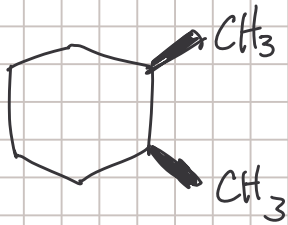


# Ch 3

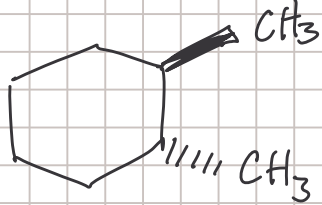
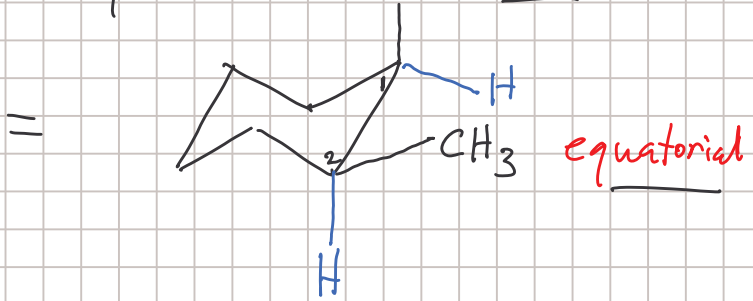
1-axial, 2-equatorial  $\rightleftharpoons$  1-eq, 2-ax  
 equal in energy

Note Title

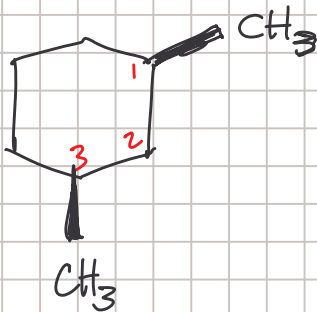
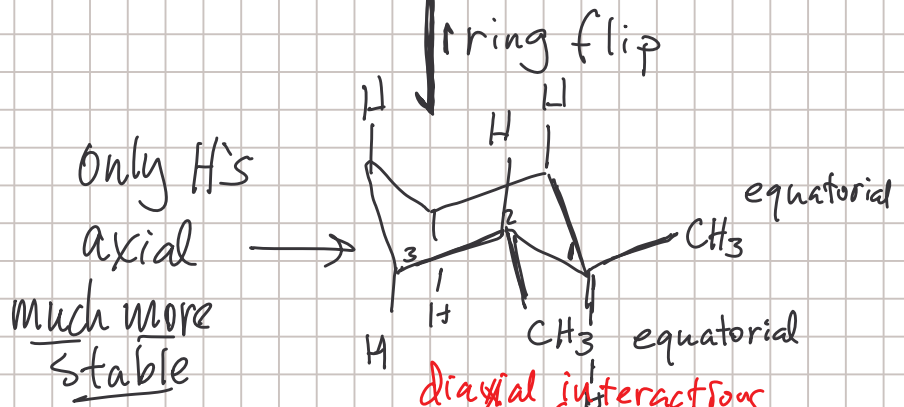
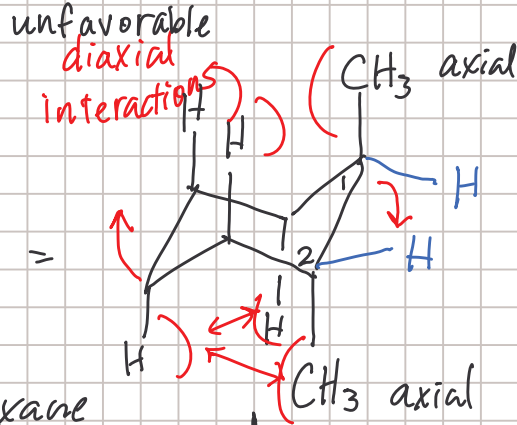
2 equal conformations  $\text{CH}_3$  axial 9/20/2005



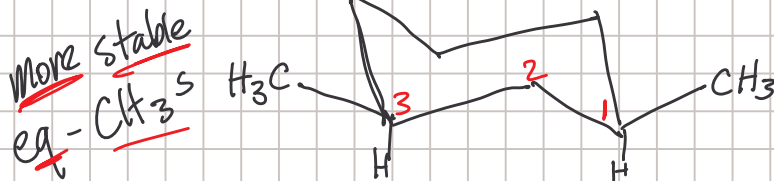
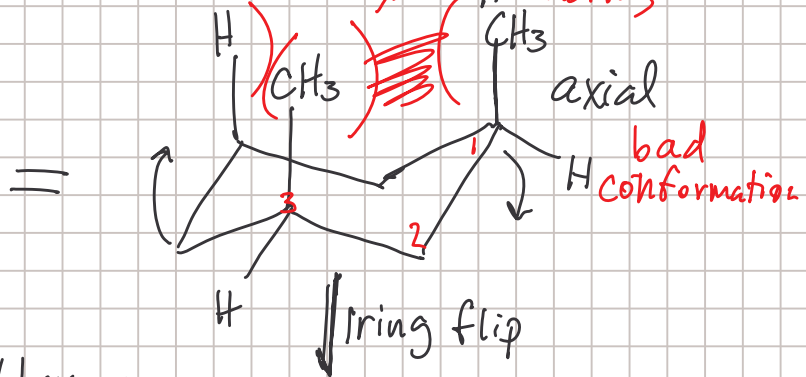
Cis-1,2-dimethylcyclohexane

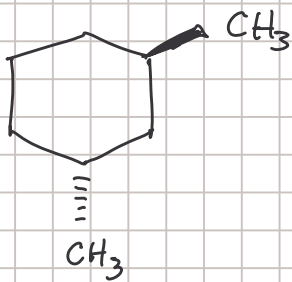


trans-1,2-dimethylcyclohexane

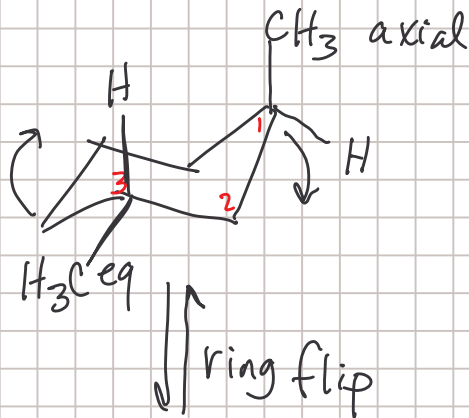


Cis-1,3-dimethylcyclohexane

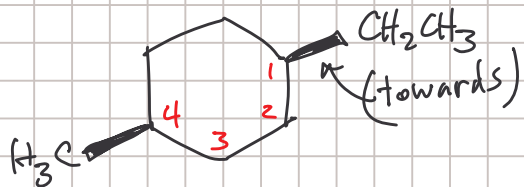
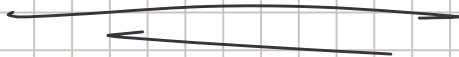
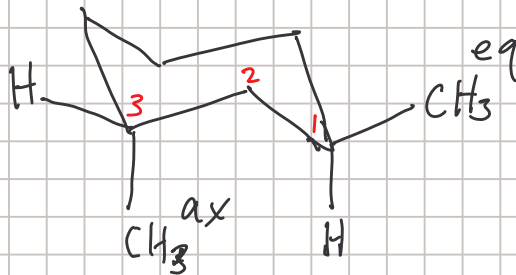




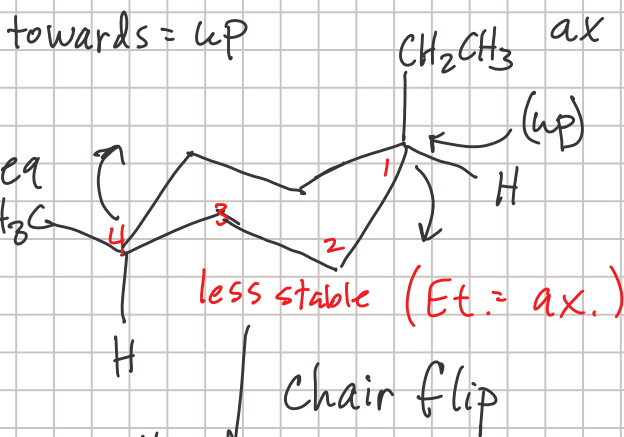
trans-1,3-dimethylcyclohexane



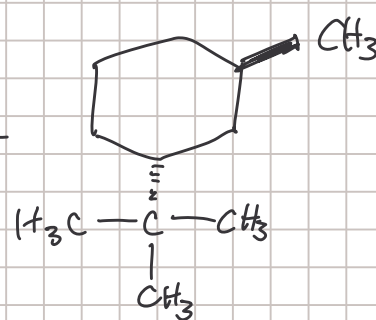
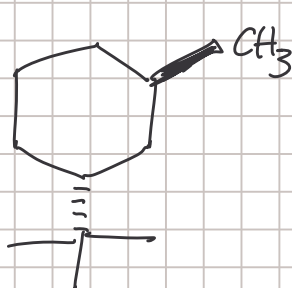
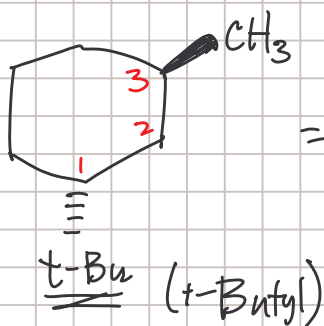
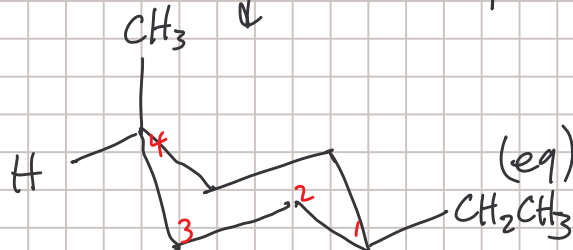
2 different groups  
on cyclohexane



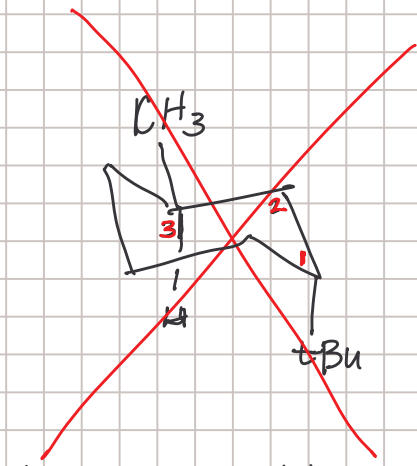
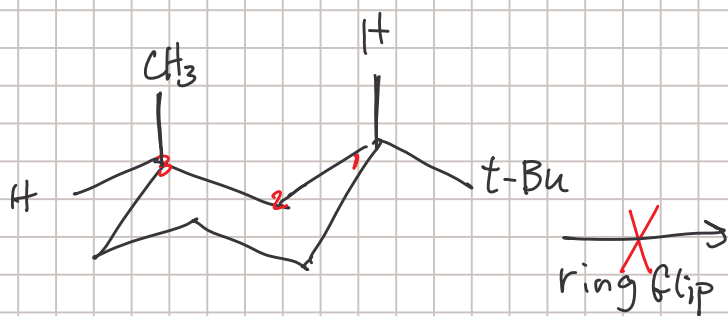
Cis-1-ethyl-4-methyl-  
Cyclohexane



large groups most  
stable when equatorial



# trans-1-t-butyl-3-methylcyclohexane

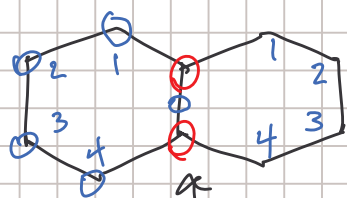


t-Bu is a very bulky group

t-Bu cannot be axial!

## Bicyclic systems more than 1 ring

- fused = 2 rings share 2 adjacent carbons



bicyclo[4.4.0]decane  
2 rings      # of carbons in each path      total # carbons

bridgehead carbons (shared)

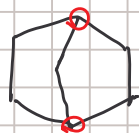
# of carbons in each path



bicyclo[4.3.0]nonane  
(start w/ largest)

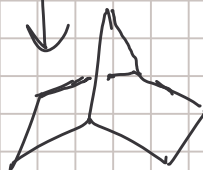
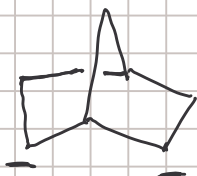
# Bridged bicyclic systems

bridgehead carbons are non-adjacent

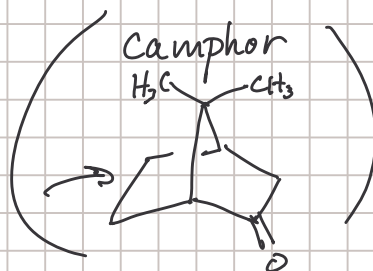


bicyclo[2.2.1]heptane

IUPAC name



norbornane (common name)

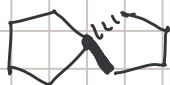


Camphor  
H<sub>3</sub>C C<sub>13</sub>H<sub>3</sub>

## Spiro Spirocyclic compounds

two rings are joined at a single carbon

(1 bridgehead)



spiro[4.4]nonane

2 rings  
perpendicular  
to each other