IGCSE CHEMISTRY • EXERCISE SHEET

8.3 Group VII properties

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

Objective

Build the skills to answer exam questions on **Group VII —the halogens** 卤素—their appearance, trends, and **displacement reactions** 置换反应.

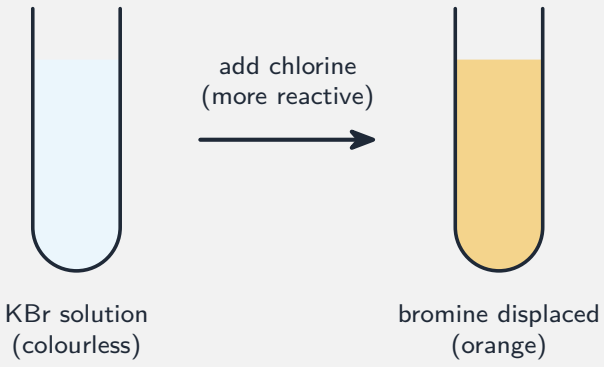
You must be able to:

- describe the halogens (diatomic, colours/states) and the trends down the group
- write and explain a halogen displacement reaction
- predict the products of a displacement

1 Worked examples

Displacement

Down Group VII the reactivity decreases (opposite to Group I)



A more reactive halogen displaces a less reactive halide from its solution

> $\mathbf{Cl_2 + 2KBr \rightarrow 2KCl + Br_2}$ —chlorine (more reactive) displaces bromine.

2 Practice

2.1 State the colour and state of chlorine at room temperature. [1]

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

3 Exam-style questions

3.1 Which halogen is the most reactive? [1]

- **A** chlorine
- **B** bromine
- **C** iodine
- **D** they are equal

3.2 Chlorine is bubbled into colourless potassium iodide solution.

(a) Write the equation for the reaction. [2]

(b) State and explain the colour change. [2]

3.3 Predict whether bromine will displace chlorine from potassium chloride, and explain your answer. [2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **8.3 Group VII properties** past-paper sheet in the Library, or try these in **Practice mode**:

- 0620/21 N25 —Q25 (Group VII)
- 0620/22 N25 —Q24 (halogens / displacement)

Solutions

2.1 a pale yellow-green gas.

2.2 reactivity decreases.

3.1 **A**. Chlorine is the most reactive (reactivity decreases down the group).

3.2 (a) $Cl_2 + 2KI \rightarrow 2KCl + I_2$.
(b) the solution turns brown/orange; because iodine has been displaced/formed.

3.3 no —bromine will not displace chlorine; because chlorine is more reactive than bromine, so only a more reactive halogen can displace a less reactive one.