

## Determining a Name Nomenclature

### IUPAC

① Identify the principle grouping:

a) alkane

b) alkene

c) alkyne

d) carboxylic acid - COOH  $\begin{matrix} \text{O} \\ \parallel \\ \text{C} - \text{OH} \end{matrix}$

e) internal carbonyl - R-C(=O)-R' ketone

f) terminal carbonyl - R-C(=O) aldehyde

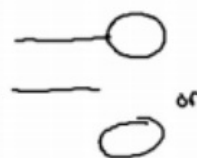
g) amide - NH<sub>2</sub>

h) hydroxyl -OH alcohol

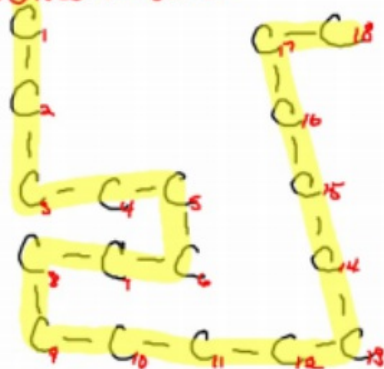
② Identify carbon that make parent chain. The longest continuous grouping of carbon - maybe chain or ring form but not both.

a) highlight parent chain + number carbon.

# must be started at end of parent chain w/ most branches, higher level functional group or double/triple bonds.

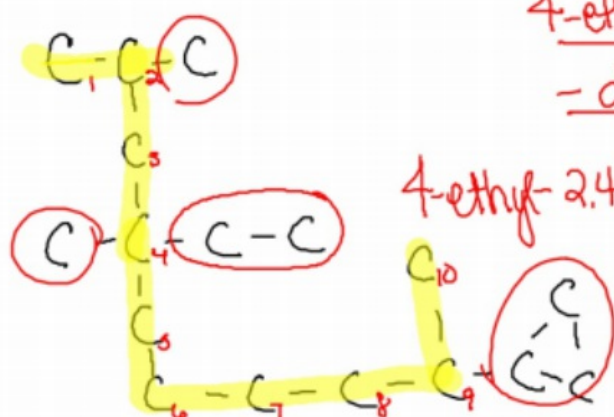


octadecane



Conformations - the changes in the shape of the 3-D molecule based on free rotation around single bonds  
(Bending)

- ③ name by using prefix for # of carbon in parent chain + suffix for type of C-C bonds. If ring add cyclo- to front of name.
- ④ if branches are present list halogens first alphabetically, followed by alkyl (carbon) branches listed alphabetically.

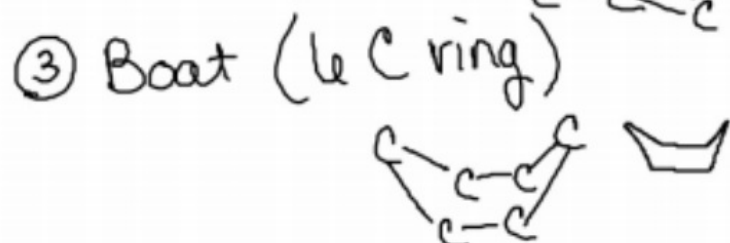
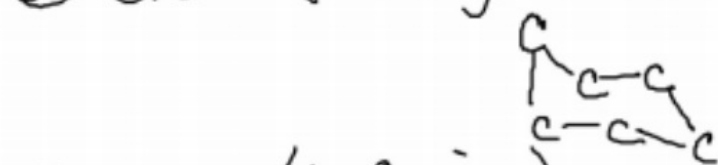
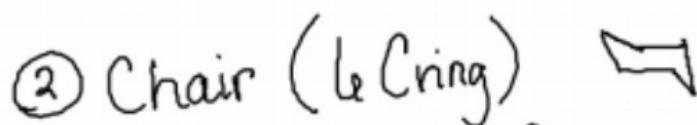
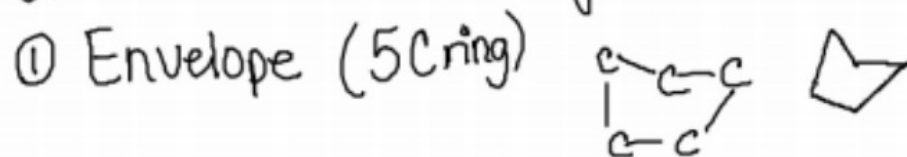


4-ethyl-2,4-dimethyl-cyclopropyl  
-decane

4-ethyl-2,4-dimethyl-9-cyclopropyl-  
decane

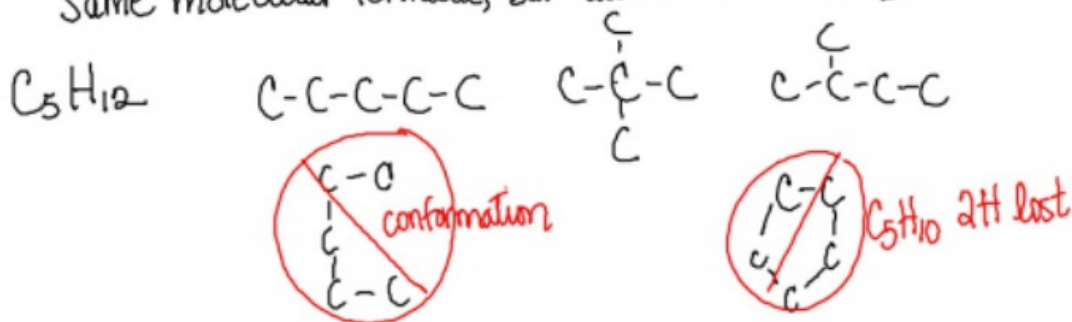
## Conformations - Bending

### Common Conformations - Cycloalkanes



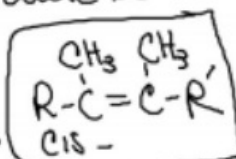
# Constitutional Isomers (Structural Isomers)

Same molecular formula, but different atom-atom BONDING

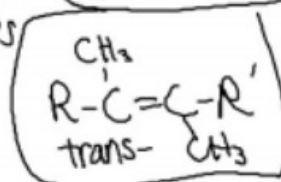


Cis-Trans Isomers: isomers created when a double bond or ring form prevents free rotation.

Cis - Same side - Substituents are both on same side

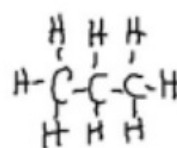


Trans - opposite sides - Substituents are on opposite sides

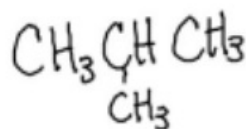
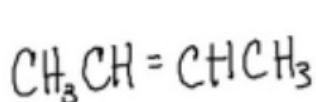
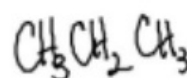


## Ways to Illustrate:

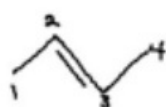
Structural: uses element symbol + dashes for bonds  
(shows arrangement but not shape)



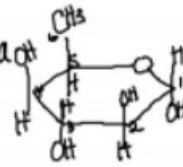
Condensed: removes dashes from parent chain and records Carbon + hydrogen together:



line angle: leaves only the dashes for the Carbon to carbon bonds + the element symbols for non-carbon




Skeletal: a blending of methods used to focus on critical area





Ball + Stick: drawing of actual 3-D model

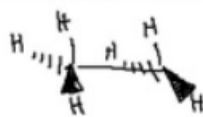
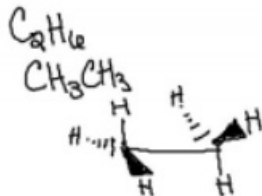


Dash-Wedge: uses skeletal illustration with enhanced bonds.

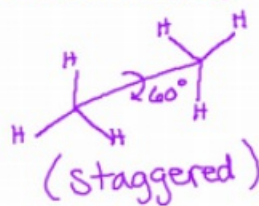
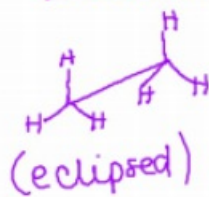
 wedge indicates front-facing bond

 dash indicates rear-facing bond

 line indicates up/down bond



Saw-Horse: uses skeletal at an angle so that orientation of substituents can be observed.



Newman Projection: the "front" carbon bonds go to the center of the circle, the "back" carbon bonds begin at the edge of the circle + go out.

