

LUKE
WILSON

LOGAN
LERMAN

BRIE
LARSON

It's time to stand up for the little guys.



BASED ON THE BESTSELLING NOVEL

HOOT

NEW LINE CINEMA AND WALDEN MEDIA PRESENT A KENNEDY/MARSHALL COMPANY PRODUCTION "HOOT" LUKE WILSON LOGAN LERMAN BRIE LARSON TIM BLAKE NELSON
NEIL FLYNN AND ROBERT WAGNER CASTING BY AMANDA MACKAY CSA & CATHY SANDRICH GELFOND CSA MUSIC BY SAVANNAH JANE BUFFETT NEW MUSIC BY JIMMY BUFFETT
ORIGINAL SCORE BY PHIL MARSHALL MICHAEL WILEY MACMANNALLY PRODUCERS WIL SHRINER CARL HAASEN MARK KAUFMAN MICHAEL DISSO EXECUTIVE PRODUCERS CHRISTOPHER LAWRENCE
EDITED BY ALAN EDWARD BELL PRODUCTION DESIGNER STEPHEN LINWEAVER DIRECTOR OF PHOTOGRAPHY MICHAEL CHAPMAN ASC EXECUTIVE PRODUCERS TOBY EMMERICH KEVIN REIDY GREGG TAYLOR
SOUNDTRACK AVAILABLE ON MALLBOAT RECORDS PRODUCED BY FRANK MARSHALL JIMMY BUFFETT BASED ON THE NOVEL BY CARL HAASEN SCREENPLAY BY WIL SHRINER DIRECTED BY WIL SHRINER

PG PARENTAL GUIDANCE SUGGESTED
SOME MATERIAL MAY NOT BE SUITABLE FOR CHILDREN
MILD BULLYING AND BRIEF LANGUAGE



WWW.HOOTMOVIE.COM
COMING SOON



NEW LINE CINEMA
WALDEN MEDIA



Cyclohexane \rightarrow most stable cyclohexane

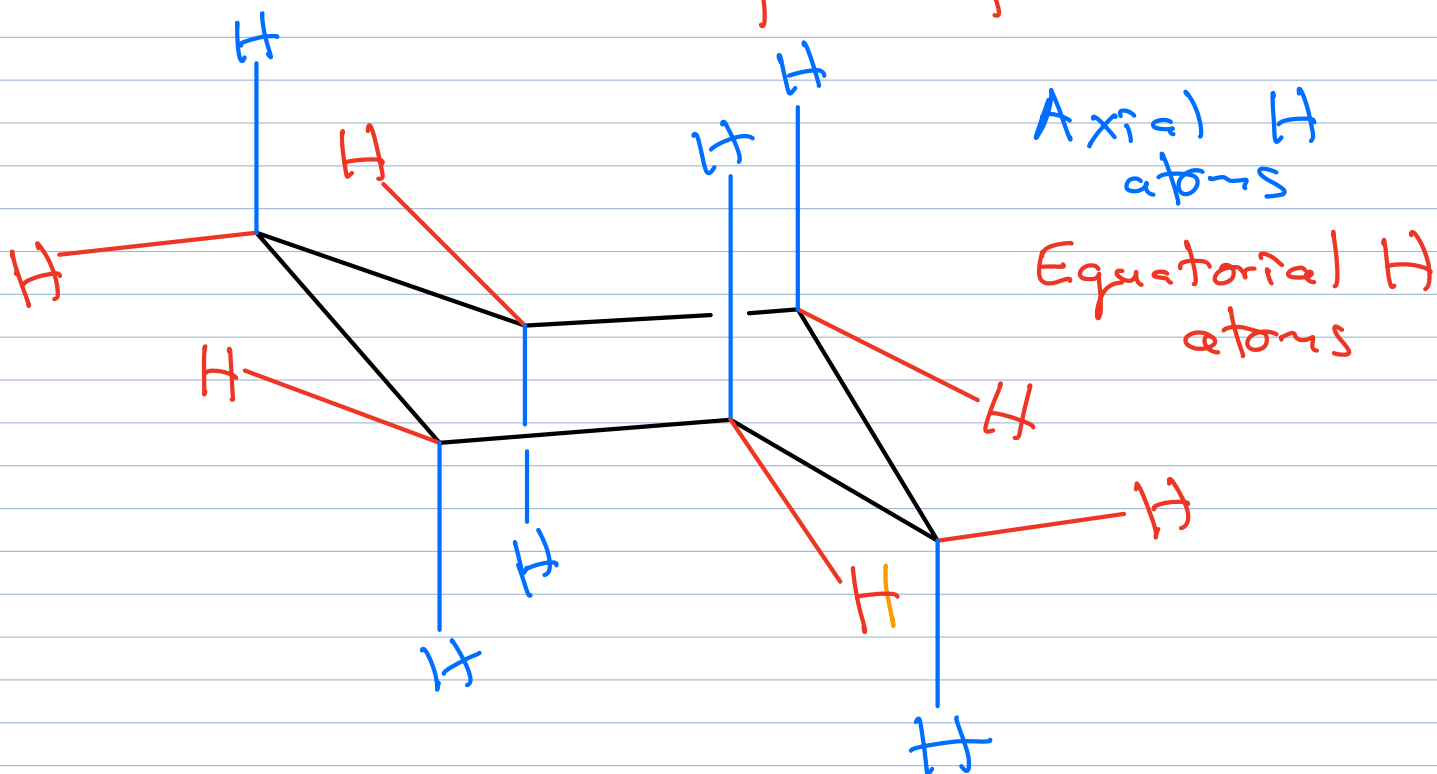
\rightarrow Adopts a chair conformation

\Downarrow
Minimal
angle
strain

\Downarrow
No torsional
strain

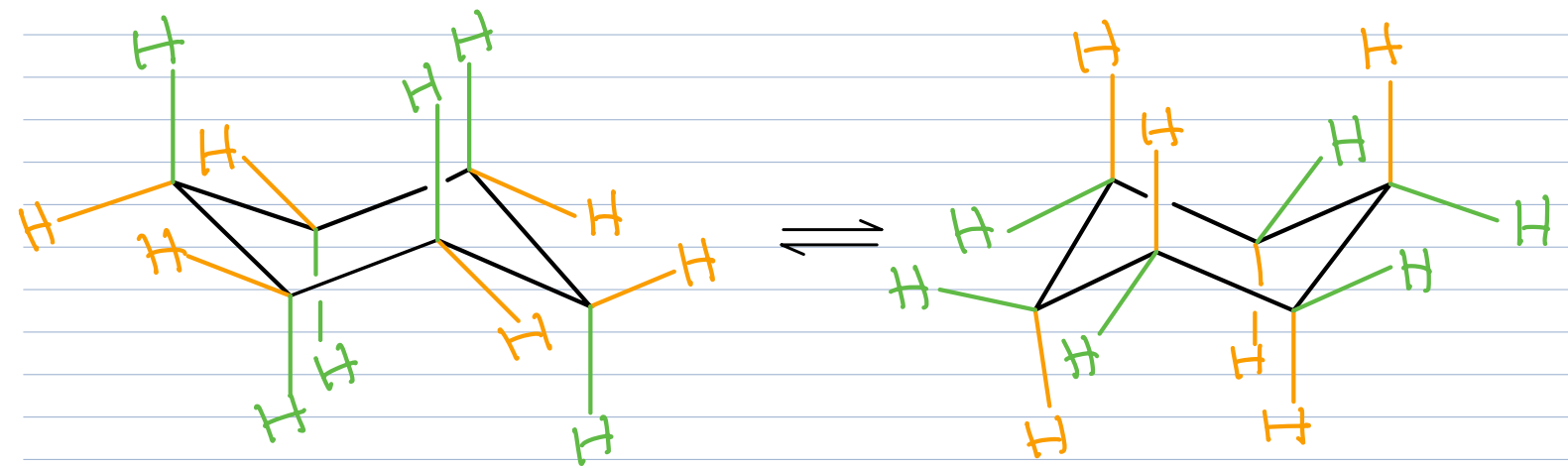
You will need to know how to draw
a great chair cyclohexane

\Rightarrow "Keep it parallel"



There are two kinds of H atoms in
chair cyclohexane - axial (blue) and
equatorial (red) - these are different
chemical environments

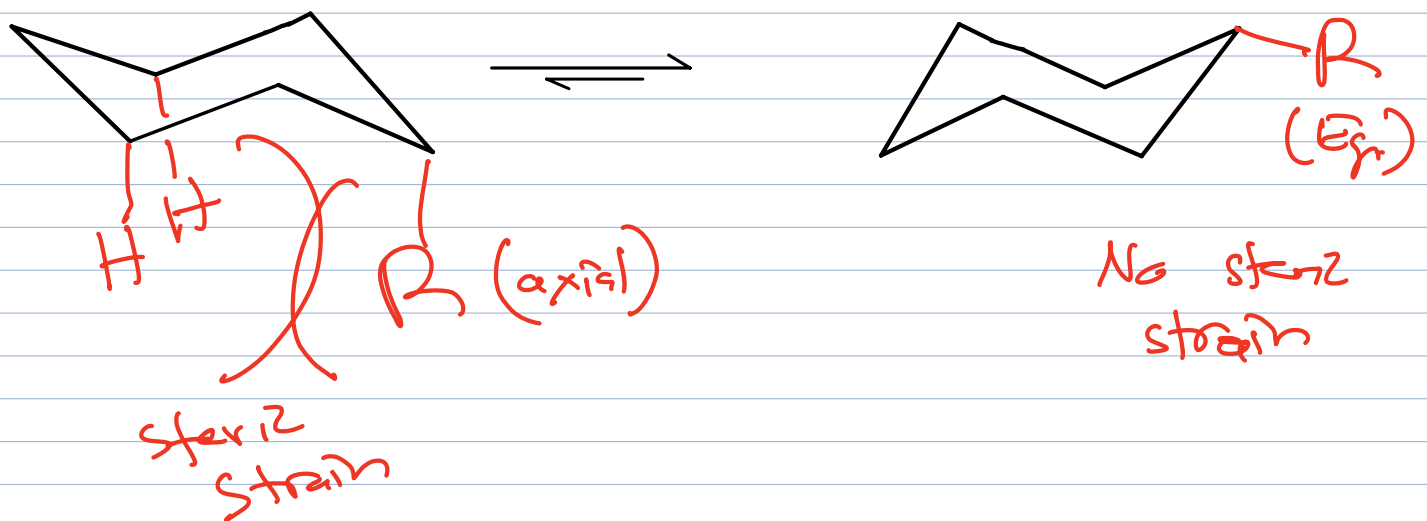
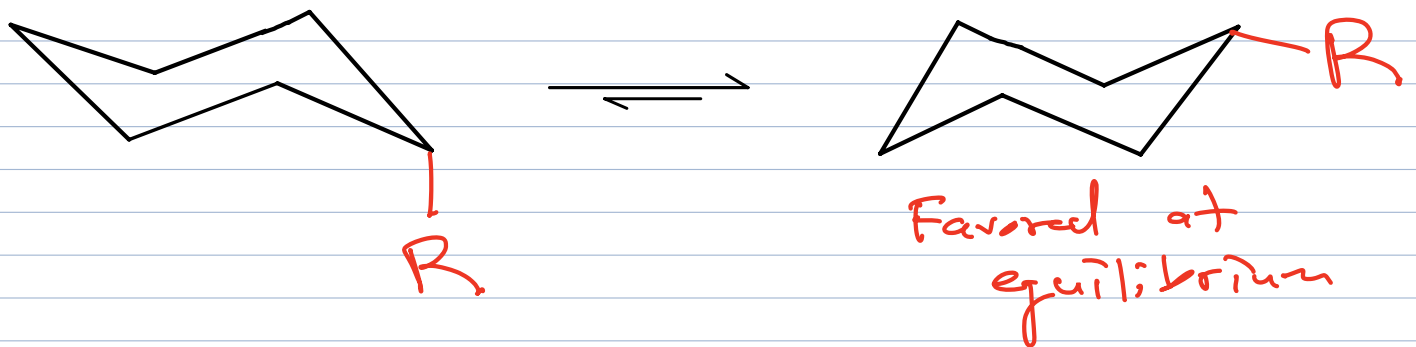
The cyclohexane chair can "flip"
at room temperature



When the chair flips the axial H atoms
become equatorial and the equatorial H atoms
become axial

As chairs flip, they go through a
"boat-like" intermediate conformation

In a cyclohexane chair conformation, any group larger than an H atom will prefer to be equatorial to avoid steric strain ("crunching") → the larger the group (R), the greater the preference for being equatorial

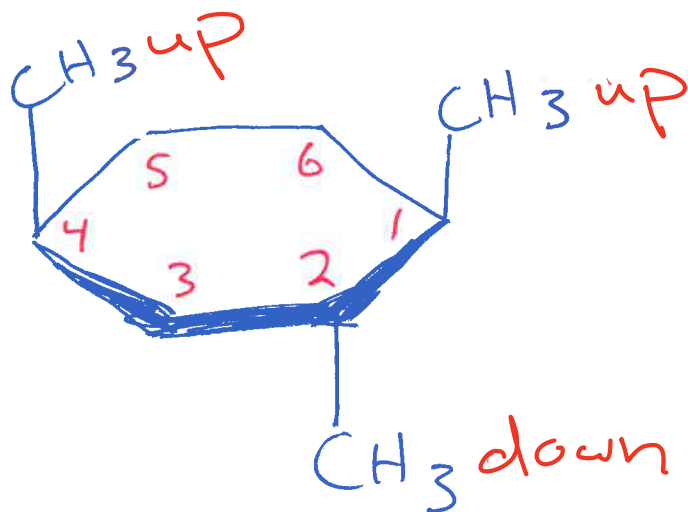
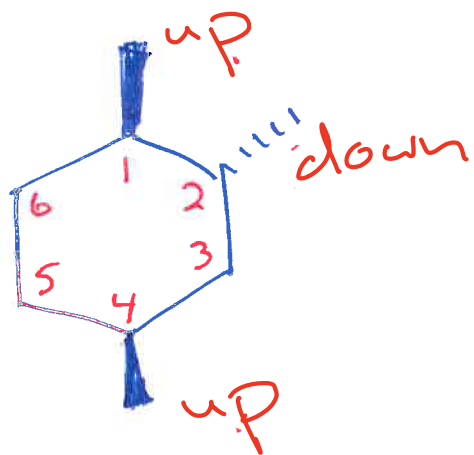


Drawing cyclohexane chairs all of the time can be difficult → so we draw different versions to describe the structures

↳ "Flat"
↳ "Haworth Projections"

⇒ You will need to be able to convert between flat, Haworth and chairs for cyclohexanes

To do this conversion, remember:
"Up is up and down is down"

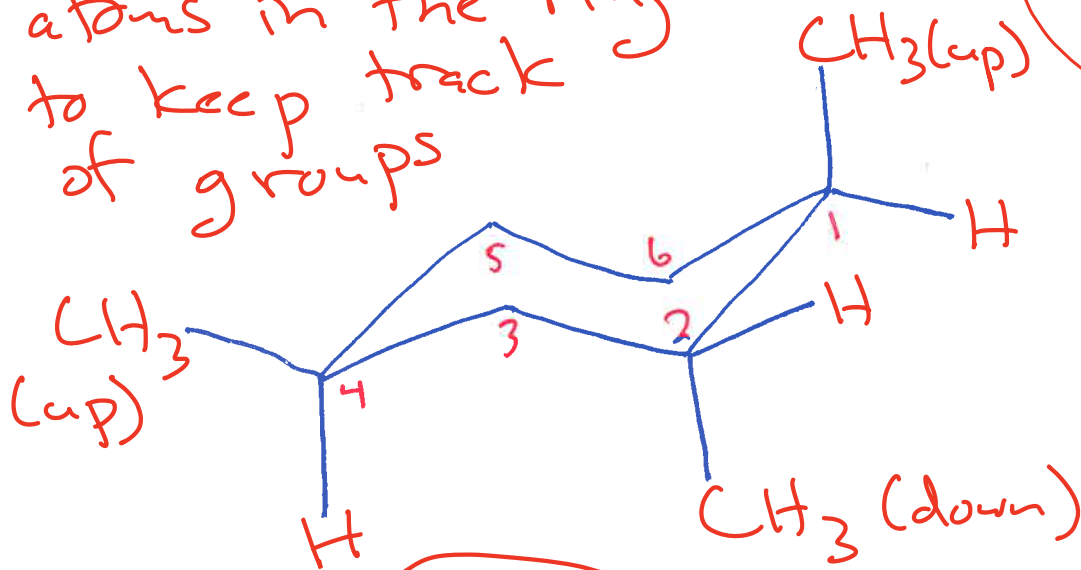


Drawn Flat

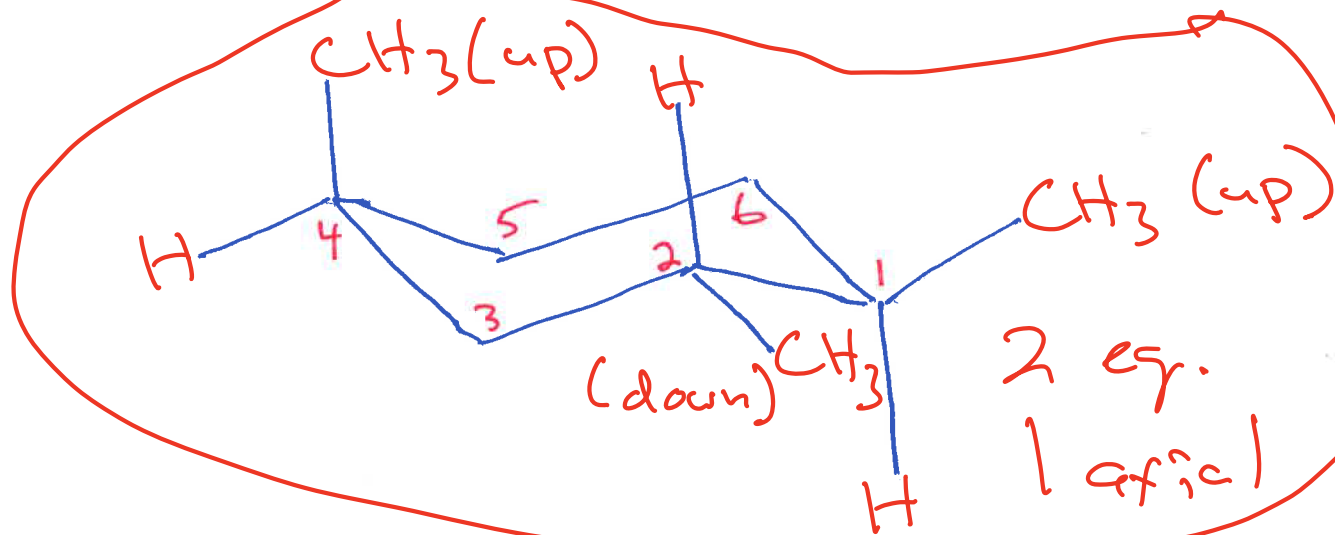
Haworth Projection

Pro tip: Always number the carbon atoms in the ring to keep track of groups

⇒ Number consistently so clockwise stays clockwise



2 axial
1 eq.

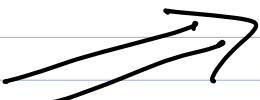


2 eq.
1 axial

The lower structure is more stable than the upper structure

Upper Structure → 2 axial and 1

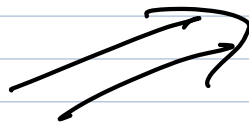
More axial
so more
steric strain



equatorial methyl
group

Lower Structure → 1 axial and 2

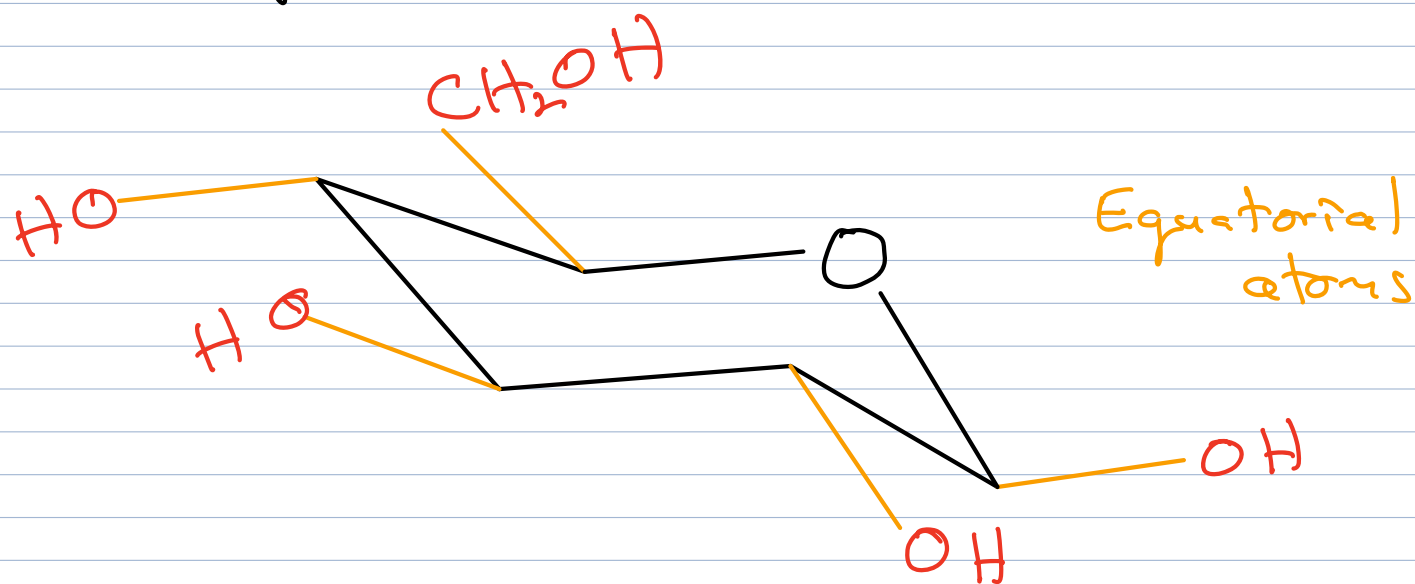
Less steric
strain
so more
stable



equatorial methyl
group

Why do we care so much about chairs anyway?

Most common molecule in the biosphere:

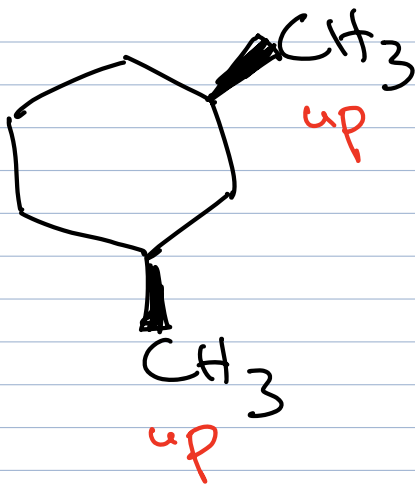


β -D-Glucose

Stable because all of the groups are equatorial!!

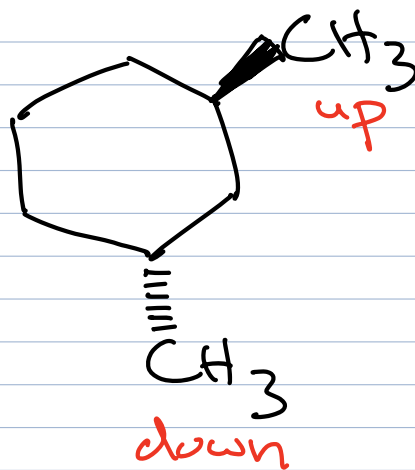


Stereoisomers →
two molecules with
the same connectivity
of atoms, but
different orientations
of groups in
three-dimensional
space



cis

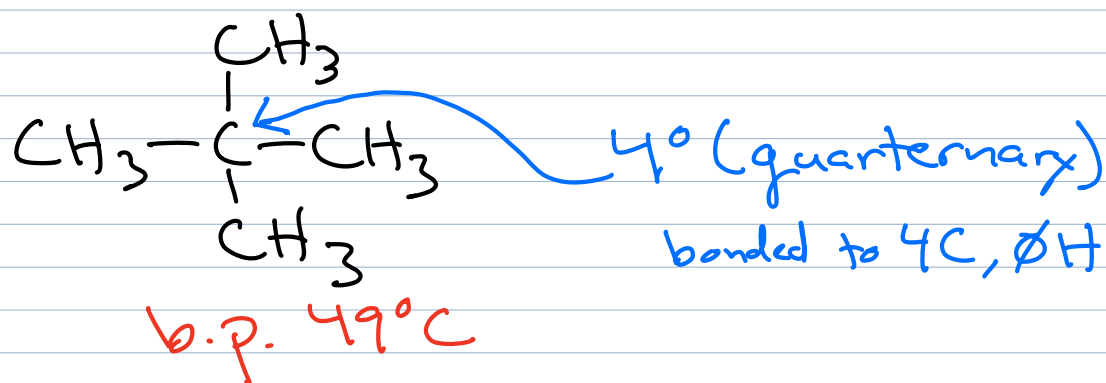
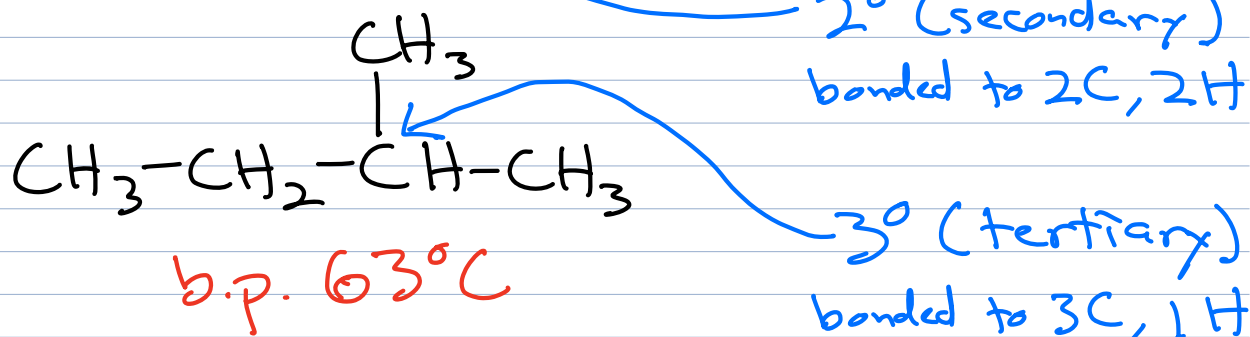
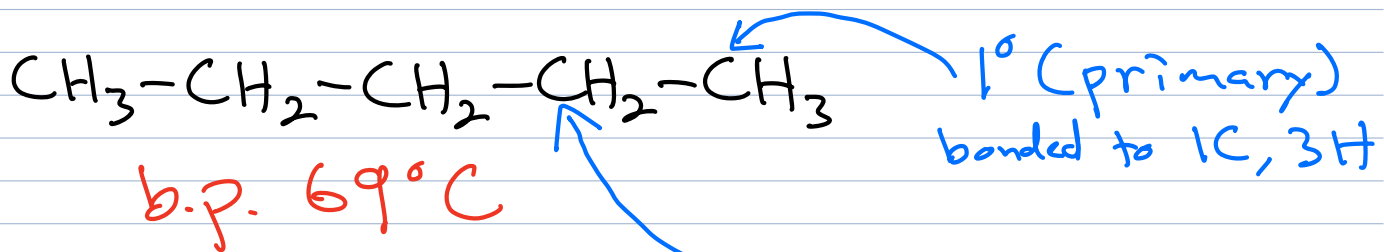
"Same
Side"



trans

"opposite side"

Classification of carbon atoms

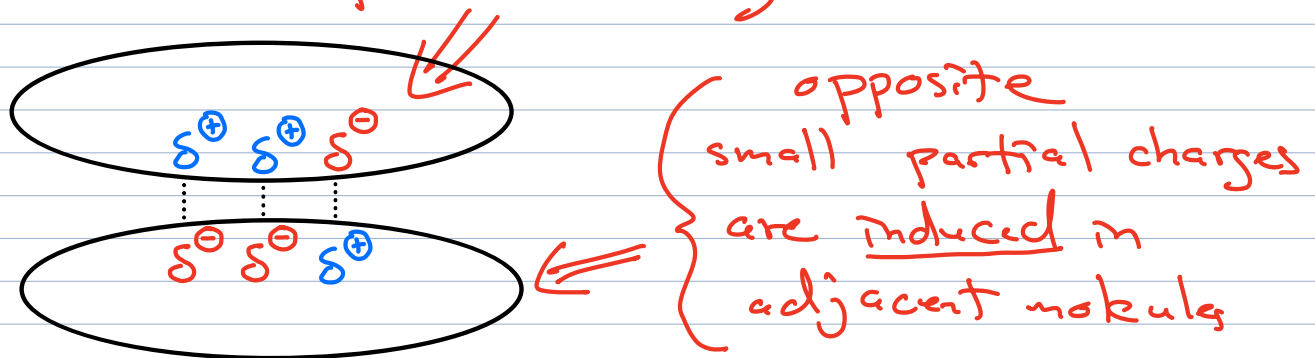


Boiling points (b.p.) of alkanes \rightarrow More surface area of contact between molecules increases boiling point

\rightarrow Branching of alkanes decreases boiling points by decreasing surface area of contact

Reason \rightarrow Dispersion forces \rightarrow attraction between temporary partial charges on adjacent molecules

Dispersion forces \rightarrow molecules have small, fluctuating and temporary partial charges



These opposite small partial charges on adjacent molecules attract each other \Rightarrow enough to provide small attraction between molecules that is proportional to the surface area of contact between molecules

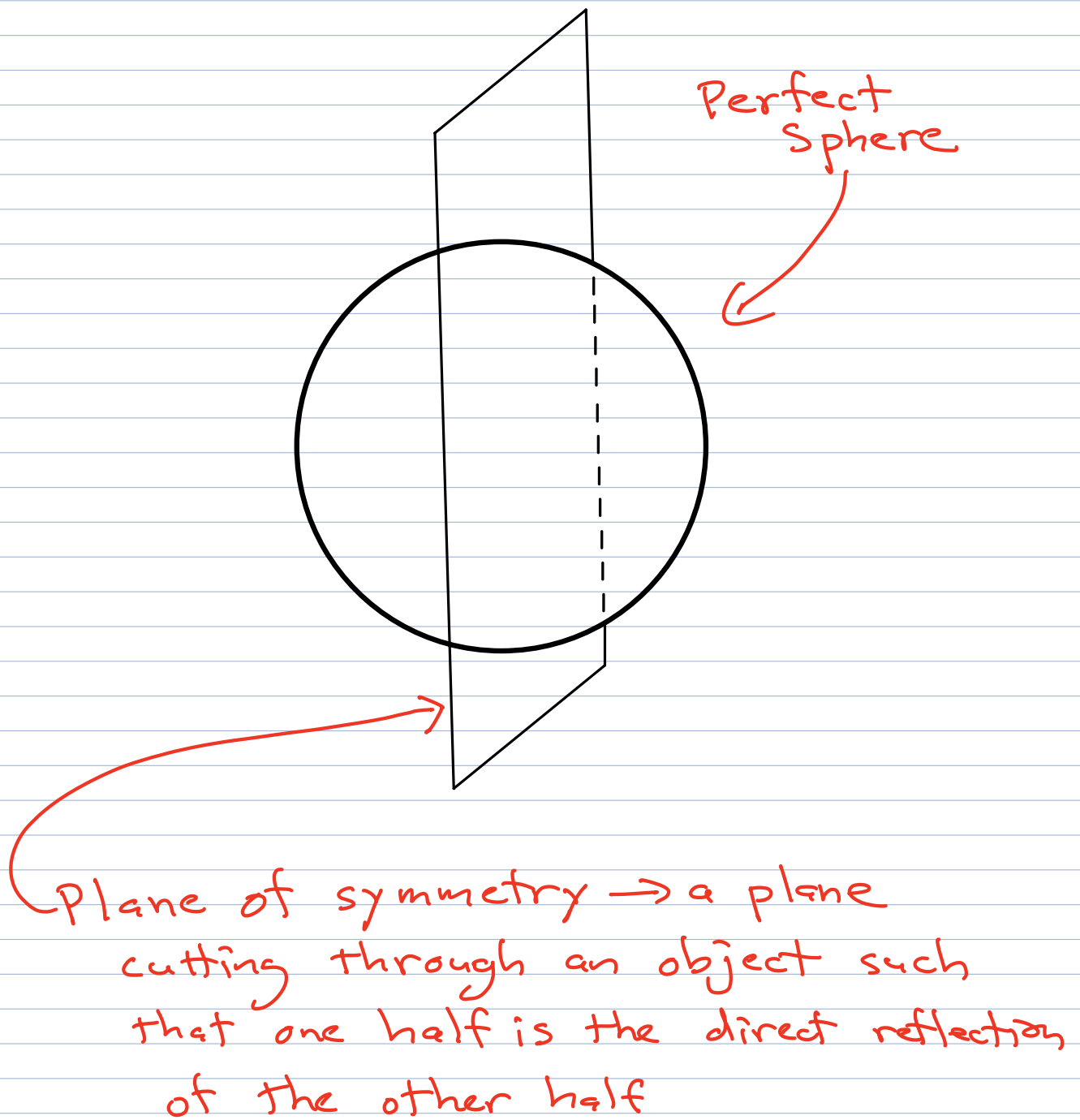
Stereochemistry

Chiral Object

Chiral Molecule

1) Not identical to its mirror image

2) Does not contain a symmetry element such as a **plane of symmetry** or a **point of symmetry**



Stereoisomers \longrightarrow molecules with the same connectivity of atoms, but different orientations of groups in three-dimensional space



(Stereoisomers that are mirror images of each other but not identical)

stereoisomers that are NOT enantiomers