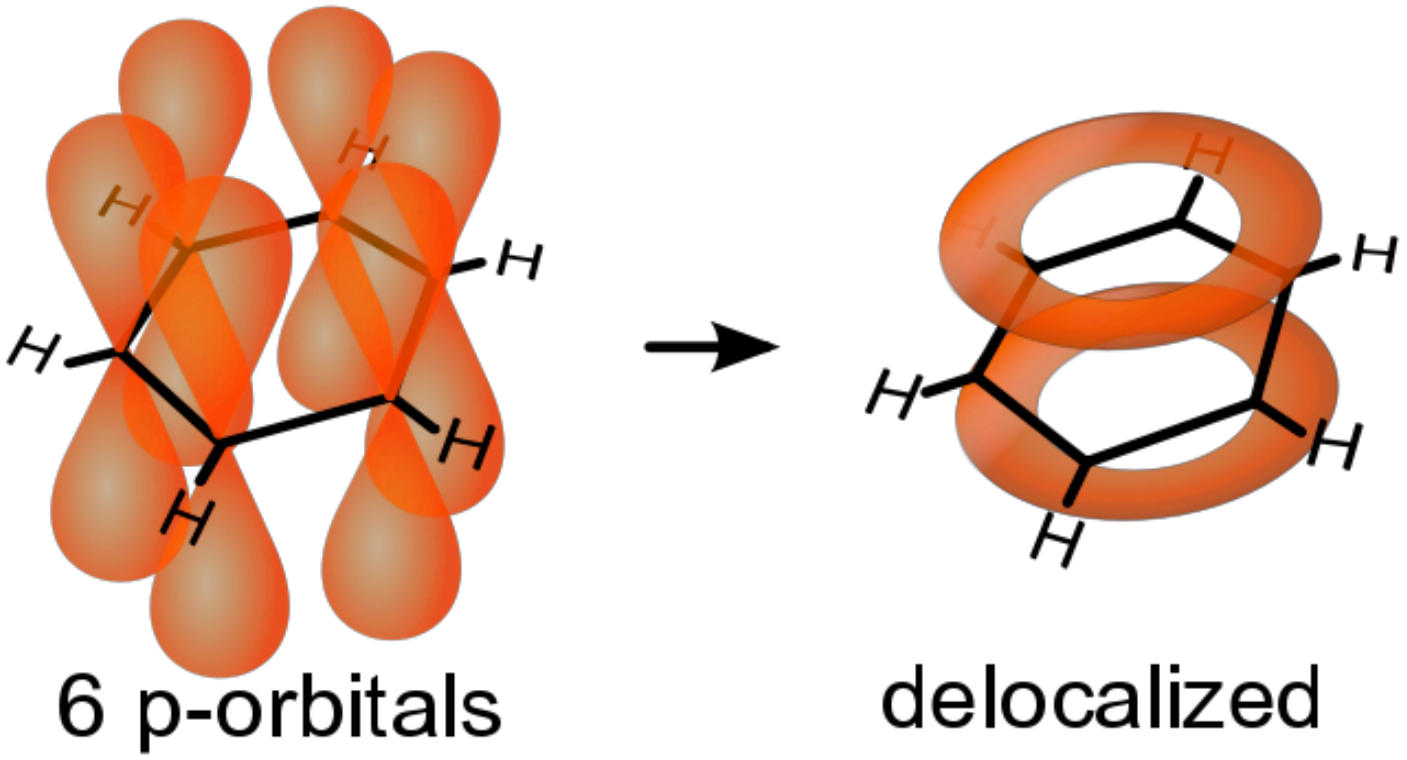
Week 2

Hooray!

You're here to learn more!

review

Benzene



P-orbitals (lobes on top) mix together to form delocalized “donut” from moving e-

Same occurs for bottom lobes of p-orbitals

Nomenclature

- Super important!
  - It's how you describe molecules & compounds to other scientists (and people)!
  - It describes the structure of the molecule or compound

Simple Organic Molecules You Should Know

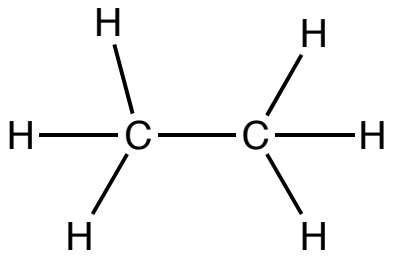
ALKANES: contain single bonds

- Methane
- Ethane
- Propane
- Butane
- Pentane
- Hexane
- Heptane
- Octane
- Nonane
- Decane

& etc. !

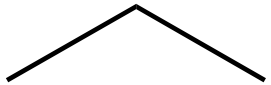
Alkanes contd.

- Methane
  - CH_4
- Ethane
  - C_2H_6



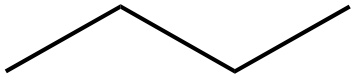
- Propane
  - C_3H_6

$CH_3CH_2CH_3$



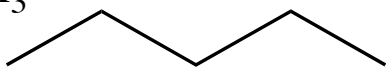
- Butane
  - C_4H_8

$CH_3CH_2CH_2CH_3$



- Pentane
  - C_5H_{10}

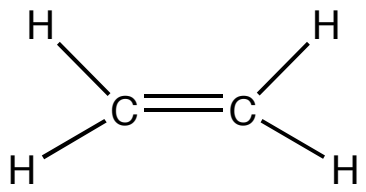
$CH_3CH_2CH_2CH_2CH_3$



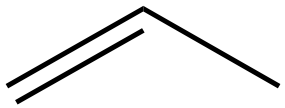
And etc….

Alkenes: contain double bonds

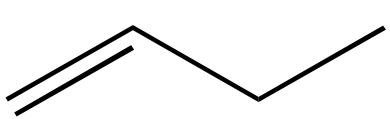
- Ethene
  - C_2H_4

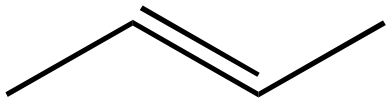


- Propene
  - C_3H_6



- Butene
  - C_4H_8

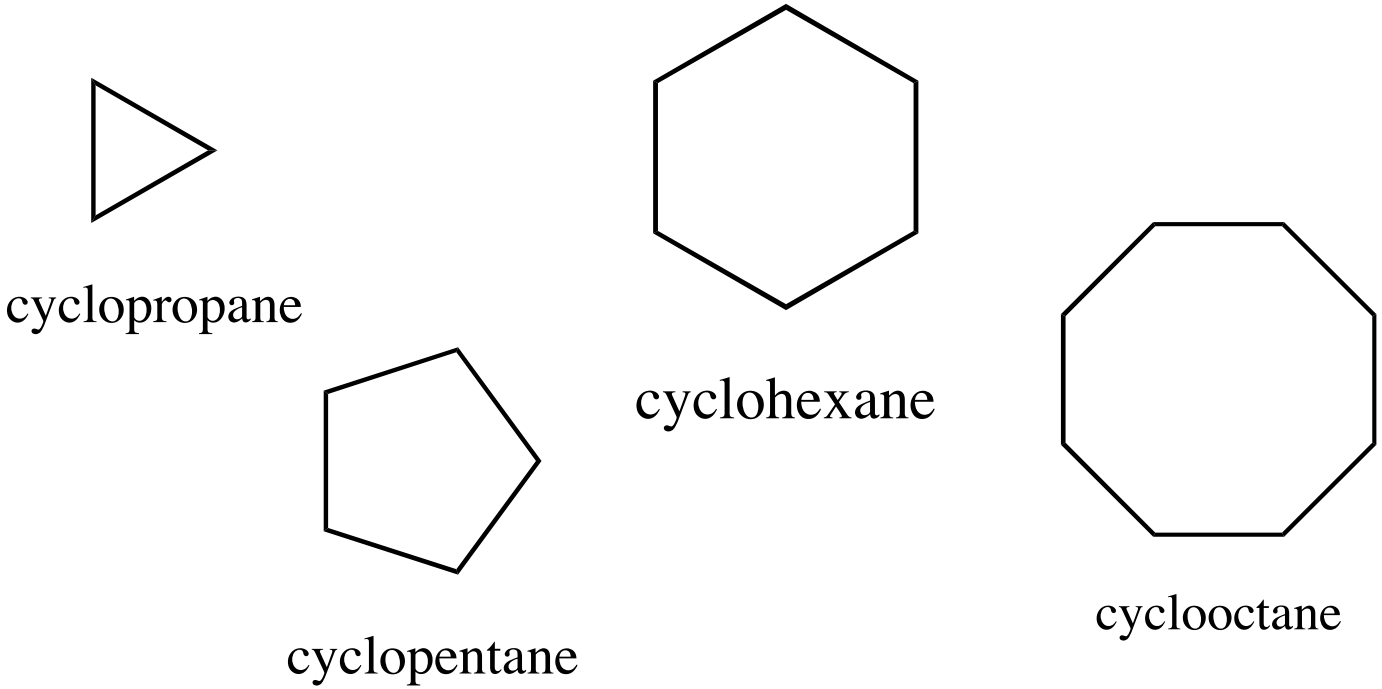




Both are Butene, Double bond is just somewhere else!
They are isomers!

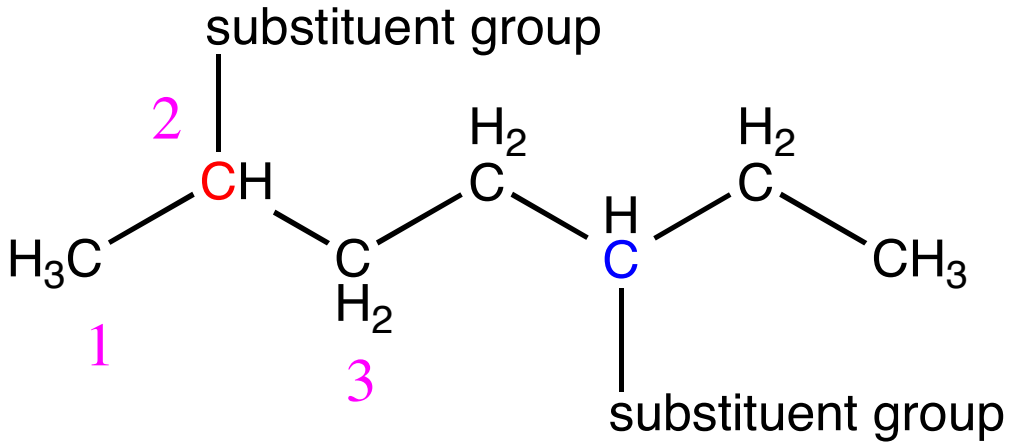
Cyclic Compounds!

- Not only do they have to be chains!
- They can be cyclic!



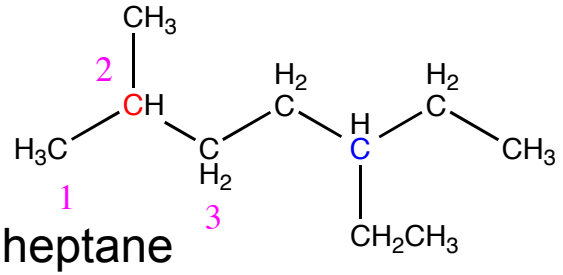
Nomenclature Rules

- "Parent" chain is the longest chain of carbon atoms
  - Put this at the end and then look at groups attached to parent chain!
- Give the lowest # to the carbon bonded to the closest substituent group from the end of the parent chain



Rules contd.

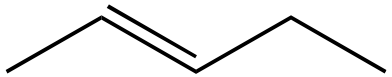
- Give substituent groups names!
  - If they are -CH_3 groups… they are "methyl"
  - If it's a CH_3CH_2- group, it's called an "ethyl" group, etc…
- You also have to number off on which carbon they are bonded!
  - If you have 2 methyls… write the number twice to indicate you have a methyl at position twice!
  - Then you have to add a prefix… two methyls = dimethyl…
- Then, place these names in alphabetical order
  - Ethyl, then methyl… and then heptane!



2-methyl,5-ethylheptane

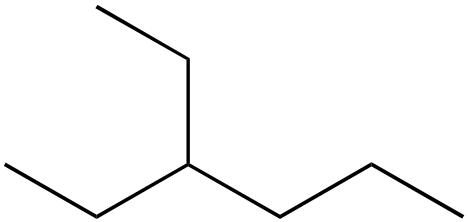
More Rules

- Larger substituent groups follow same rules, where smaller group is numbered on larger group
- If there are double bonds, give the nearest carbon in the double bond to the end the lowest number possible!

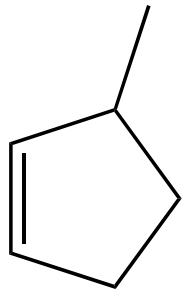
2-pentene and not 3-pentene 

- Compounds with halides (Chlorine, Bromine) are also substituent groups (Chloro-, Bromo-)
  - They come alphabetically before ethyl and methyl (remember your ABC's!)
  - If they come on the first carbon, they they start off the parent chain numbering
  - If methyl or ethyl groups come first, then they start off the count!

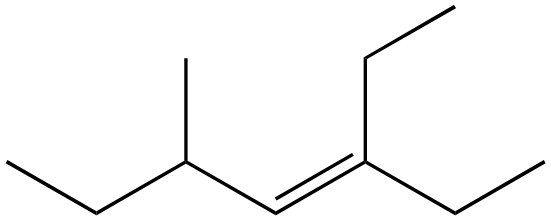
Now you can name organic compounds!!



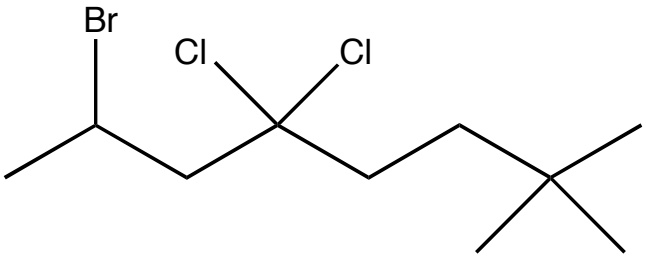
3-ethylhexane



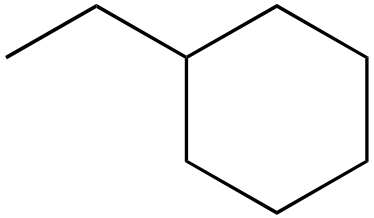
3-methylcyclopent-1-ene



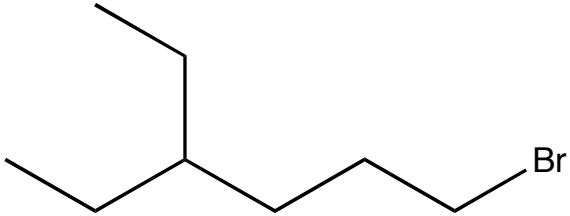
3-ethyl-5-methylhept-3-ene



7-bromo-5,5-dichloro-2,2-dimethyloctane



ethylcyclohexane



1-bromo-4-ethylhexane