## Objective

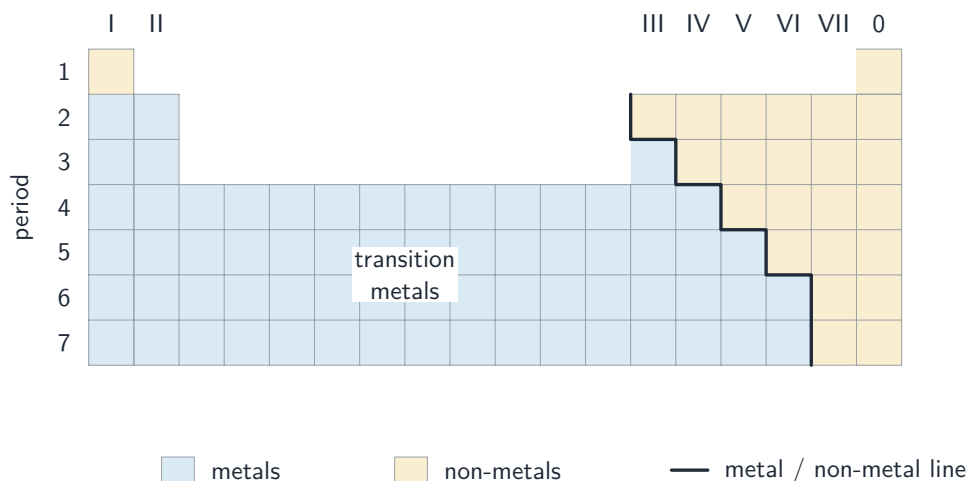
Build the skills to answer exam questions on the **arrangement of elements** 元素排列 — order, **groups** 族 and **periods** 周期, and using position to predict properties.

**You must be able to:**

- describe the order (increasing proton number) and what groups/periods are
- link group number to ion charge and outer electrons
- explain why elements in a group have similar properties

## 1 Worked examples

### ■ Reading the Periodic Table



*Groups = columns, periods = rows; metals on the left, non-metals on the right*

| Group I |                                                                                                                      | Group VII |
|---------|----------------------------------------------------------------------------------------------------------------------|-----------|
| Li      | <br>reactivity<br>increases<br>down | Cl        |
| Na      |                                                                                                                      | Br        |
| K       |                                                                                                                      | I         |

*Trends in properties across groups and periods*

- order = increasing proton number.
- **group number = outer-shell electrons = ion charge** (Group I  $\rightarrow +1$ , Group VII  $\rightarrow -1$ ).
- same group  $\rightarrow$  same outer electrons  $\rightarrow$  similar properties.

## 2 Practice

2.1 State what the elements are arranged in order of. [1]

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2.2 State the charge of the ion formed by a Group II element. [1]

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## 3 Exam-style questions

3.1 Elements in the same group have similar chemical properties because they have the same: [1]

- |   |   |
|---|---|
| A | B |
| C | D |
- A** number of shells
  - B** number of outer-shell electrons
  - C** mass number
  - D** number of neutrons

3.2 An element is in Group VII, Period 3.

(a) State the number of outer-shell electrons it has. [1]

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(b) State the charge of the ion it forms. [1]

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**3.3** Explain how the Periodic Table lets you predict an element's properties. [2]

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