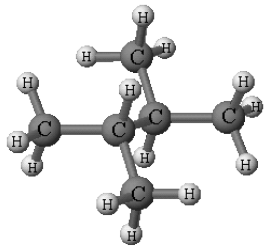
Basic Concepts of Organic Chemistry

The key areas of study in this topic are:

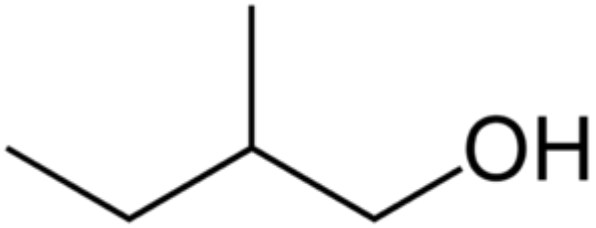
- Naming and representing organic compounds
- Functional groups
- Isomerism
- Reaction mechanism



By the end of this topic I should be able to:	Start	End
Use IUPAC rules of nomenclature to systematically name organic compounds		
Know the names of the first ten members of the alkanes homologous series and their corresponding alkyl groups.		
Understand and use the following terms: • general formula (the simplest algebraic formula of a member of a homologous series) • structural formula (the minimal detail that shows the arrangement of atoms in a molecule) • displayed formula (the relative positioning of atoms and the bonds between them) • skeletal formula (the simplified organic formula, shown by removing hydrogen atoms from alkyl chains, leaving just a carbon skeleton and associated functional groups) • functional group (a group of atoms responsible for the characteristic reactions of a compound) • alkyl group (of formula $C_nH_{2n+1)}$ • aliphatic (a compound containing carbon and hydrogen joined together in straight chains, branched chains or non-aromatic rings) • alicyclic (an aliphatic compound arranged in non-aromatic rings with or without side chains) • aromatic (a compound containing a benzene ring) • saturated (single carbon–carbon bonds only) and unsaturated (the presence of multiple carbon–carbon bonds, including C=C, C≡C and aromatic rings) • structural isomers (compounds with the same molecular formula but different structural formulae)		
Define homologous series (a series of organic compounds having the same functional group but with each successive member differing by CH_2)		
Use the general formula of a homologous series to predict the formula of any member of the series		

Determine possible structural formulae of an organic molecule, given its molecular formula		
Describe and identify the different types of covalent bond fission: • homolytic fission (in terms of each bonding atom receiving one electron from the bonded pair, forming two radicals) • heterolytic fission (in terms of one bonding atom receiving both electrons from the bonded pair)		
Understand the term radical (a species with an unpaired electron) and the use of 'dots' to represent species that are radicals in mechanisms		
Use a 'curly arrow' to describe the movement of an electron pair, showing either heterolytic fission or formation of a covalent bond		
Draw reaction mechanisms, using diagrams, to show clearly the movement of an electron pair with 'curly arrows' and relevant dipoles.		

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



2-methylbutan-1-ol