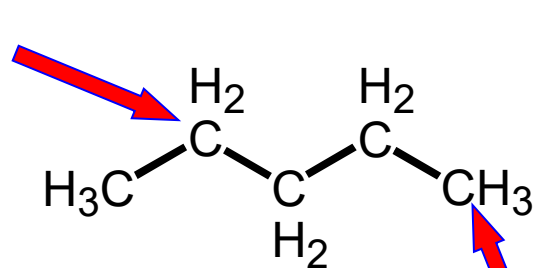


Chapter 4: Organic Compounds

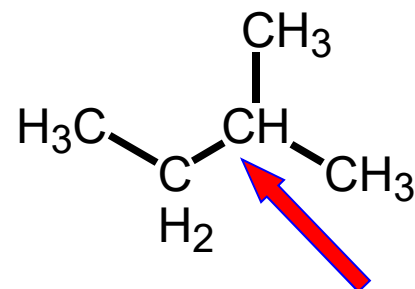
Part 2: Configurational Isomers and Cycloalkanes

Naming Organic Compounds

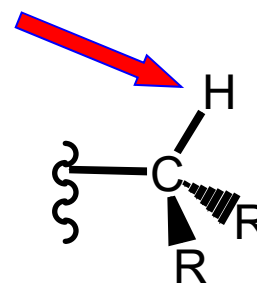
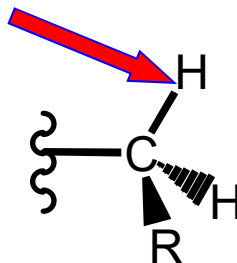
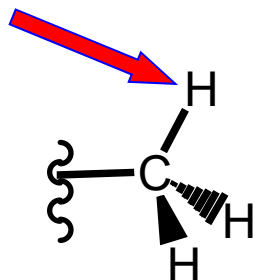
We need to make a distinction between different types of Carbons, Hydrogens, or Nitrogens



pentane

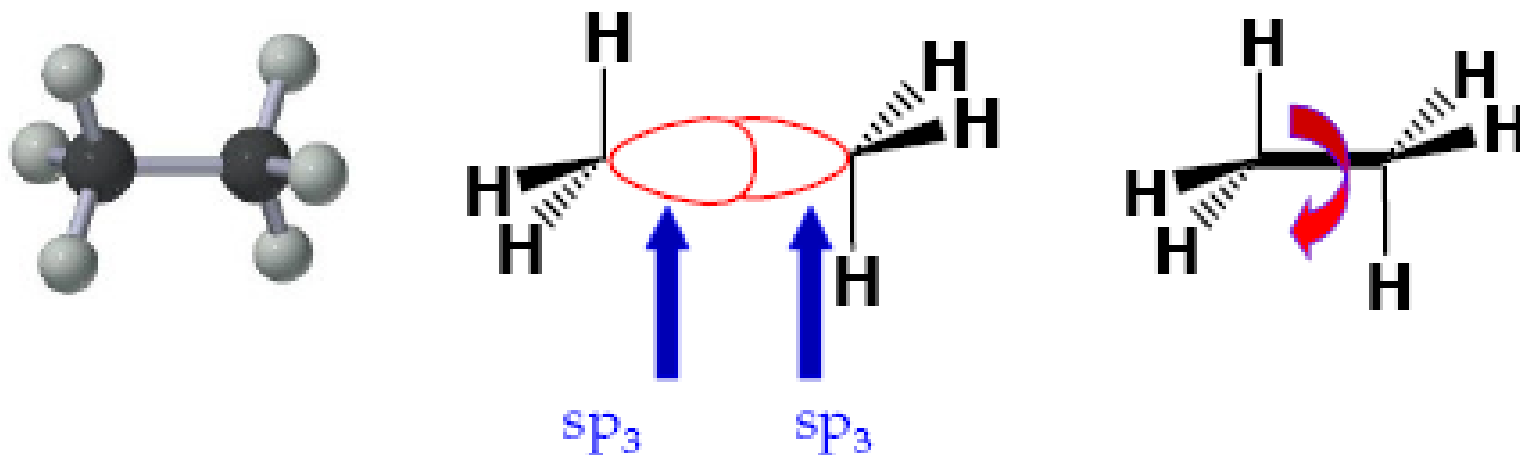


isopentane



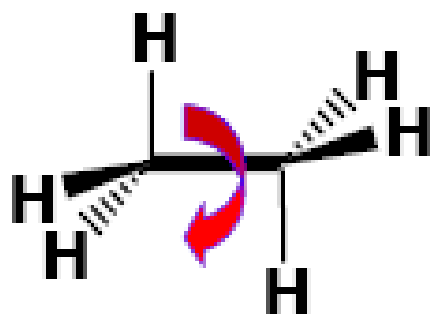
Conformations of Alkanes

Let's look again at ethane....

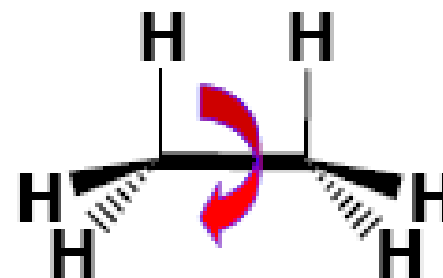


Rotation about a σ bond

Conformational Isomers



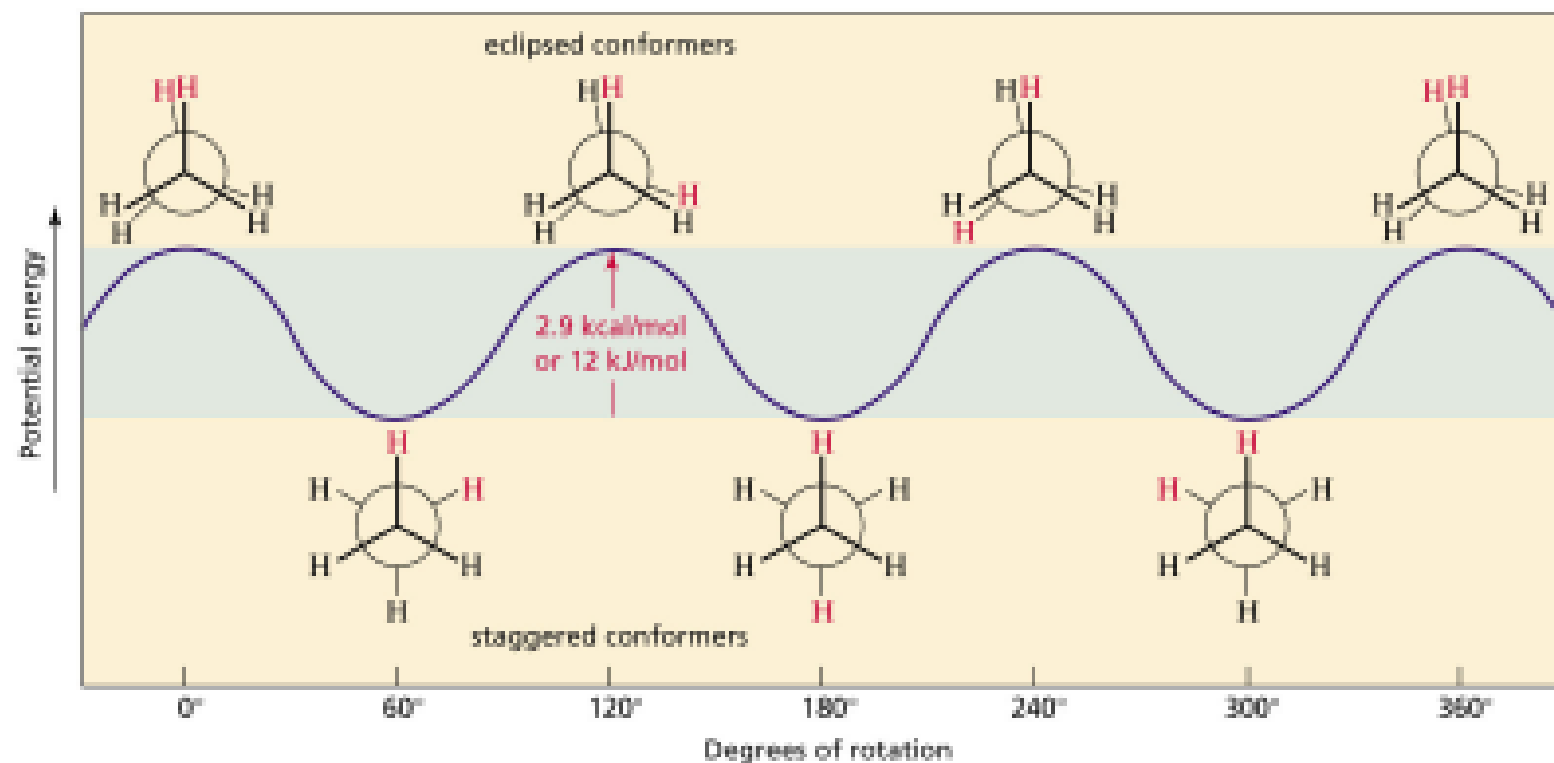
staggered conformer



eclipsed conformer

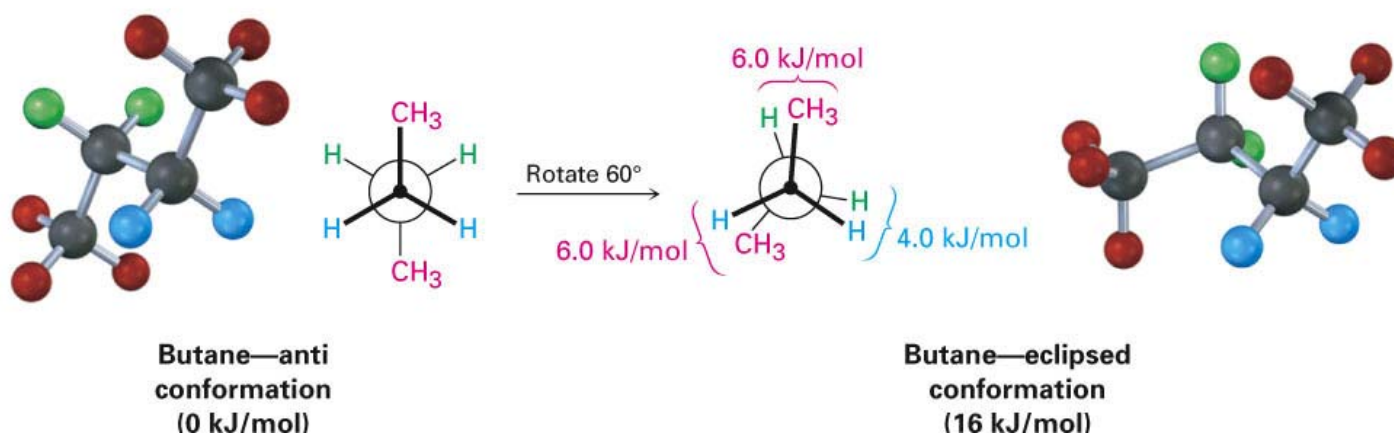
- ▶ Conformational isomer: isomer created by a rotation about a (single) bond

Conformations of Ethane



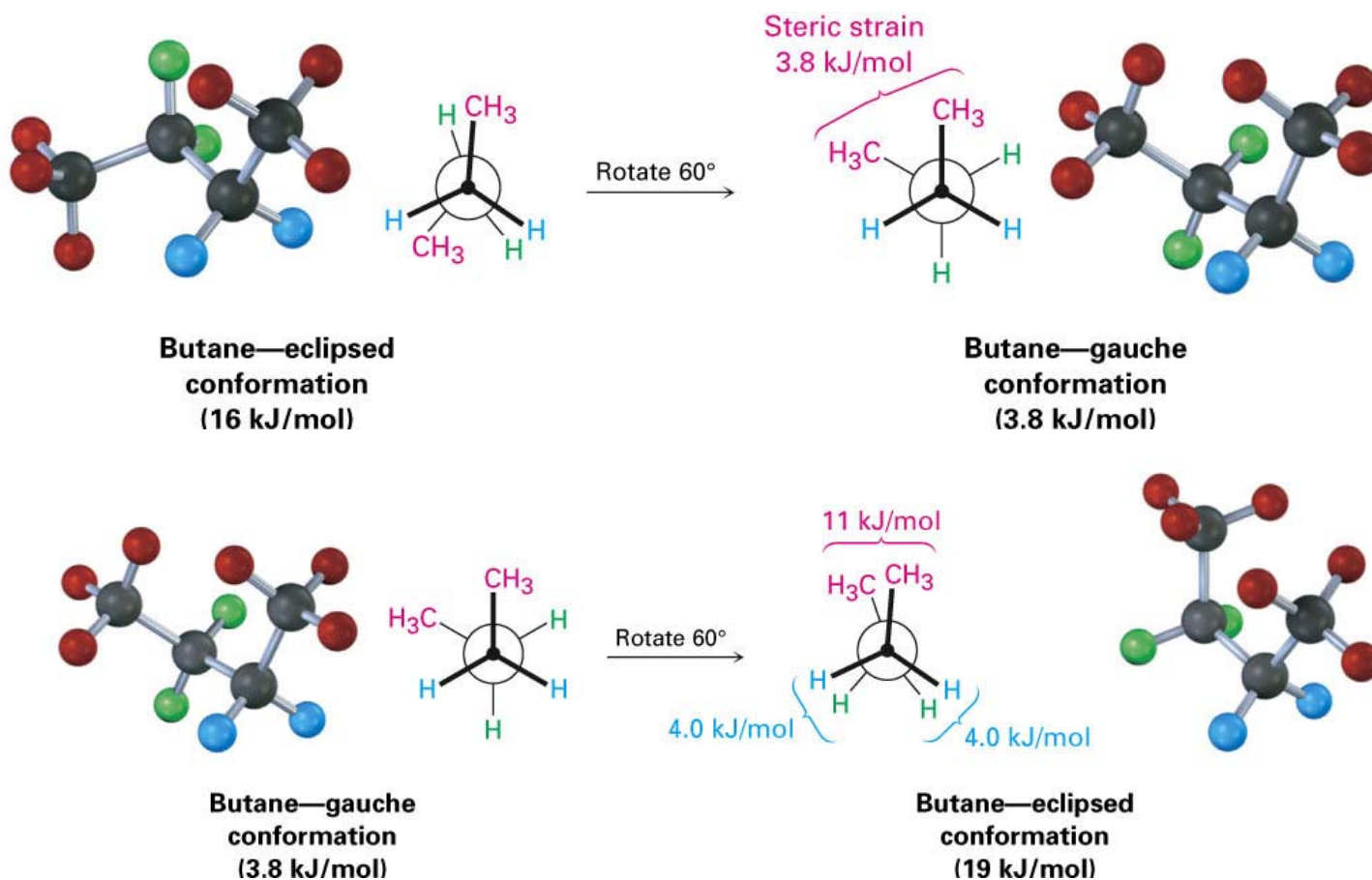
Conformations of Other Alkanes

Let's look at Butane



Conformations of Butane

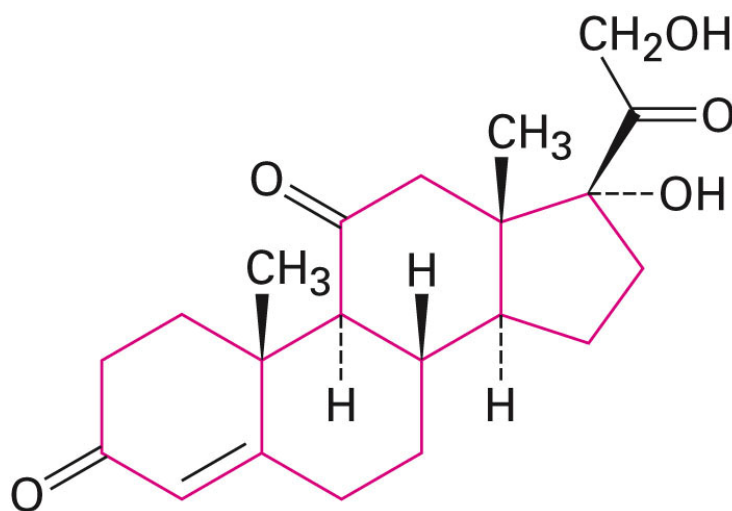
► **Anti** conformation- **Gauche** conformation-



Chapter 4 Part 2: Cycloalkanes

We've discussed open-chained compounds up to this point

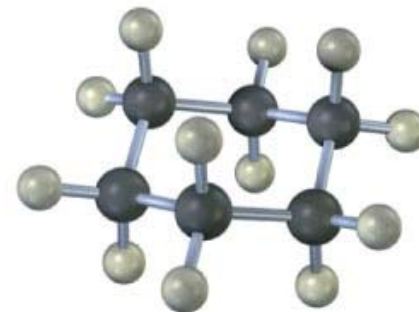
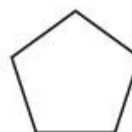
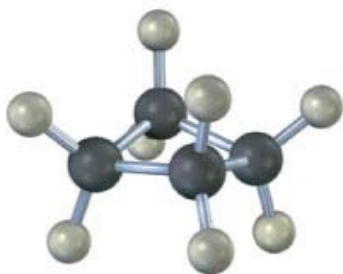
Many organic compounds contain rings of carbon atoms



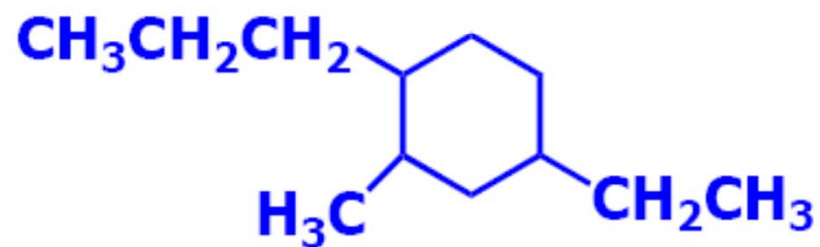
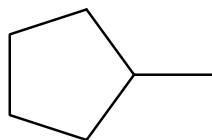
Cortisone

Naming Cycloalkanes

Cycloalkanes are saturated cyclic hydrocarbons



Naming Cycloalkanes



Cycloalkanes: Ring Strain

Angle strain results when carbon bond angles deviate from the ideal 109.5° bond angle



good overlap



poor overlap



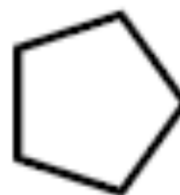
Cyclopropane

60



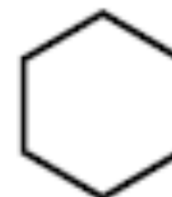
Cyclobutane

90



Cyclopentane

108



Cyclohexane

120

Types of Strain

- ▶ **strain** - eclipsing of bonds on neighboring atoms
- ▶ **strain** - repulsive interactions between nonbonded atoms in close proximity
- ▶ **strain** - expansion or compression of bond angles away from most stable

For Next Time....

- ▶ Friday More Chapter 4 (4.5-4.9)
 - ▶ BRING YOUR MODEL SET!

- ▶ Monday Finish Chapter 4 (if we haven't)
 - ▶ Chapter 5 (5.1-5.4)
 - ▶ BRING YOUR MODEL SET!

- ▶ Wednesday Exam #1 (Chapters 1-4)

- ▶ Homework Problems Chapter 4
- ▶ #1, 6, 10, 19, 25, 28, 36, 43, 48, 51, 52, 63