

# The Periodic Table: Group 7

The key areas of study in this topic are:

- Characteristic physical properties of the halogens
- Reactivity of the halogens and their compounds
- Characteristic reactions of halide ions

By the end of this topic I should be able to:

	Start	End
Know the existence of halogens as diatomic molecules and explain the trend in the boiling points of Cl <sub>2</sub> , Br <sub>2</sub> and I <sub>2</sub> , in terms of induced dipole–dipole interactions		
Understand that Group 7 elements have an outer shell electron configuration of s <sup>2</sup> p <sup>5</sup> and that they gain one electron in many redox reaction to form 1- ions		
Describe the trend in reactivity of the halogens of Cl <sub>2</sub> , Br <sub>2</sub> and I <sub>2</sub> , as illustrated by their reaction with other halide ions		
Explanation of the trend in reactivity of the halogens from the decreasing ease of forming 1– ions, in terms of attraction, atomic radius and electron shielding		
Explain the term disproportionation as oxidation and reduction of the same element, illustrated by: <ul style="list-style-type: none"> <li>• the reaction of chlorine with water as used in water purification</li> <li>• the reaction of chlorine with cold, dilute aqueous sodium hydroxide, as used to form bleach</li> <li>• reactions analogous to those listed above</li> </ul>		
Describe the benefits of chlorine use in water treatment (killing bacteria) contrasted with associated risks (e.g. hazards of toxic chlorine gas and possible risks from formation of chlorinated hydrocarbons)		
Describe and understand the test for different halide ions, by the precipitation reactions with aqueous silver ions, followed by aqueous ammonia		
Write ionic equations for the precipitation reactions of halide ions with aqueous silver ions.		

In all topic areas you should be able to demonstrate and apply your knowledge and understanding.

