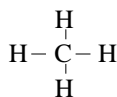
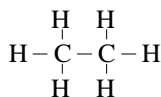
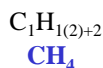


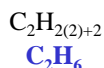
Alkanes



Methane



Ethane



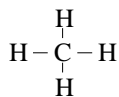
Naming Alkanes

Prefix = # of carbons in chain Suffix = -ane

CH ₄	methane	natural gas
C ₂ H ₆	ethane	
C ₃ H ₈	propane	BBQ fuel
C ₄ H ₁₀	butane	lighter fluid
C ₅ H ₁₂	pentane	solvent
C ₆ H ₁₄	hexane	component of gasoline
C ₇ H ₁₆	heptane	solvent
C ₈ H ₁₈	octane	component of gasoline
C ₉ H ₂₀	nonane	
C ₁₀ H ₂₂	decane	

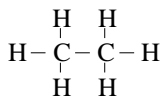
Structural Isomers

Compounds that have the same chemical formula but different arrangements of atoms



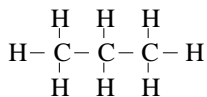
Methane

1 Isomer



Ethane

1 Isomer

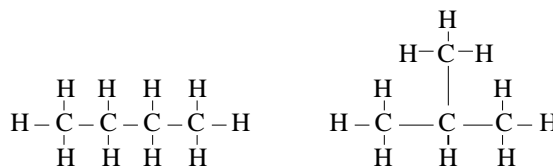


Propane

1 Isomer

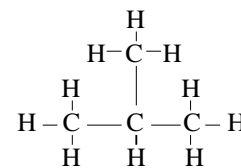
There is only one possible arrangement for each of these compounds.

Structural Isomers of Butane



normal butane

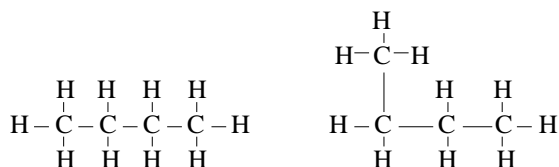
(n-butane)



isobutane

Butane has two isomers.

n - butane



normal butane

and

normal butane

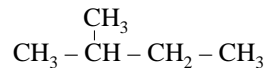
These two structures are the same. They are not isomers.

Pentane has 3 Isomers

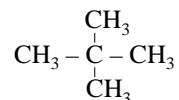
n-pentane



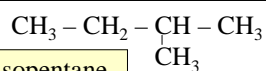
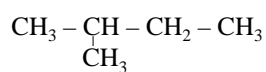
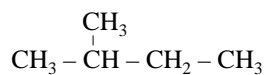
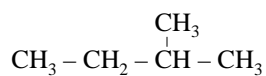
Isopentane



neopentane



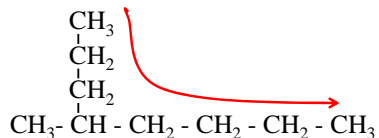
These are not different isomers



They are all isopentane

Nomenclature after Pentane

Step 1) Count the carbon atom in the longest continuous carbon chain.



8 carbon atoms in the longest carbon chain

It's an **Octane**.

Nomenclature after Pentane (cont.)

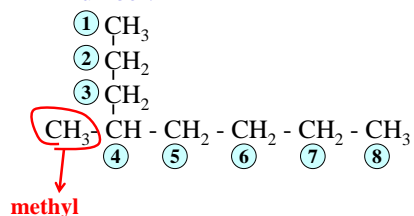
Step 2) Name the secondary alkane group according to the following chart.

- | | |
|---|--------|
| - CH ₃ | methyl |
| - CH ₂ CH ₃ | ethyl |
| - CH ₂ CH ₂ CH ₃ | propyl |
| - CH ₂ CH ₂ CH ₂ CH ₃ | butyl |

- | | |
|--|-----------|
| $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH} \\ \\ \text{CH}_3 \end{array}$ | isopropyl |
|--|-----------|

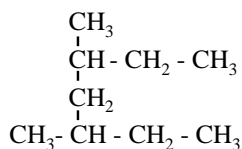
Nomenclature after Pentane (cont.)

Step 3) Number the carbon chain so that the secondary alkane falls on the lowest possible number.

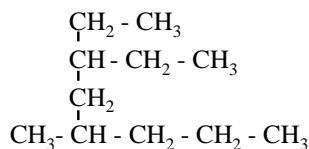


4-methyloctane.

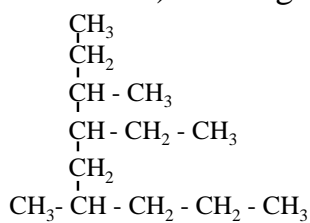
Ex 1) Naming Alkanes



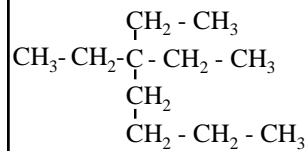
Ex 2) Naming Alkanes



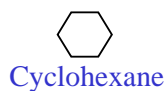
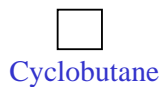
Ex 3) Naming Alkanes



Ex 4) Naming Alkanes



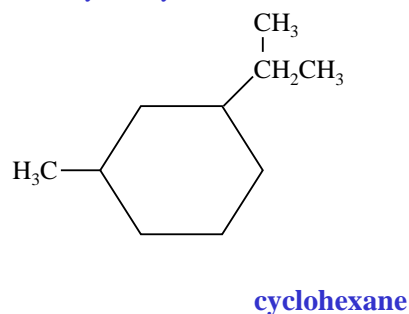
Cycloalkanes



General formula C_nH_{2n}

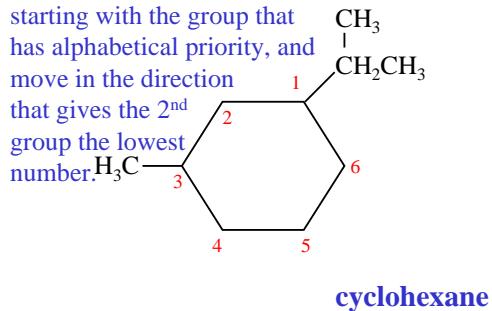
Naming Cycloalkanes

Step 1. Identify the Cycloalkane



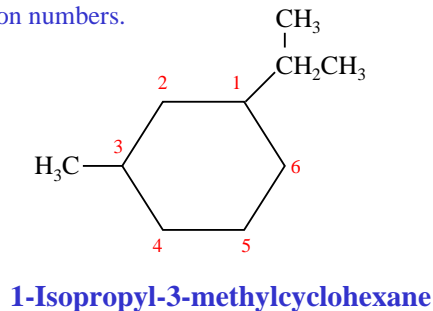
Naming Cycloalkanes

Step 2. Number the carbons in the cycloalkane by starting with the group that has alphabetical priority, and move in the direction that gives the 2nd group the lowest number.



Naming Cycloalkanes

Step 3. Add the group names with their associated carbon numbers.



Ex) Name this Cycloalkane

