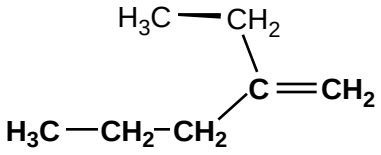
Naming Alkenes

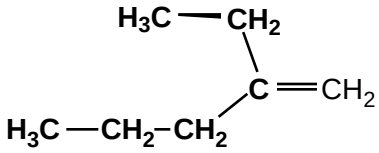
Suffix: -ene

Many of the same rules for alkanes apply to alkenes

1. Name the parent hydrocarbon by locating the longest carbon chain that contains the double bond and name it according to the number of carbons with the suffix -ene.

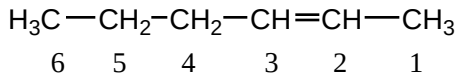


Parent = pentene



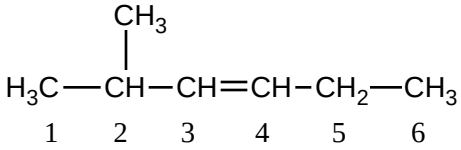
not hexene
(does not contain double bond)

2. a. Number the carbons of the parent chain so the double bond carbons have the lowest possible numbers.



2-hexene

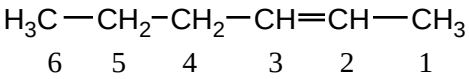
b. If the double bond is equidistant from each end, number so the first substituent has the lowest number.



2-methyl-3-hexene

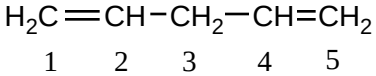
3. Write out the full name, numbering the substituents according to their position in the chain and list them in alphabetical order.

4. Indicate the double bond by the number of the first alkene carbon.

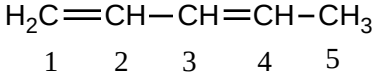


2-hexene

5. If more than one double bond is present, indicate their position by using the number of the first carbon of each double bond and use the suffix -diene (for 2 double bonds), -triene (for 3 double bonds), -tetraene (for 4 double bonds), etc.

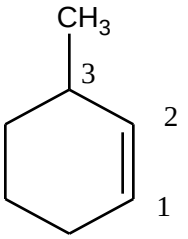


1,4-pentadiene

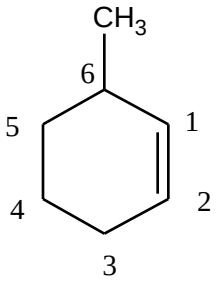


1,3-pentadiene

6. a. Cycloalkenes are named in a similar way. Number the cycloalkene so the double bond carbons get numbers 1 and 2, and the first substituent is the lowest possible number.

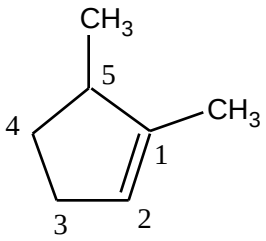


3-methylcyclohexene

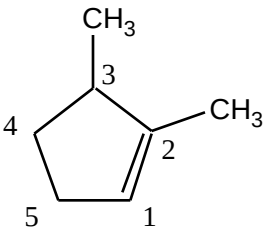


NOT
6-methylcyclohexene

b. If there is a substituent on one of the double bond carbons, it gets number 1.

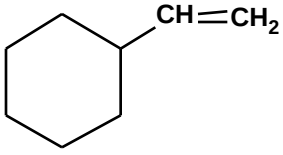


1,5-dimethylcyclopentene

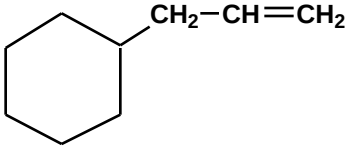


NOT
2,3-dimethylcyclopentene

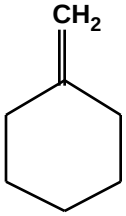
Alkenes as Substituents:



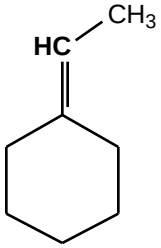
ethenyl or vinyl
(vinylcyclohexane)



2-propenyl or allyl
(allylcyclohexane)

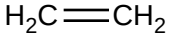


methylene
(methylenecyclohexane)

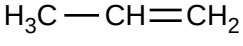


ethylidene
(ethylidenecyclohexane)

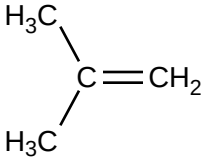
Non-IUPAC Alkenes (Table 6.1, pg. 184)



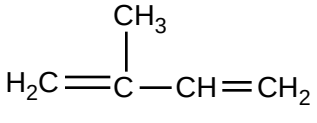
ethylene
(ethene)



propylene
(propene)



isobutylene
(2-methylpropene)



isoprene
(2-methyl-1,3-butadiene)