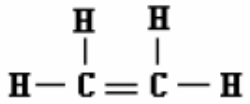
Topic: **Alkene Hydrocarbons**

Objective: What are Alkenes, and how do they function in chemistry?

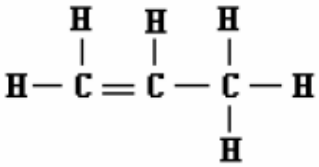
Alkene Family:

1. The **alkene** family, also known as the olefin family, differ from their related alkanes by having one carbon to carbon double bond (**C=C**) somewhere along the longest chain.
2. Ethane (C_2H_4) and propene (C_3H_6) are the smallest alkenes, and only form one structural shape.
3. Butene (C_4H_8) is the smallest alkene that may have isomers, which are the same molecular formula, but different structural (shape) formula. Any alkenes larger than butane have isomers.
4. The general **formula** for an **alkene** is C_nH_{2n}. If you know the number of carbon atoms (prefix), then you double the prefix to get the number of hydrogen atoms for that alkene.
5. What is the molecular formula for octadecene? This is an 18 carbon alkene. Using the general formula C_nH_{2n}, we can write the molecular formula for ocatadecene:

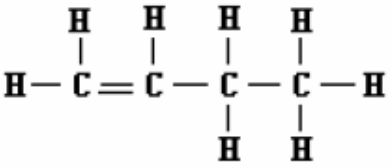
$$18 \text{ carbons} = n \quad \rightarrow C_{(18)}H_{(2 \times 18)} = C_{18}H_{36}$$



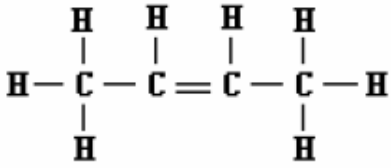
Ethene: 2 carbons with a double bond between them. Each carbon fills its remaining two bonds with hydrogens.



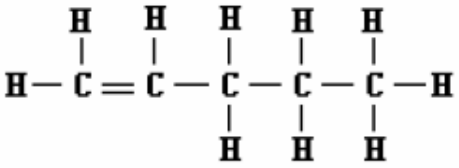
Propene: 3 carbons with a double bond between the end carbon and the middle carbon.



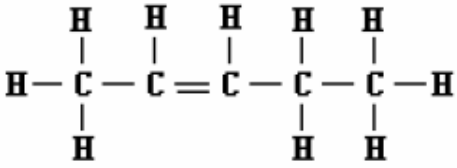
1-butene: there is a double bond between the end carbon (the 1st carbon) and the 2nd carbon. The number 1- indicates that the 1st carbon is the lowest numbered carbon that the double bond is touching.



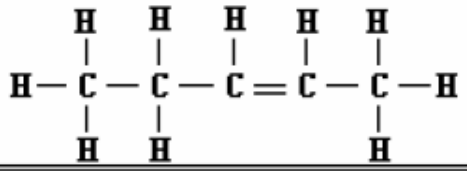
2-butene: there is a double bond between the two middle (2nd and 3rd) carbons. The number 2- indicated that the 2nd carbon is the lowest numbered carbon that the double bond is touching.



1-pentene: there is a double bond between the 1st and 2nd carbons.



2-pentene: there is a double bond between the 2nd and 3rd carbons.



Also 2-pentene. Count the carbons from the side the double bond is closest to. In this case, it's the right side, and the double bond is between the 2nd and 3rd carbons.