8 Groups and trends – Part 2

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)		
Group VII	第七族			
transition elements	过渡元素			
noble gases	稀有气体			
halogens	卤素			
diatomic	双原子			
coloured compounds	有色化合物			
catalysts	催化剂			
monatomic	单原子			

Recall

From Part 1 you know Group I gets more reactive down the group. Here we look at **Group VII** 第七族 (the opposite trend), the **transition elements** 过渡元素, and the **noble gases** 稀有气体.

- Group VII = the **halogens** 卤素.
- The transition metals sit in the middle of the table.

Nothing here is hard —it just compares groups.

New ideas

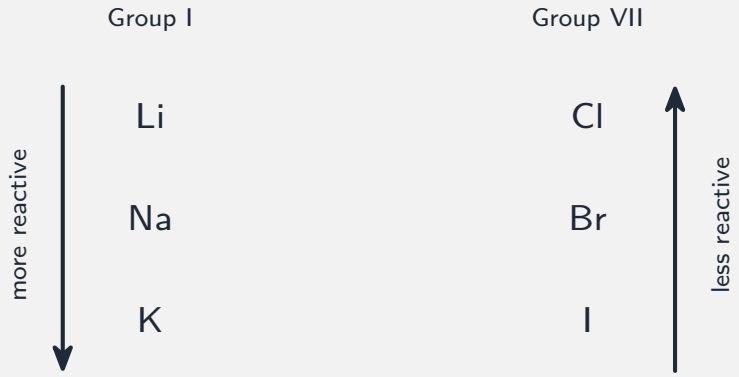
Read these first, then do the Practice.

1 Group VII —the halogens

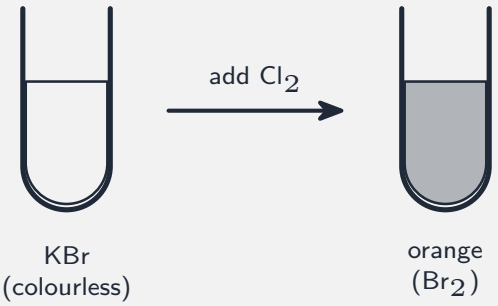
The **halogens** 卤素 (chlorine, bromine, iodine) are **diatomic** 双原子 non-metals:

Halogen	At room temperature
chlorine	pale yellow-green **gas**
bromine	red-brown **liquid**
iodine	grey-black **solid**

Going **down** Group VII, **reactivity decreases** —the **opposite** of Group I.



A more reactive halogen **displaces** a less reactive one from its salt:



2 Transition elements and noble gases

- **transition elements** 过渡元素 (middle of the table) have **high melting points**, form **coloured compounds** 有色化合物, are good **catalysts** 催化剂, and have **variable oxidation numbers** (e.g. iron(II) and iron(III)).
- **noble gases** 稀有气体 (Group VIII) are **unreactive**, **monatomic** 单原子 gases —they already have a **full outer shell**.

Watch out: Group VII (halogens) gets **less** reactive *down* the group —the opposite of Group I. A more reactive halogen **displaces** a less reactive one from its salt. Noble gases are unreactive because their outer shell is already **full**.

Practice

Try these in order.

8.1 Give the colour and state of (a) chlorine, (b) iodine. [2]

8.2 State the trend in reactivity going down Group VII. [1]

8.3 Write the equation for chlorine reacting with potassium bromide, and state the colour change. [2]

8.4 State two properties of the transition elements. [2]

8.5 Why are the noble gases unreactive? [1]

8.6 Challenge. Will bromine displace chlorine from potassium chloride solution? Explain your answer. [2]