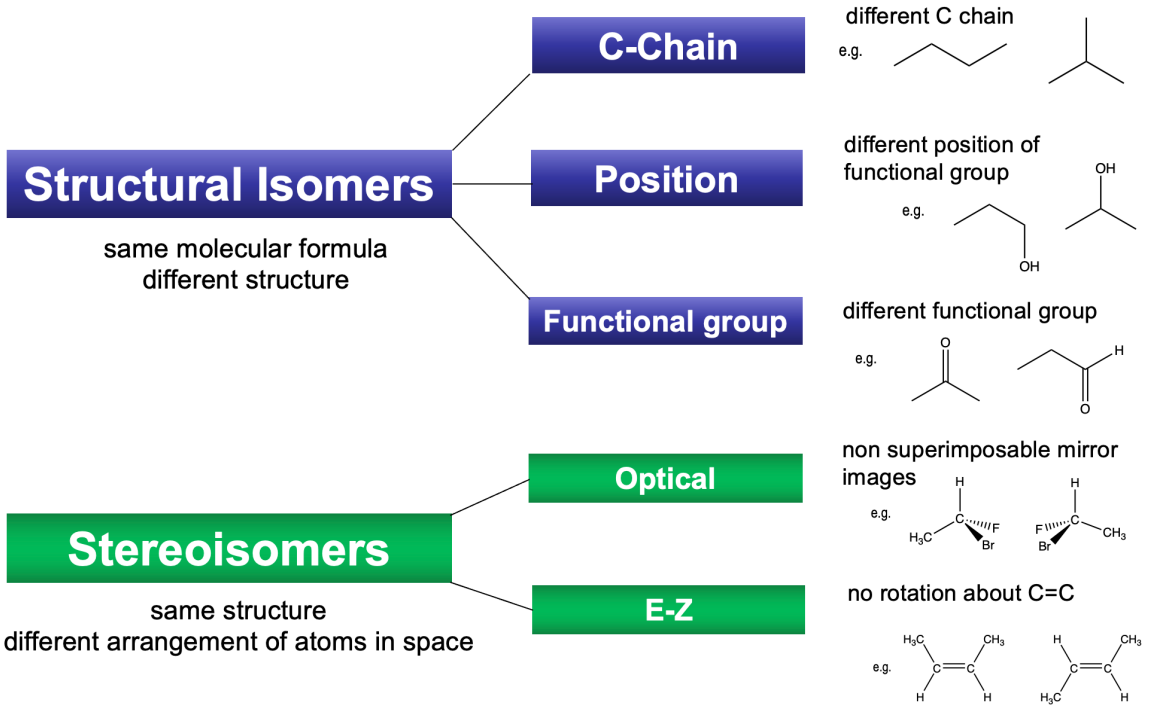
STRUCTURAL ISOMERISM

Types of Isomerism



Types of Structural Isomerism

a) Chain isomerism

The carbon chain is different.

e.g. C_4H_{10}

$CH_3-CH_2-CH_2-CH_3$

butane

$CH_3-CH(CH_3)-CH_3$

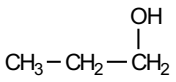
methylpropane

Task 1	Draw and name all the chain isomers of pentane, C_5H_{12}

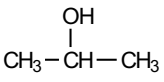
b) Position isomerism

Functional groups can be in different positions on the carbon chain resulting in isomers.

e.g. C_3H_7OH



propan-1-ol



propan-2-ol

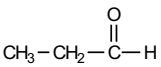
Task 2	Draw and name all the position isomers of 1,1-dichloropropane

c) Functional group isomerism

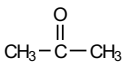
Some compounds with the same molecular formulae can contain different functional groups.

Aldehydes & ketones

e.g. C_3H_6O



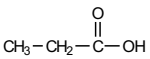
propanal



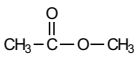
propanone

Carboxylic acids & esters

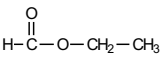
e.g. $C_3H_6O_2$



propanoic acid



methyl ethanoate

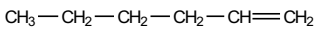


ethyl methanoate

Alkenes & cycloalkanes

e.g. C_6H_{12}

cyclohexane



hex-1-ene

Task 3	Draw and name a functional group isomer of each of the following	
pent-2-ene	butanoic acid	pentan-3-one

Task 4 Structural isomerism Problems

1) Draw and name all the molecules with the formula C_6H_{14}

2) a) Draw and name a carbon chain isomer of 1-chlorobutane.
   b) Draw and name a position isomer of 1-chlorobutane.

3) a) Draw and name a carbon chain isomer of but-1-ene.
   b) Draw and name a position isomer of but-1-ene.
   c) Draw and name a functional group isomer of but-1-ene

4) a) Draw and name a carbon chain isomer of butanal.
   c) Draw and name a functional group isomer of butanal

5) a) Draw and name a carbon chain isomer of pentanoic acid.
   c) Draw and name a functional group isomer of pentanoic acid.

6) Draw and name all the molecules with the formula C_5H_{10}

7) Draw and name all the molecules with the formula C_4H_9Cl

8) Draw and name all the molecules with the formula $C_4H_8Br_2$