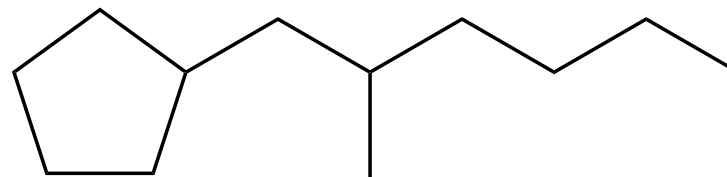
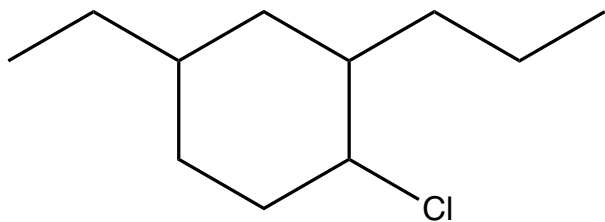


Cycloalkanes

- Determine the name of the parent alkane
 - Ring is the parent hydrocarbon unless the alkyl substituent has more carbons; in that case the acyclic part becomes the parent hydrocarbon
 - cyclo(number of carbons)ane
 - cyclohexane
 - cyclopentane
- Cite the name of substituent before the name of the parent cycloalkane
 - one substituent, no need to give it a number
 - two substituents
 - alphabetical order
 - first substituent is given the number 1
 - numbers counted (clockwise or counterclockwise) to give lowest 2nd substituent number
 - more than two substituents
 - not necessarily in alphabetical order
 - starting point (substituent with number 1) and direction of the counting (clockwise or counterclockwise) is decided by finding the combination that gives the lowest possible numbers for all of the substituents

Practice Nomenclature

Section 4.1



longest chain/ring:

parent alkane name

functional group (?) and position:

substituent names

substituent positions

full name:

longest chain/ring:

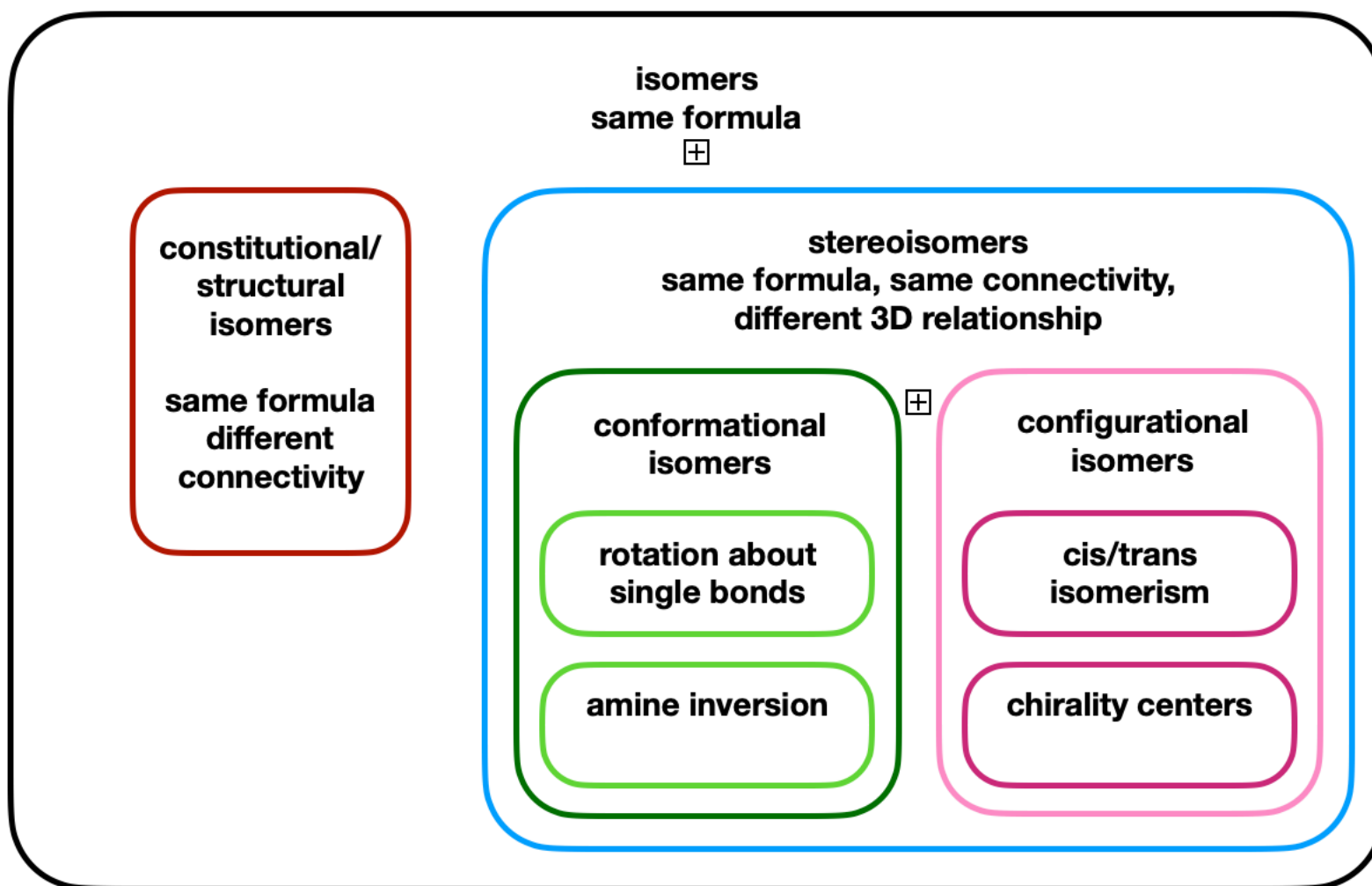
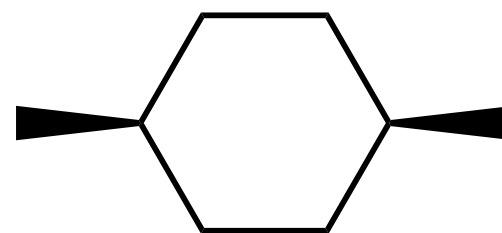
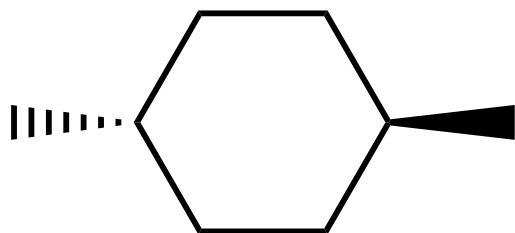
parent alkane name

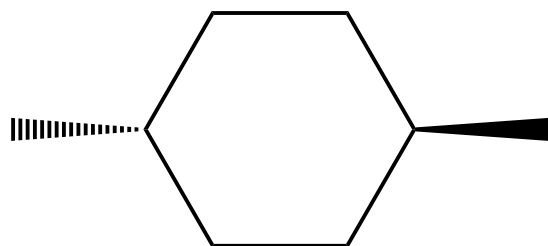
functional group (?) and position:

substituent names

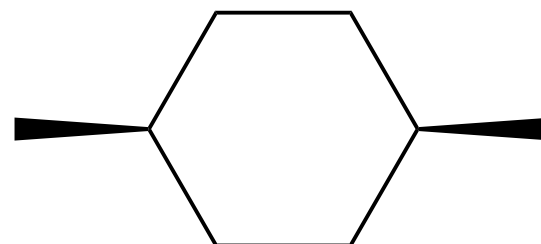
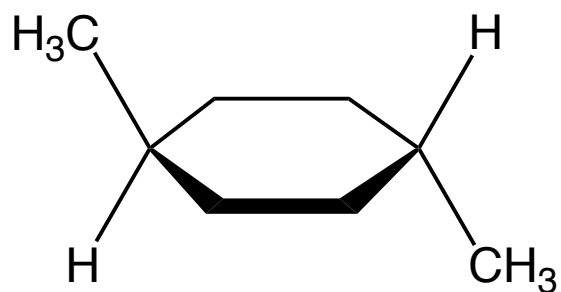
substituent positions

full name:

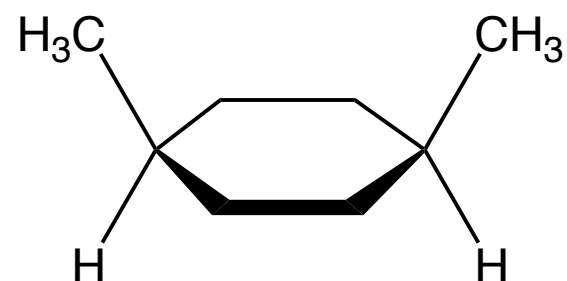




rotate $\Downarrow$ 90°



rotate $\Downarrow$ 90°



Ring Strain and the Structure of Cycloalkanes

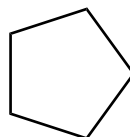
Section 4.3 – 4.8



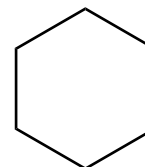
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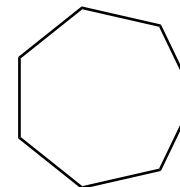
90



108



120



128

Ring Strain and the Structure of Cycloalkanes

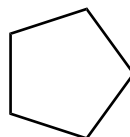
Section 4.3 – 4.8



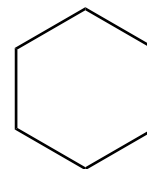
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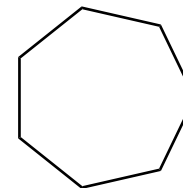
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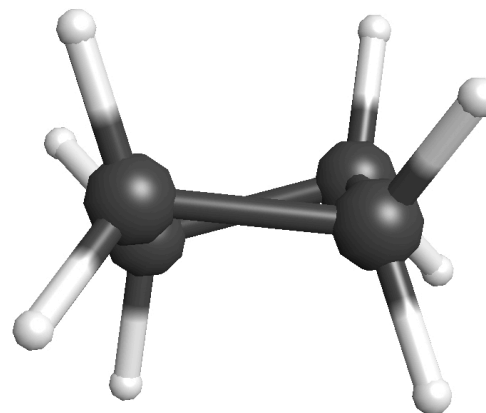
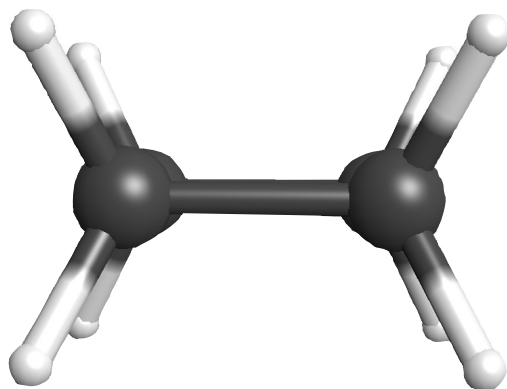
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~~120~~



~~128~~



Ring Strain and the Structure of Cycloalkanes

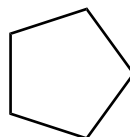
Section 4.3 – 4.8



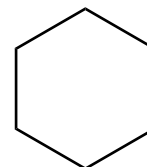
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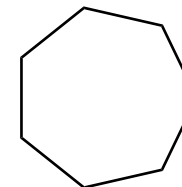
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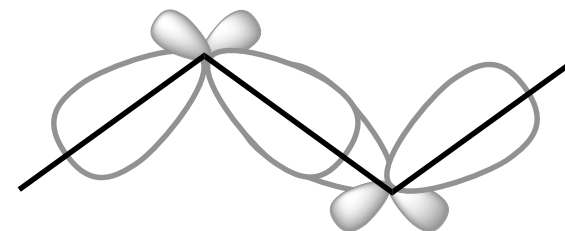
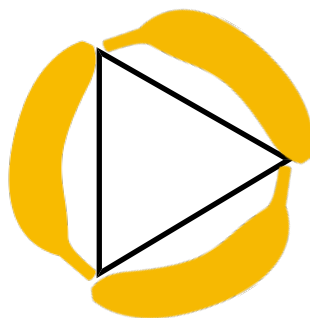
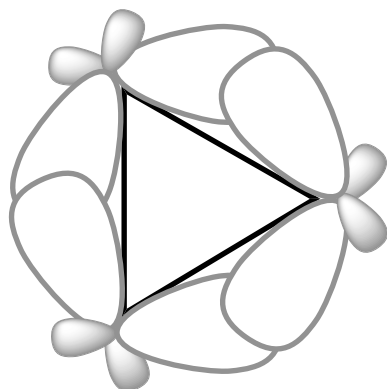
102 to 106



111

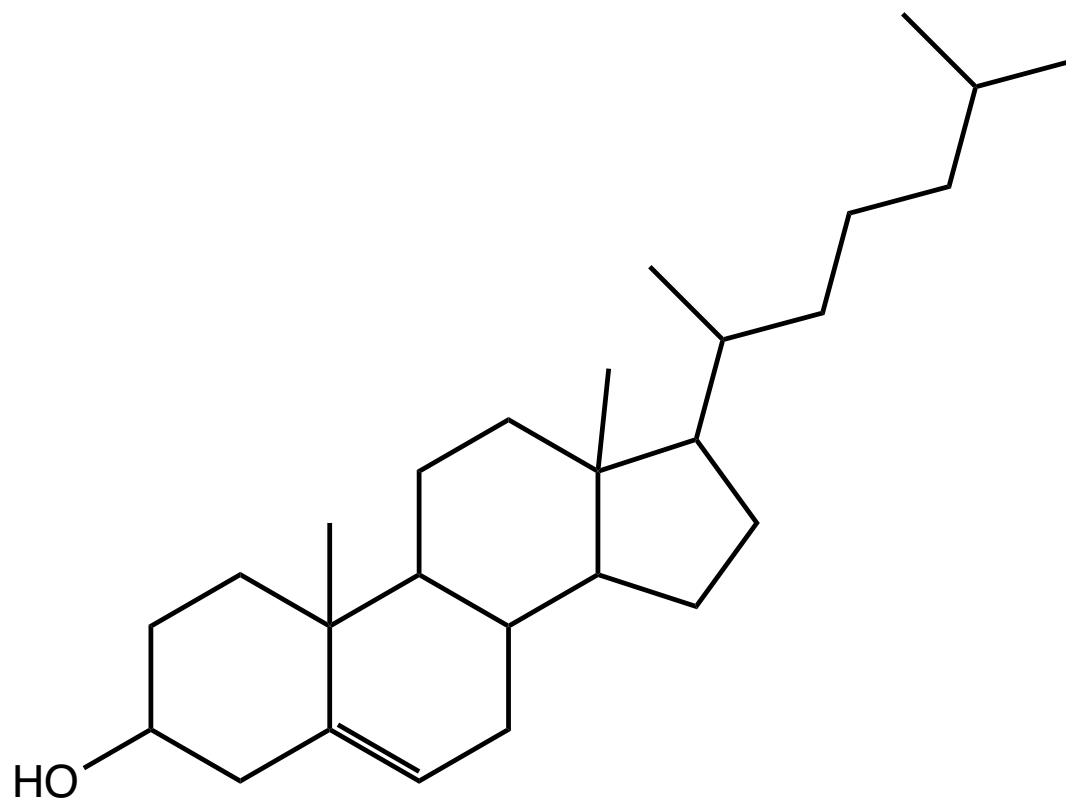
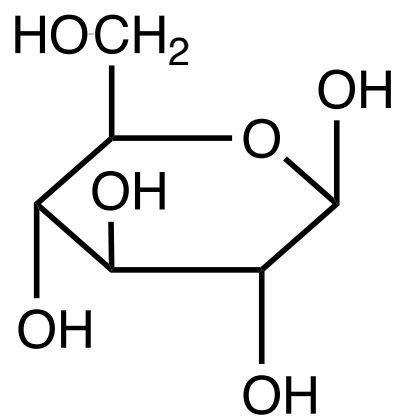


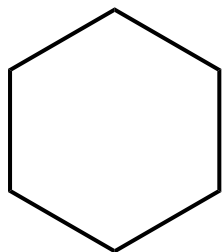
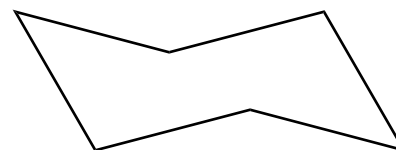
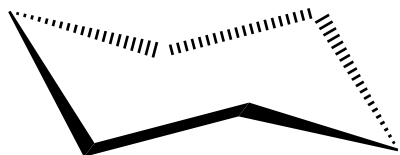
115 to 116¹

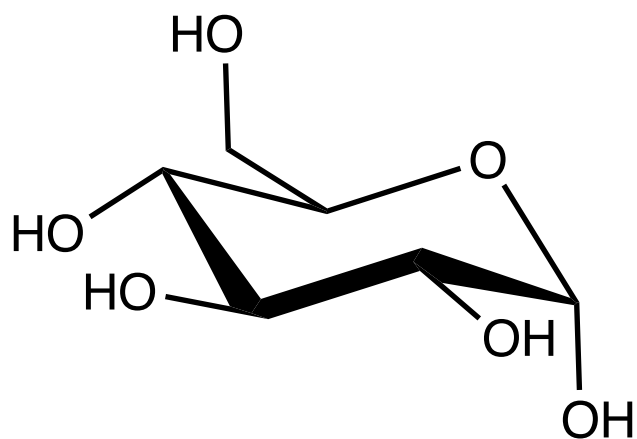


¹ Based on quick mechanics calculations in WebMO

Why?

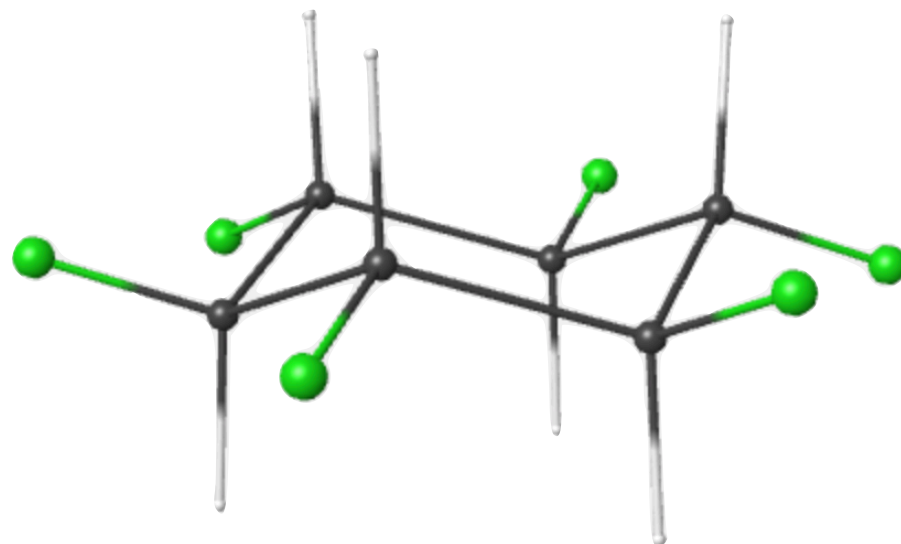
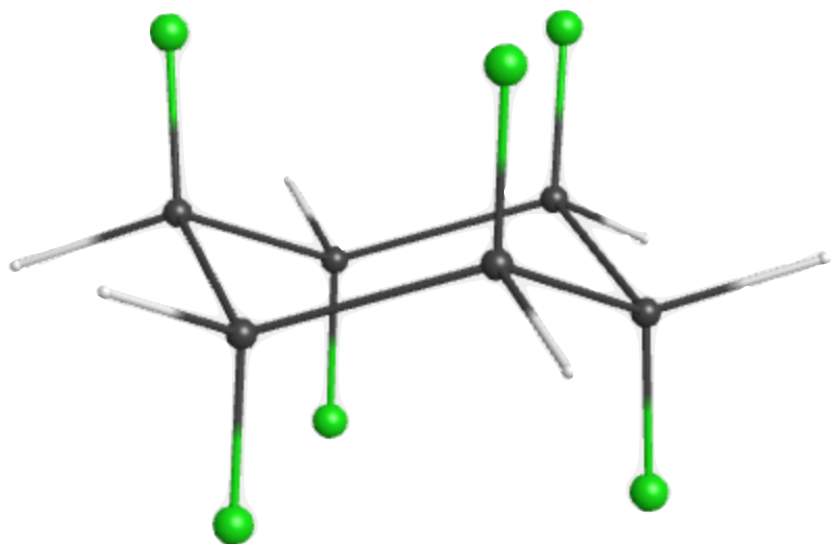




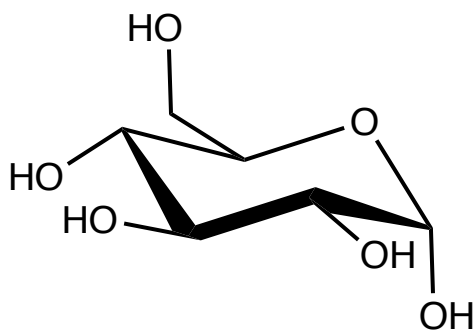


Conformations of Cyclohexane: Partial Rotation Causes Changes in Conformations and "Ring Flips"

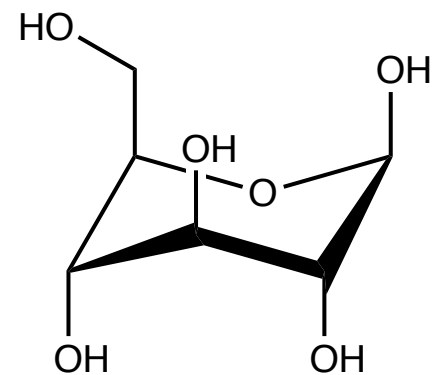
Section 4.3 – 4.8



Why?

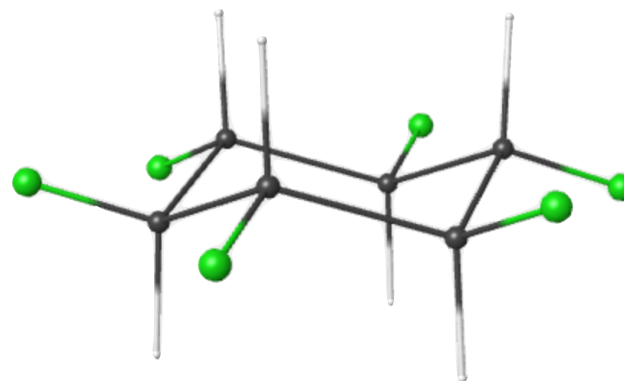
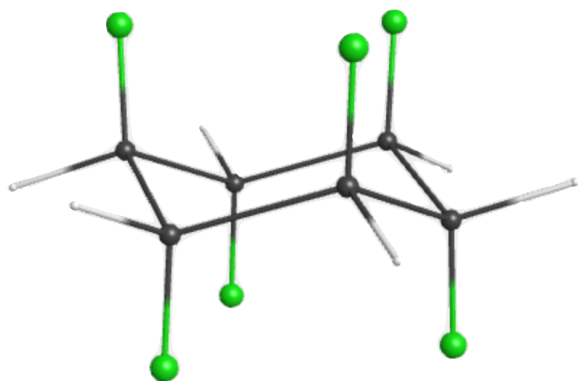


ring flip



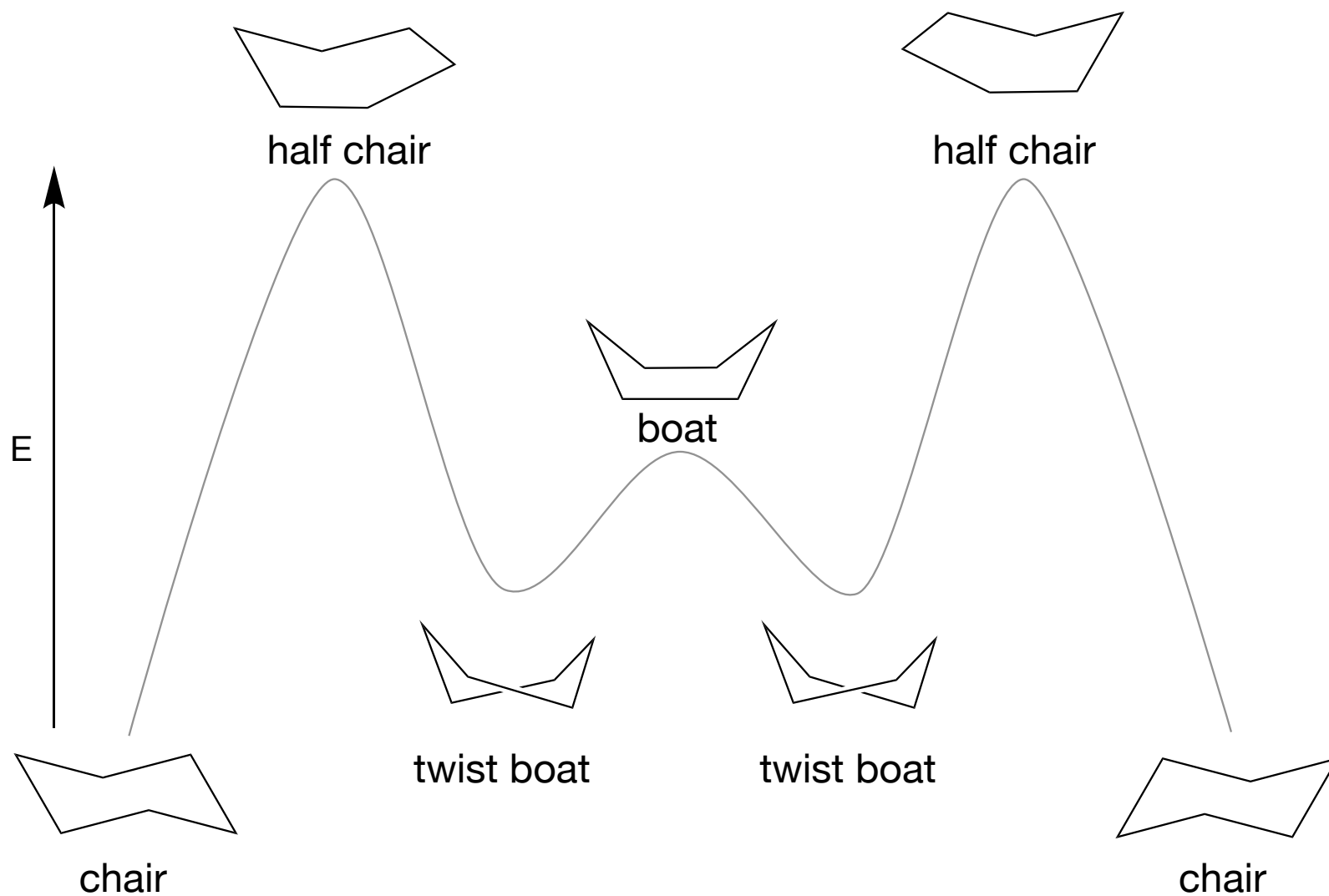
Conformations of Cyclohexane: Partial Rotation Causes Changes in Conformations and "Ring Flips"

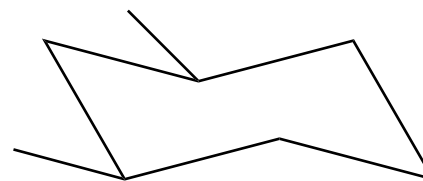
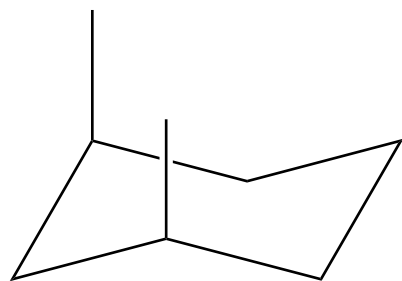
Section 4.3 – 4.8

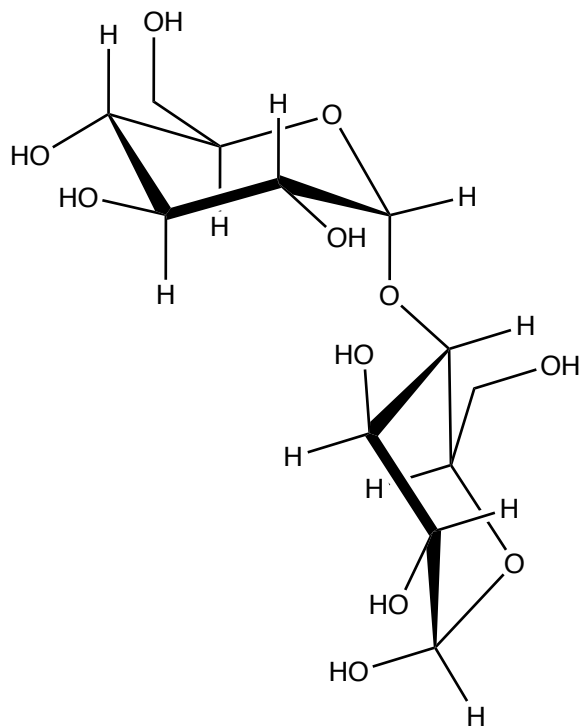


Conformations of Cyclohexane: The "chair", twist boat, and other conformations

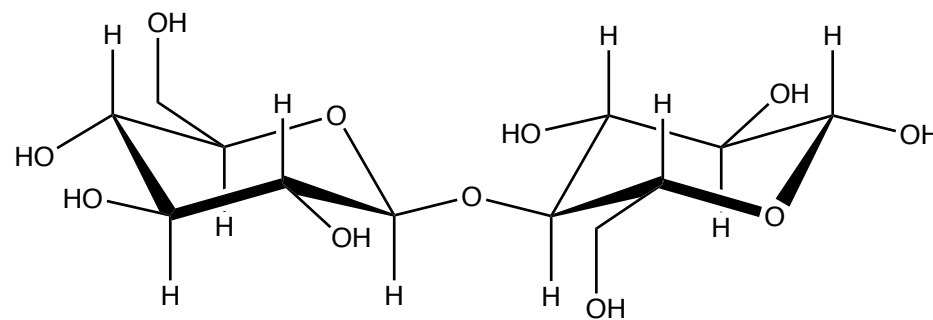
Section 4.3 – 4.8



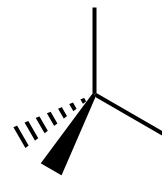
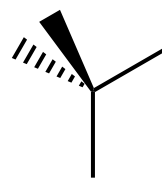
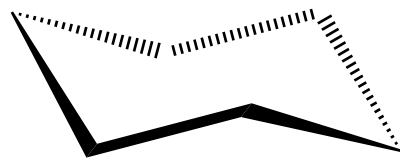




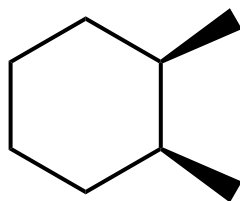
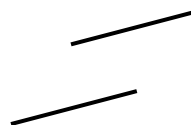
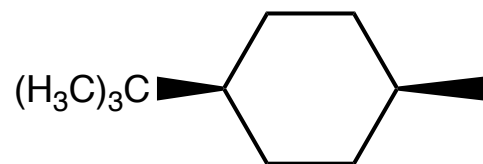
α -1,4 linkage



β -1,4 linkage



Things to keep in mind while drawing cyclohexane conformations



Which of the Following Pairs Represent Ring-flipped Cyclohexanes

Section 4.3 – 4.8

