

**2.3 GROUP 7(17) THE HALOGENS:
TRENDS DOWN THE GROUP**

Halogens gain an electron when they react

Weaker nuclear attraction

More electron shielding and larger atomic radius

Reactivity Decreases

Electronegativity Decreases

Increasing atomic radius and electron shielding

Electrons are less attracted to the larger atoms

Boiling Point Increases

Relative mass of the molecules increases

Van der Waals increase in strength

Demonstrated by physical states

- Fluorine (F₂) – yellow gas
- Chlorine (Cl₂) – green gas
- Bromine (Br₂) – brown liquid
- Iodine (I₂) – grey solid

Less Oxidising

Displacement reactions

Halogen displaces any halide which is below it in the periodic table

The more reactive halogen ends up in the compound
E.g. $Br_2 + 2I^- \rightarrow 2Br^- + I_2$

Demonstrated by the reactions of sodium halides with sulfuric acid

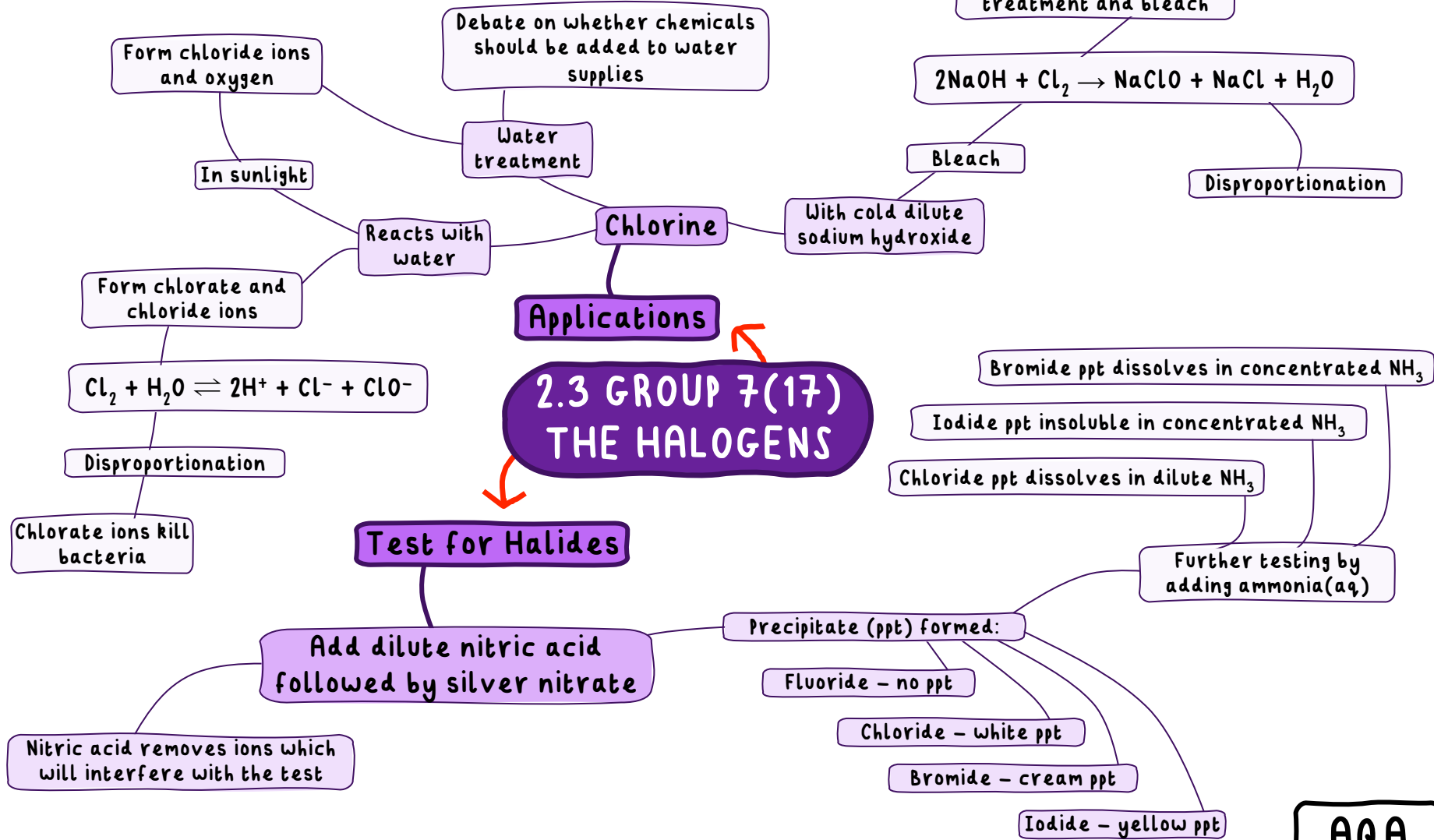
Halide ions have an increasing reducing ability

Size of ion increases

More electron shielding and weaker nuclear attraction

Electron more easily lost

AQA



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