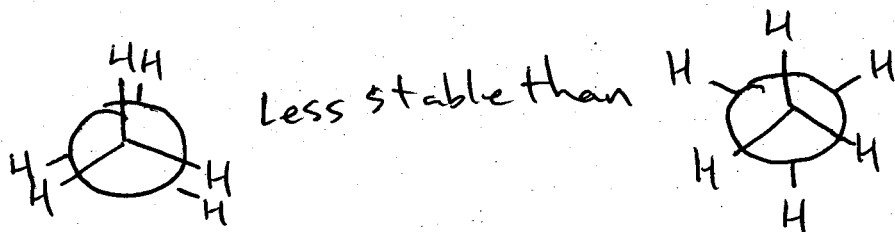


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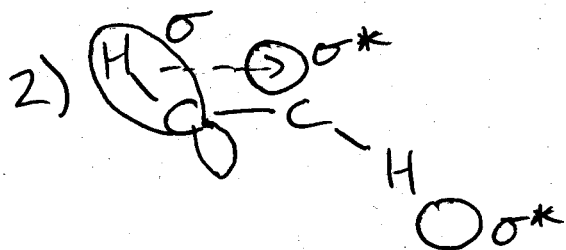
Recall: Eclipsed vs. Staggered
Conformations of ethane.



2 Factors...

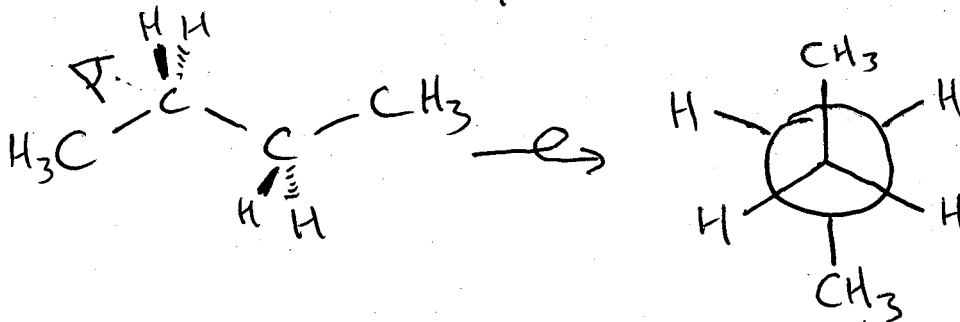


σ e^- repulsion - more severe in eclipsed.



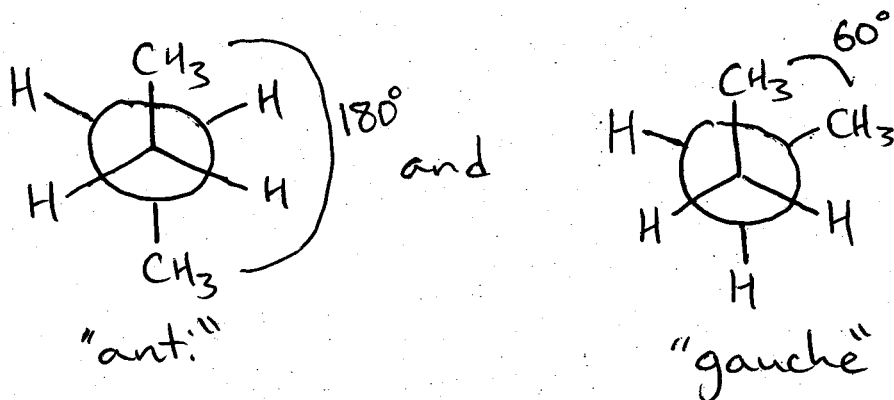
$\sigma \rightarrow \sigma^*$ e^- delocalization
favorable - in staggered.

Conformational analysis of butane

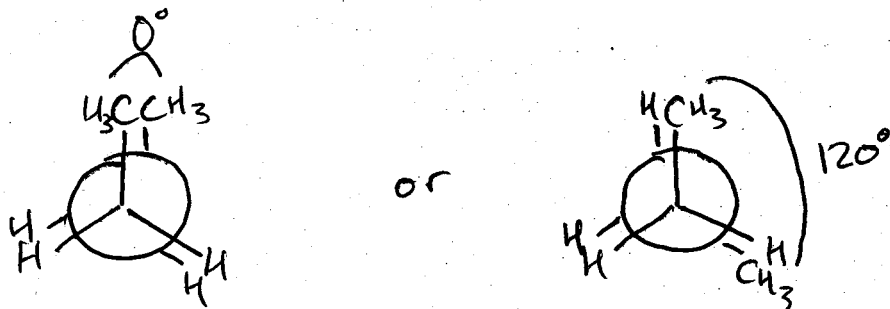


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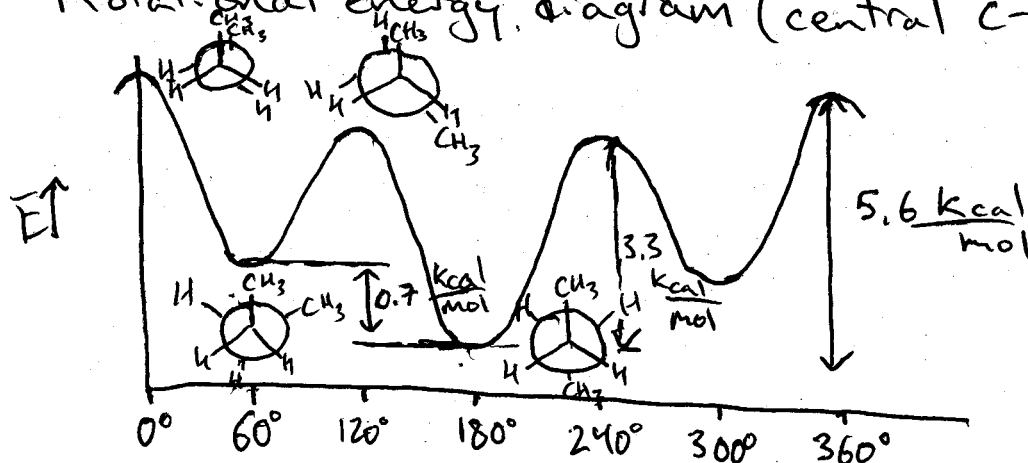
In butane there are two kinds of staggered conformations



2 kinds of eclipsed (no names):



Rotational energy diagram (central C-C bond of butane):



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Comments

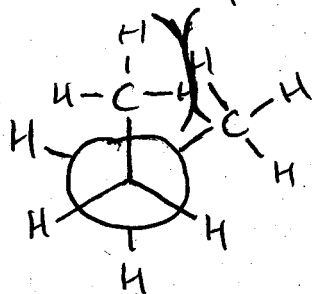
1). 2 different staggered

Gauche = local minimum

Anti = global minimum (most stable)

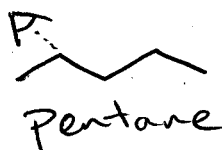
gauche conformation of butane must get over energy barrier in order to reach anti conformation.

2). Gauche is destabilized relative to anti by steric repulsions

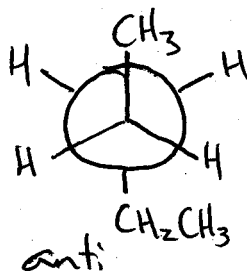
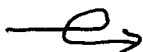


Principles discussed for butane extend directly to larger alkanes (and other molecules)

Consider

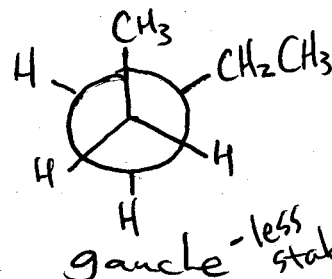


Pentane



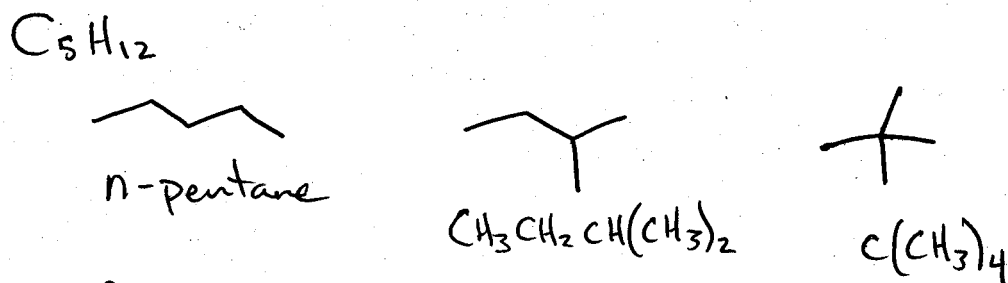
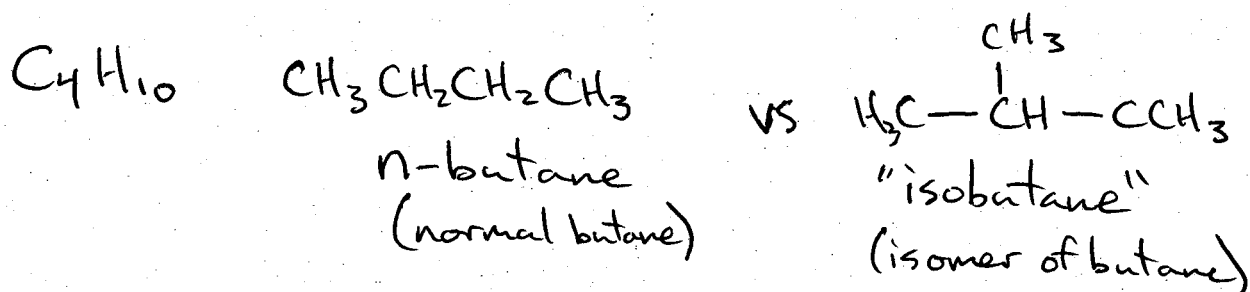
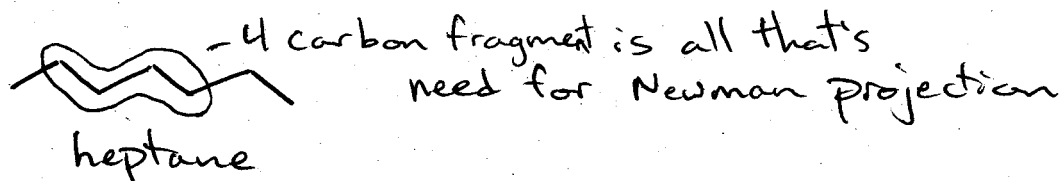
anti

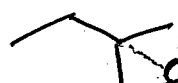
vs.



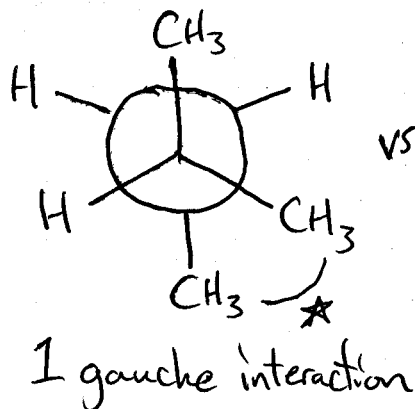
gauche - less stable

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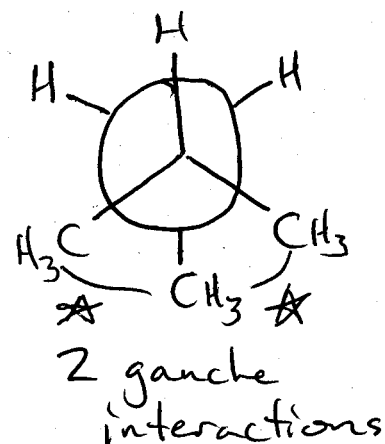


Conformational Analysis of 

Left conformation
 more stable than
 right



vs.



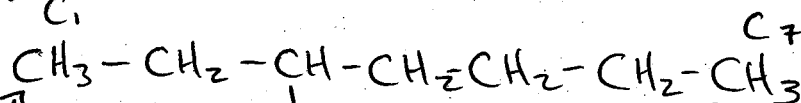
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Alkane nomenclature - p. 58-70

Students: be able to take name to structure

(other than very simple cases, don't worry about taking
na structure to name)

Consider: C₁

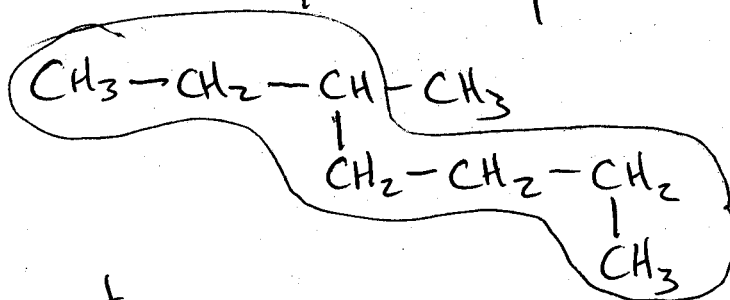


This is C₁
because it is closer
to the substituent than

"3-methylheptane"

There is a methyl group on carbon 3
family of molecule
longest linear carbon chain.

Don't be misled by the way a molecule is drawn



still 3-methylheptane

Alkyl fragment

CH₄ vs.
Methane

CH_3
"methyl group"

CH_2CH_3
Ethyl group

$\text{CH}_2\text{CH}_2\text{CH}_3$
Propyl group

Course Chem 343

Lecturer Gellman IIA M

Day Wednesday

Date 9-14-11

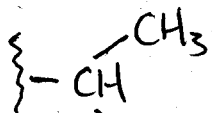
Notes Taken By Derek

Total # of Pages 6

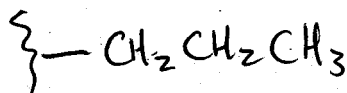
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Branching (Alkyl ≥ 3 C's)



"isopropyl"



"propyl"