Subject	Year	Term
Chemistry	12	3/4

Topic

4.2.2 Haloalkanes

Content (Intent)

Prior Learning (Topic) KS4 Y9 C7 Organic chemistry KS5 **Y12** 4.1.1 Basic concepts 4.1.3 Alkenes

Substitution reactions of haloalkanes

(a) hydrolysis of haloalkanes in a substitution reaction:

(i) by aqueous alkali

(ii) by water in the presence of $AgNO_3$ and ethanol to compare experimentally the rates of hydrolysis of different carbon–halogen bonds

(b) definition and use of the term nucleophile (an electron pair donor)

(c) the mechanism of nucleophilic substitution in the hydrolysis of primary haloalkanes with aqueous alkali **(see also 4.1.1 h–i)**

(**d)** explanation of the trend in the rates of hydrolysis of primary haloalkanes in terms of the bond enthalpies of carbon–halogen bonds (C–F, C–Cl, C–Br and C–I)

Environmental concerns from use of organohalogen compounds

(e) production of halogen radicals by the action of ultraviolet (UV) radiation on CFCs in the upper atmosphere and the resulting catalysed breakdown of the Earth's protective ozone layer, including equations to represent:

(i) the production of halogen radicals

(ii) the catalysed breakdown of ozone by Cl • and other radicals e.g. •NO.

Future Learning (Topic) KS5 Y12 4.2.1 Alcohols 4.2.3 organic synthesis 4.2.4 Analytical techniques **Y13** 6.1.1 Aromatic compounds 6.1.2 Carbonyl compounds 6.2.3 Poly amides and polyesters 6.2.4 Carbon-carbon bond formation 6.2.5 Organic synthesis

How will knowledge and skills be taught? (Implementation)	How will your understanding be assessed & recorded (Impact)
Presentation, notes, worked examples, molymods, model answers and exam style questions. Prac: Hydrolysis of halo alkanes including **PAG 7.1**	- 1 x standard homework (Grade given. Written feedback. Response expected.)

How can parents help at home?

Look at the topic specific resources on the VLE

Use appropriate websites: MachemGuy, Allery Chemistry, Chemistry World – by Royal Society of Chemistry, ChemGuide.

Take an interest! Ask your children what they have learnt and be curious about their learning.

Helpful further reading/discussion

Reading	**Vocabulary Lists**	**Careers Links**
Text book chapter 15 p.230-239 The Science of Everyday Life by Marty Jopson Why Chemical Reactions Happen by Keeler and Wothers	*Hydrolysis* *Substitution* *Silver nitrate* *Nucleophile* *Nucleophilic substitution* *Dipole* *Chloro-flouro-carbons* Ozone radicals	Analytical chemist Chemical engineer Clinical biochemist Forensic scientist Pharmacologist Process chemist Quality control analyst Research scientist Science writer Site chemist Teacher or lecturer Degrees; Chemistry Biochemistry Biomedical science Biological sciences