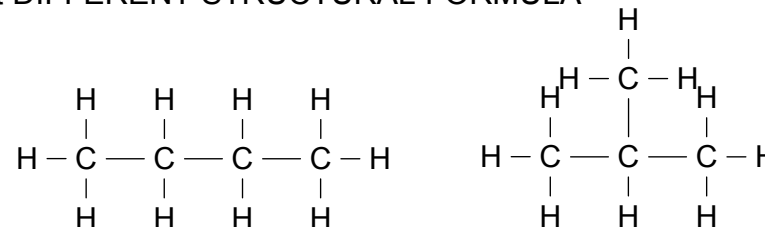


## ISOMERISM HELP SHEET

Definition: isomers are when compounds have the SAME MOLECULAR FORMULA but DIFFERENT STRUCTURAL FORMULA

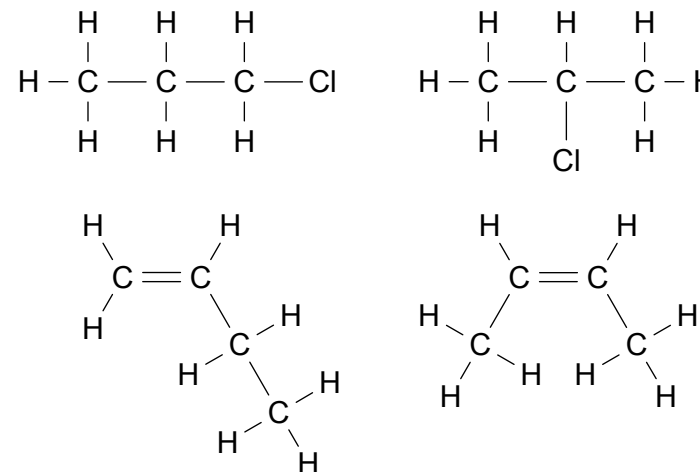
### CHAIN

different arrangement of carbon skeleton  
 similar chemical properties  
 slightly different physical properties (more branched = lower b.pt)  
 examples *butane and 2-methylpropane*



### POSITIONAL

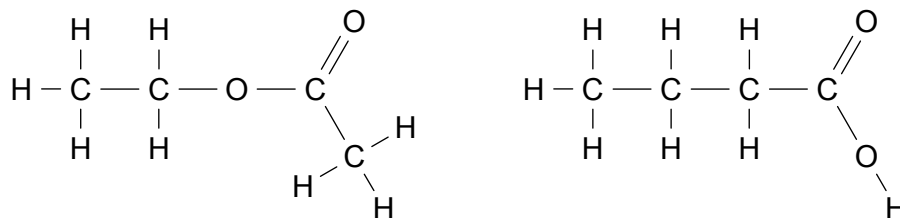
same carbon skeleton  
 same functional group  
 functional group in different position  
 mostly similar properties (at least at Level 2 NCEA)  
 examples *1-chloropropane and 2-chloropropane*  
*but-1-ene and but-2-ene*



### FUNCTIONAL GROUP

different functional group  
 different chemical properties  
 different physical properties

example  
 carboxylic acids and esters (esters now not assessed at level 2)  
 example *ethyl ethanoate and butanoic acid*



Also alcohols & ethers; and aldehydes and ketones (at Level 3)

## GEOMETRICAL ISOMERISM

a form of **stereoisomerism** (Level 3)

found in alkenes

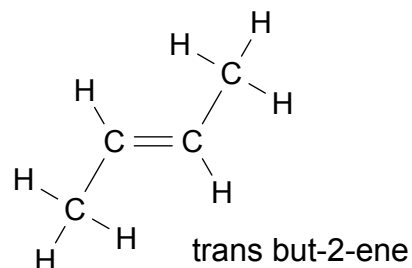
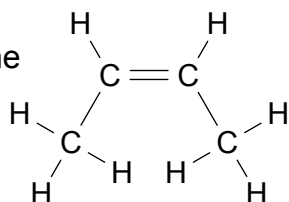
occurs due to restricted rotation of C=C double bonds (ie the C=C bond can't rotate)

can't occur with single bonds because they can rotate

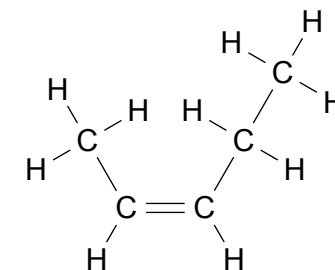
the two forms are CIS (together) and TRANS (across)

occurs when 2 different groups / atoms are on the both ends of the double bond

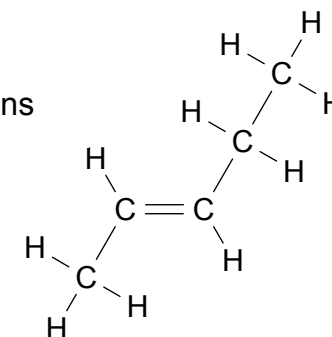
cis but-2-ene



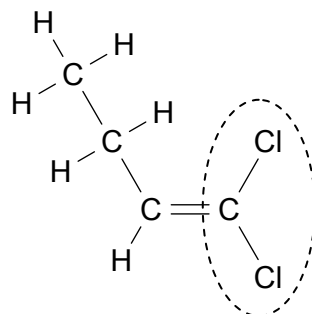
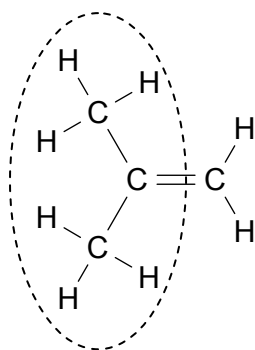
cis



trans



doesn't occur when 2 similar groups / atoms are on the same end of the double bond  
examples



Neither of these can exist as cis or trans isomers – just name them as they are eg 2-methylpropene & 1,1-dichlorobut-1-ene

MY EXTRA NOTES