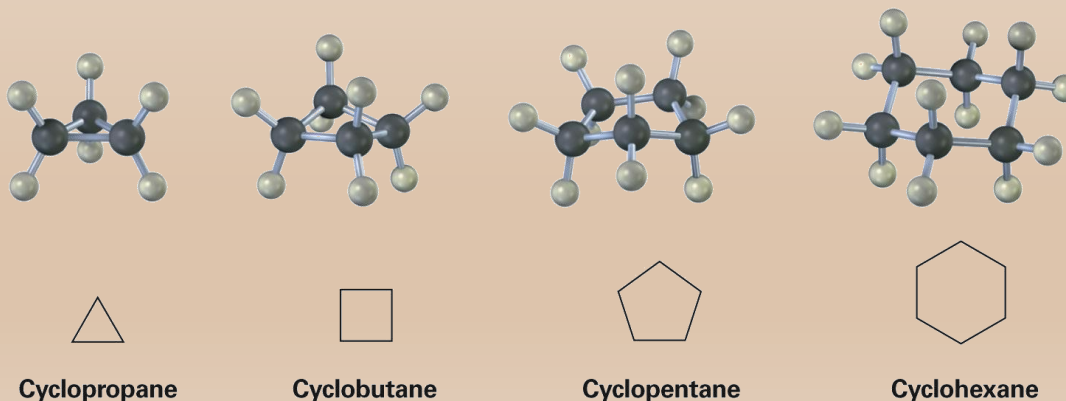


# **Cycloalkanes and Bicyclics – 2 - Nomenclature**

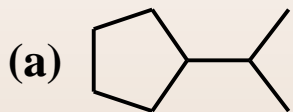
Dr. Sapna Gupta

# Cycloalkanes – Nomenclature

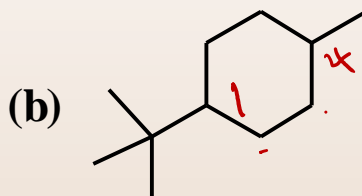
- Rings of carbon atoms (-CH<sub>2</sub>- groups)
- Formula: C<sub>n</sub>H<sub>2n</sub>
- Cycloalkane name will usually be the base compound
- Number carbons in ring if >1 substituent
- First in alphabet gets lowest number if more than one substituent
- In case where a long chain is attached to cycloalkane then give the name of the chain with cyclic alkane as cycloalkyl group.



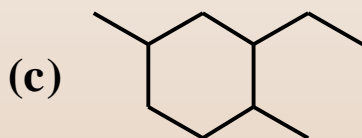
# Naming Cycloalkanes



Isopropylcyclopentane



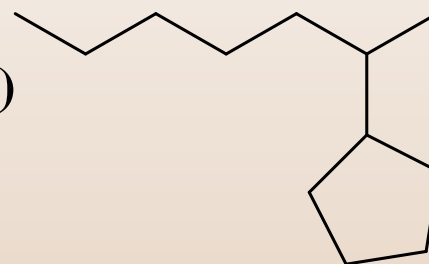
1-t-butyl-4-methylcyclohexane



1-ethyl-2,5-dimethylcyclohexane



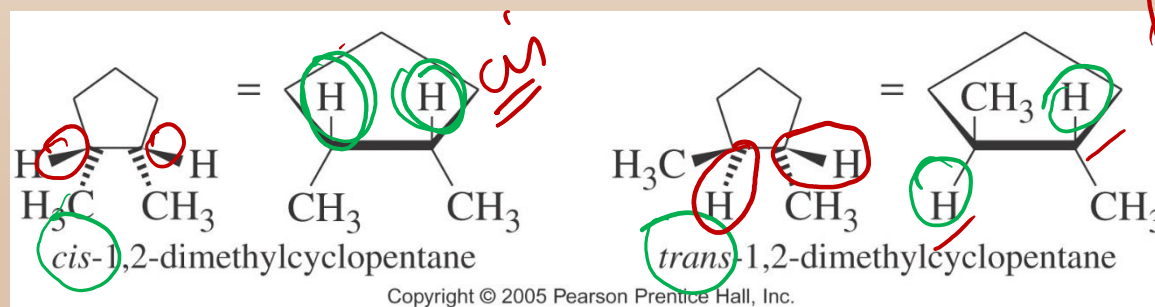
1-ethyl-1-methylcyclopropane



2-cyclopentylheptane

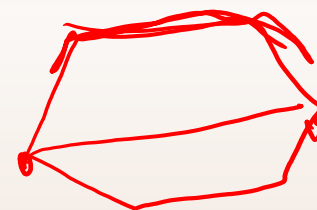
## Cis-Trans Isomerism

(cis)

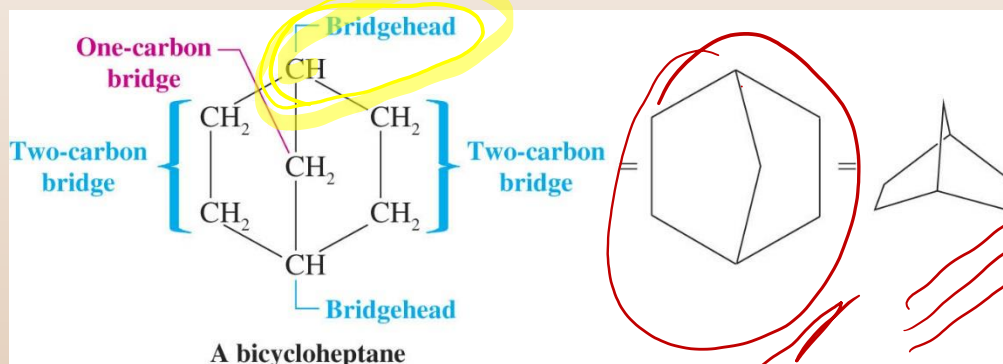


- Cis: like groups on same side of ring
- Trans: like groups on opposite sides of ring

# Bicyclic Compounds



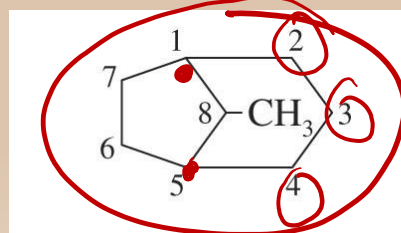
- Bicycloalkanes contain 2 rings fused together (not connected by a bond)
- The alkane with the same number of total carbons is used as the parent and the prefix bicyclo- is used



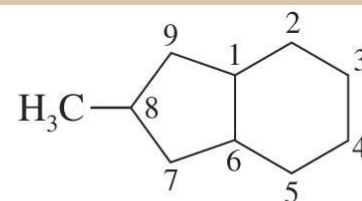
A bicycloheptane

## Bicyclo [2.2.1] heptane

- The number of carbons in each bridge is included in the middle of the name in square brackets
- For substituents: number the largest ring; the substituent can get a large number.

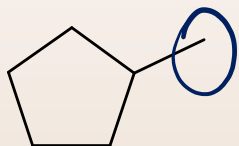


8-Methylbicyclo[3.2.1]octane

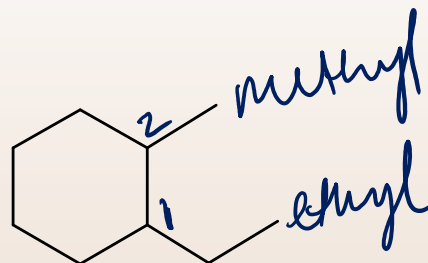


8-Methylbicyclo[4.3.0]nonane

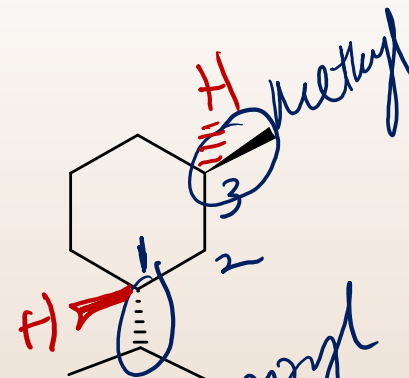
# Solved Examples



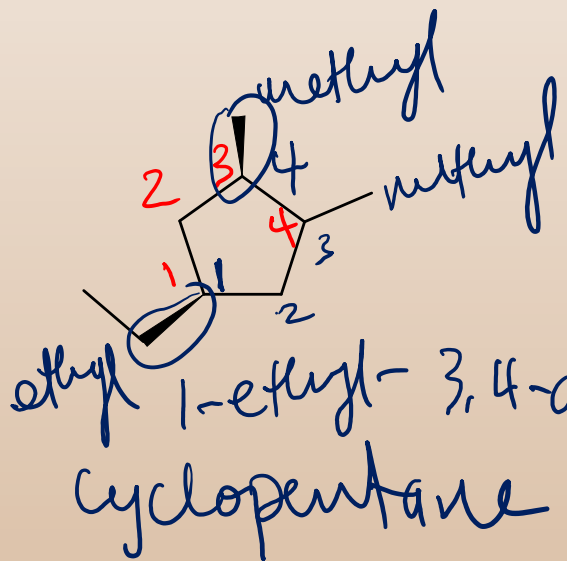
methylcyclopentane



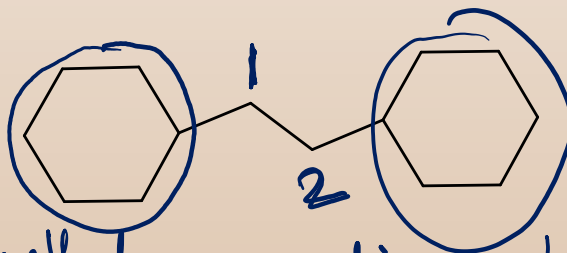
1-ethyl-2-methyl  
cyclohexane



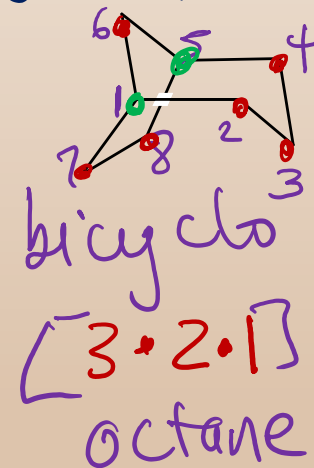
isopropyl  
methyl  
(trans)-1-isopropyl-3-  
methyl  
cyclohexane



ethyl 1-ethyl-3,4-dimethyl  
cyclopentane



1,2-dicyclohexyl  
ethane



bicyclo  
[3.2.1]  
octane

- Bicyclo [3.2.0] heptane



# Key Words/Concepts

- Know that alkenes and cycloalkanes have same molecular formula.
- Know where to start numbering.
- Know whether to name the ring or straight chain.
- Bicyclo nomenclature.