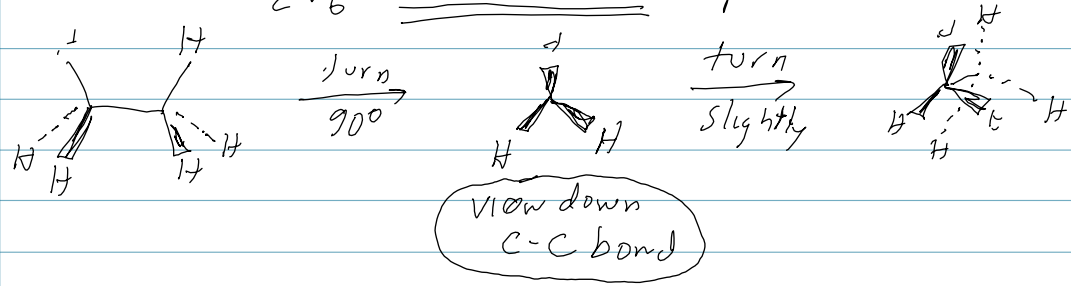


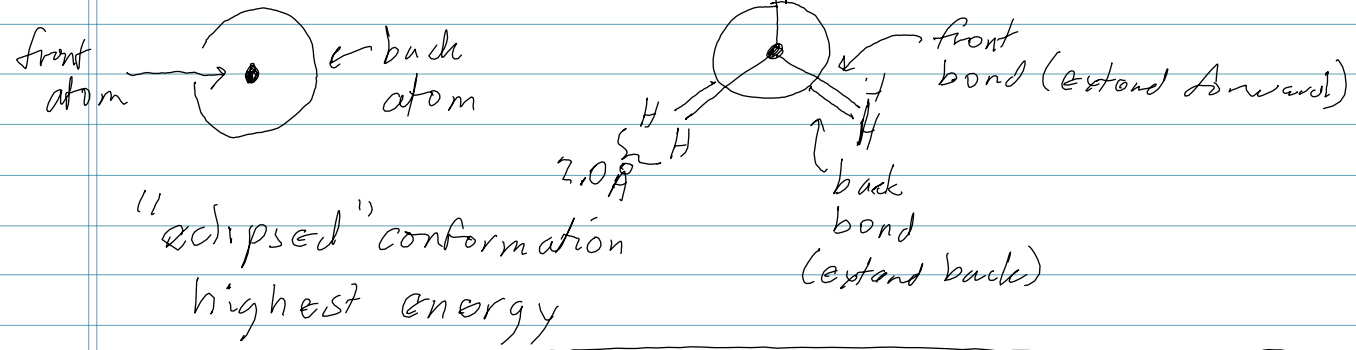
# Conformations of Alkanes

Alkanes - 6 bonds only  $\Rightarrow$  lots of conformations  
 $\Rightarrow$  most of time in lower E conf.

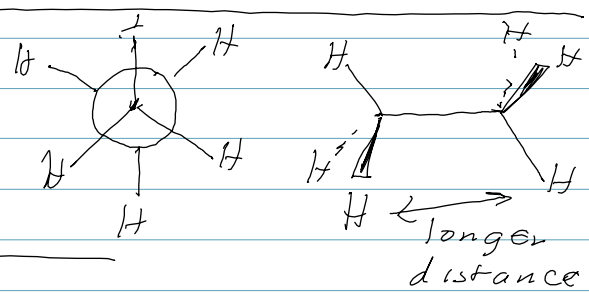
Ethane:  $C_2H_6$ ; Make model  $\Rightarrow$  place on table so 4 H atoms on table.



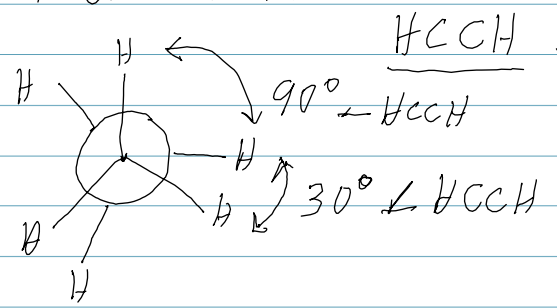
## Newman Projection



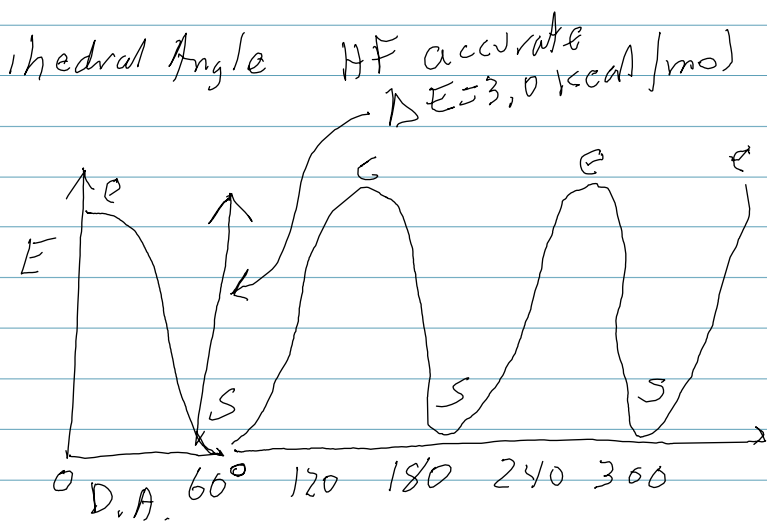
"staggered" conformation  
lowest energy



## Other conf.



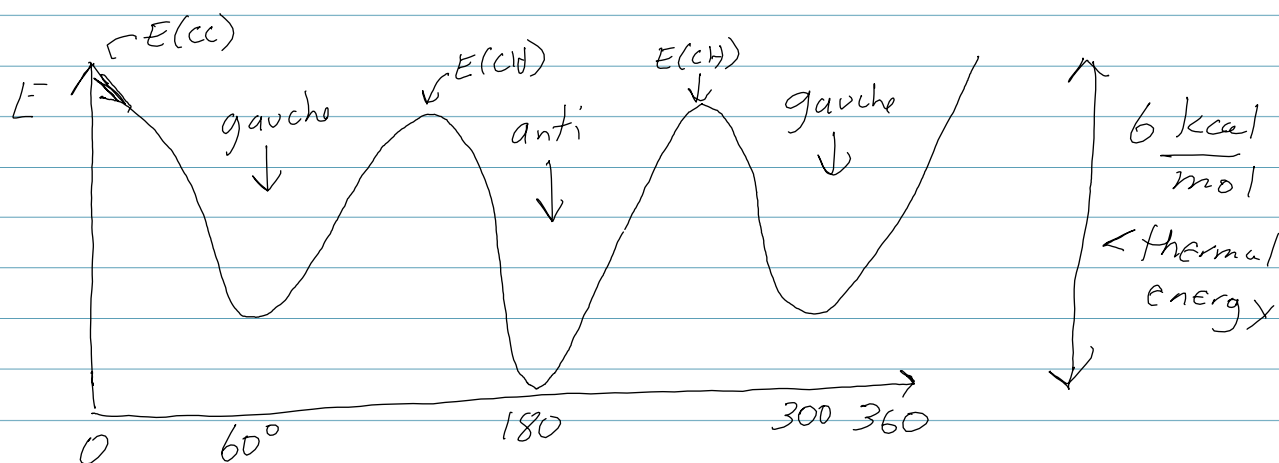
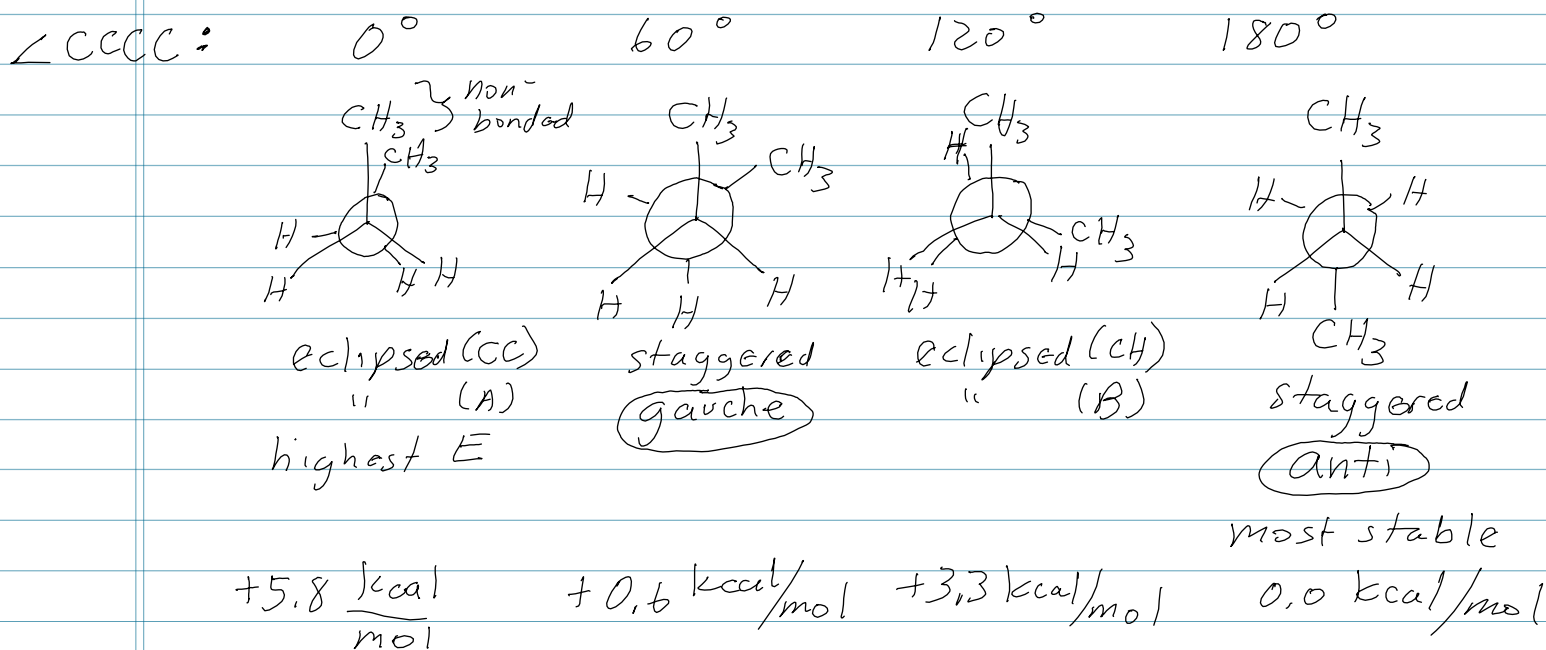
Staggered:  $\angle HCCCH = 60^\circ$   
 Eclipsed:  $\angle HCCCH = 0^\circ$



$\Rightarrow$  More molecules in staggered vs. eclipsed

Longer alkanes: diff. D.A. for each C-C bond

Butane:  $C_4H_{10}$



Free rotation around C-C single bonds

More time in lower E conformations

$$\frac{[anti]}{[gauche]} \approx 3 \text{ at RT} \quad \leftarrow 1\% \text{ eclipsed at R.T.}$$