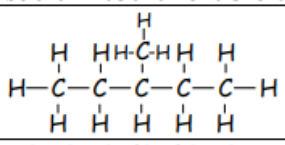
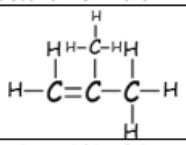
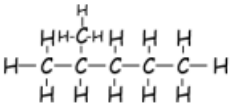
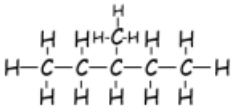
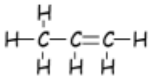
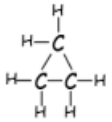
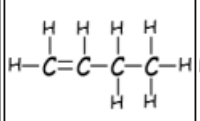
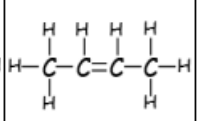
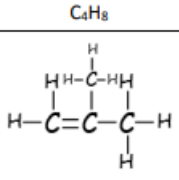
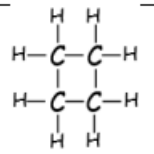
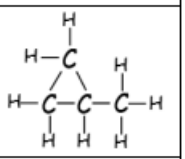
S3 Chemistry

Unit 2.1 Naming and Drawing Hydrocarbons

1	A homologous series is a family of compounds with • same general formula • similar chemical properties.		☹	😐	☺
2	Patterns are often seen in the physical properties of the members of a homologous series. • Physical properties include melting points, boiling points, solubility Melting & boiling points increase as the size of molecule increases for any homologous series • These changes in physical properties are due the strength of the intermolecular forces between the molecules. • As size of molecule increases, the strength of the intermolecular forces increases		☹	😐	☺
3	Hydrocarbons are compounds containing only hydrogen and carbon atoms • alkanes, alkenes and cycloalkanes are examples of homologous series		☹	😐	☺
4	Compounds containing only carbon–carbon single bonds are described as saturated. • Alkanes and cycloalkanes are saturated hydrocarbons Compounds containing at least one carbon–carbon double bond are described as unsaturated. • Alkenes are unsaturated hydrocarbons		☹	😐	☺
5	It is possible to distinguish an unsaturated compound from a saturated compound using bromine solution. • Unsaturated compounds decolourise bromine solution quickly e.g. alkenes • Saturated compounds do not decolourise bromine solution quickly e.g. alkanes and cycloalkanes		☹	😐	☺
6a	The structure of any molecule can be drawn as a full or a shortened structural formula. Full Structural Formula:   Shortened Structural Formula: $CH_3CH_2CH(CH_3)CH_2CH_3$ $CH_2{=}C(CH_3)CH_3$		☹	😐	☺
6b	Isomers are compounds with: • same molecular formula but different structural formulae  2-methylpentane C_6H_{14}  3-methylpentane C_6H_{14} • may belong to different homologous series e.g. alkenes and cycloalkanes  propene C_3H_6  cyclopropane C_3H_6 • usually have different physical properties e.g. alkenes decolourise bromine solution		☹	😐	☺
7	Given a structural formula for a compound, an isomer can be drawn. Isomers can be drawn for a given molecular formula. C_4H_8  but-1-ene C_4H_8  but-2-ene C_4H_8  2-methylpropene C_4H_8  cyclobutane C_4H_8  methylcyclopropane		☹	😐	☺