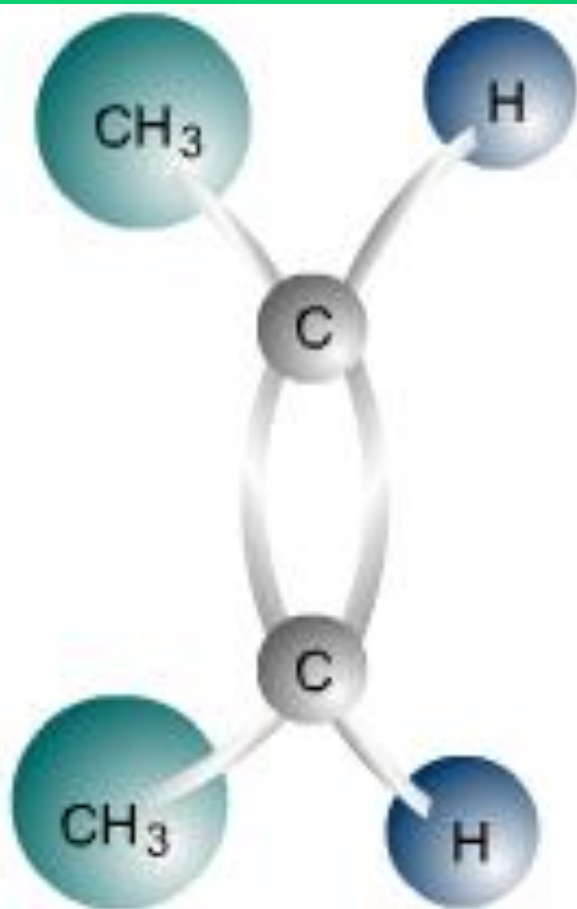
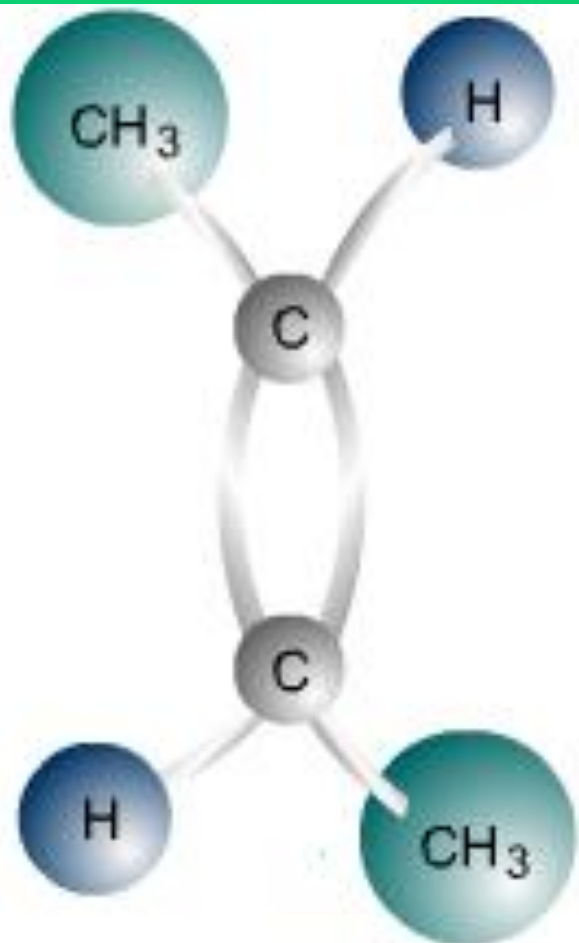


# ISOMERISM



**Cis-2-butene**  
B' pt 227k



**trans-2-butene**  
B' pt 274k

# ISOMERS

- Compounds with the same number of carbon and hydrogen atoms, but different structures
- same molar mass, different names, characteristics and chemical properties

- Isomers have different characteristics.
- If 1 isomer is used for a drug (to turn on a gene) the other may poison a person...

# Example

- Pentane vs 2-methyl butane vs 2, 2- dimethyl propane

# Cis and Trans

- Isomers
- Cis if the branches point in the SAME direction SSSS
- Trans if they are oriented in opposite directions

# Example

- CIS-2,2-dimethyl propane
- TRANS-2,2-dimethyl propane

## Example 2

- Draw and name all the structural isomers of hexane (HINT: there are 6!)



Use the following information to answer the next question.

### Molecules

- 1 pent-2-ene
- 2 pent-2-yne
- 3 cyclopentane
- 4 methylpropane
- 5 dimethylpropane
- 6 ethylcyclopropane
- 7 methylcyclobutane

### Numerical Response

12. The four molecules listed above that are isomers of  $C_5H_{10}(l)$  are numbered \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

(Record all four digits of your answer in any order in the numerical-response section on the answer sheet.)

# Cycloalkanes

- Alkanes with a cyclical ring
- Saturated aliphatic compounds (single bonds, no extra e-)

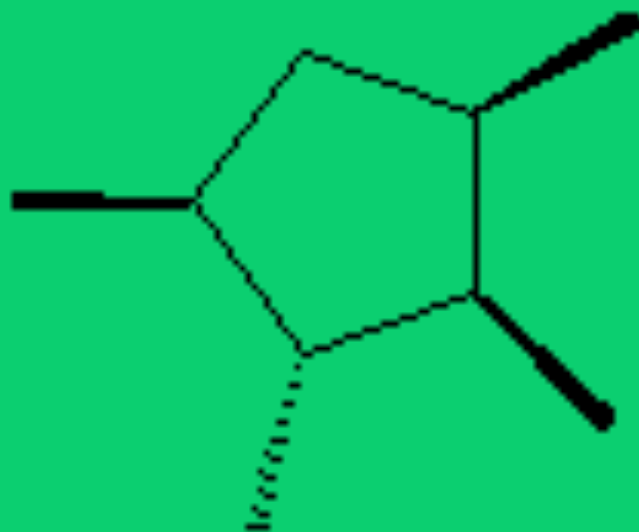


- n is equal to a number equal to or greater than 3
- i.e. cyclopropane (C<sub>3</sub>H<sub>6</sub>)

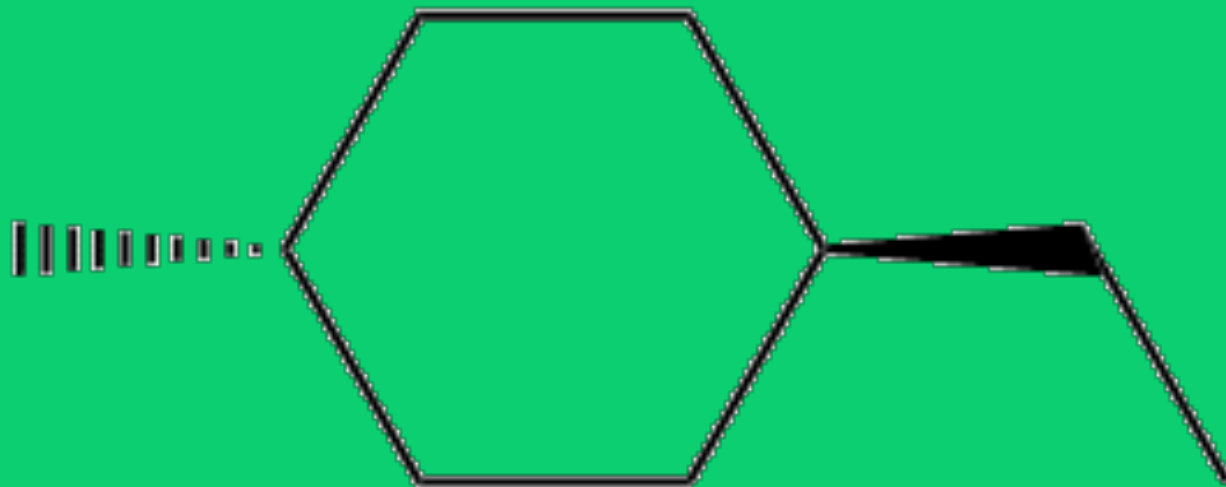
# IUPAC Naming

- Parent molecule = carbons that form the ring structure
- Branches that are bonded are numbered like alkanes

# Example



# Example 2



# Example 3

- CIS-1,3-dimethyl cycloheptane

# Example 4

- TRANS-1-ethyl, 3-methyl cyclopentane