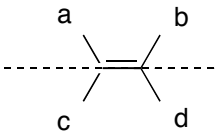
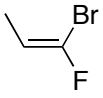
ALKENES

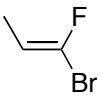
Nomenclature Alkenes:



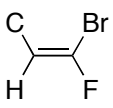
- examine atomic no.'s of elements directly attached to double bond
- compare a and c
- compare b and d
- determine if largest groups or on same side or opposite sides

Example 1



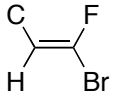


Larger - 6 Larger - 35

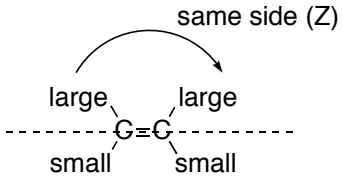


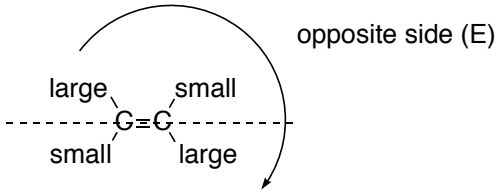
Smaller -1 Smaller - 9

Larger - 6 Smaller - 9



Smaller - 1 Larger - 35

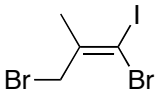




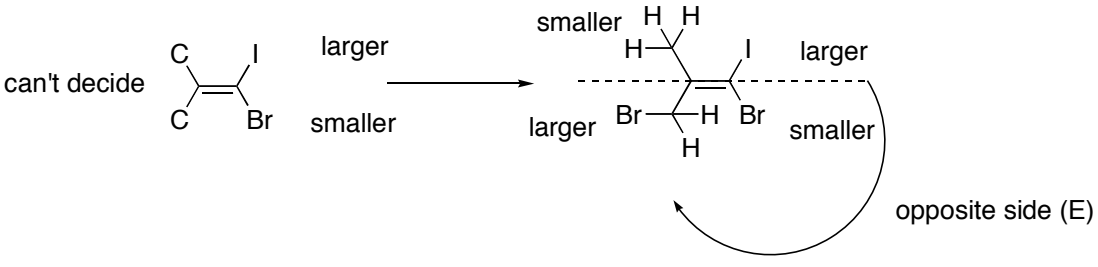
Z-1-bromo-1-fluoro-1-propene

E-1-bromo-1-fluoro-1-propene

Example 2

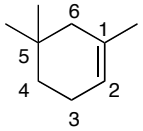


E-1,3-dibromo-1-iodo-2-methyl-1-propene



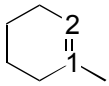
Nomenclature Alkenes continued:

 cyclopropene - ringstrain makes this molecule very reactive



1,5,5-trimethylcyclohexene or
1,5,5-trimethyl-1-cyclohexene

Cyclohexene

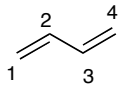


1-Methylcyclohexene

For molecules having multiple double bonds:

2 C=C bonds → diene
3 C=C bonds → triene
4 C=C bonds → tetraene
5 C=C bonds → pentaene

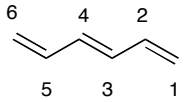
Eg.1



1,3-butadiene

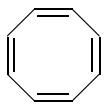
drop "ne" ending of alkane and add "diene"

E.g 2



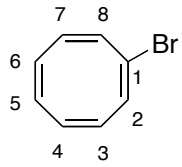
1,3,5-hexatriene

E.g 3

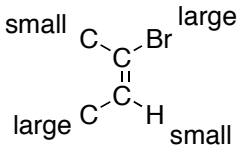


Cyclooctatetraene

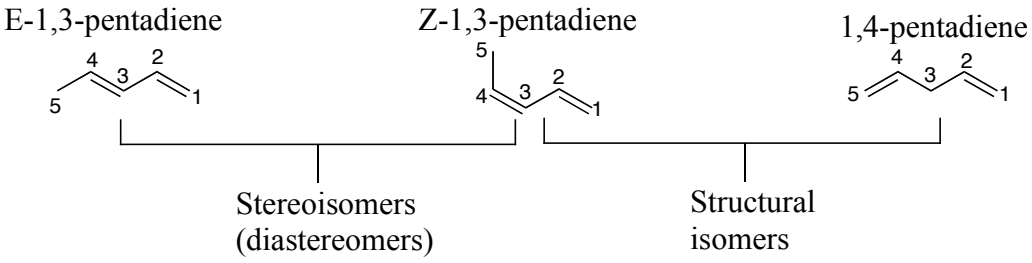
Eg.4



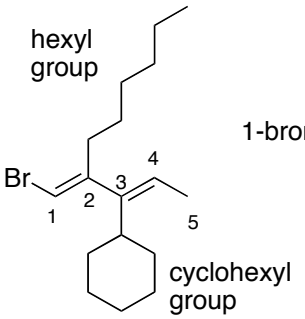
1-E-1-bromo-1,3,5,7-cyclooctatetraene



Eg.5

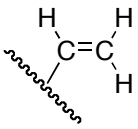


Eg.6 (double bonds are all E below)



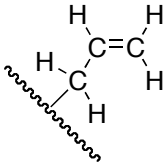
1-bromo-3-cyclohexyl-2-hexyl-1,3-pentadiene

Different groups

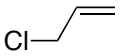


Vinyl group

Vinyl chloride
1-chloroethene



Allyl group



Allyl chloride
3-chloropropene

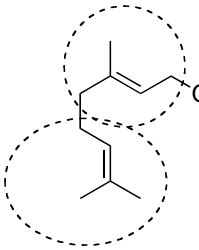
Natural Alkenes eg. Terpenes/Terpenoids or Isoprenes/Isoprenoids

- **These are polymers of C_5 units.**

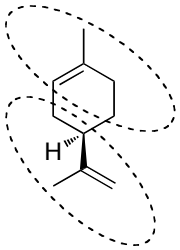
Isoprene
2-methyl-1,3-butadiene

C_5

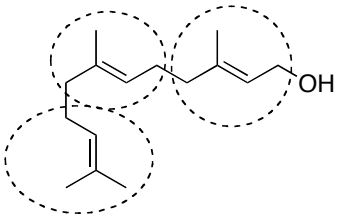
2 C_5 (isoprene units) – monoterpene
3 C_5 (isoprene units) – sesquiterpene
4 C_5 (isoprene units) – diterpene
6 C_5 (isoprene units) – triterpene



Geraniol (monoterpene)



limonene (monoterpene)
C_{10}

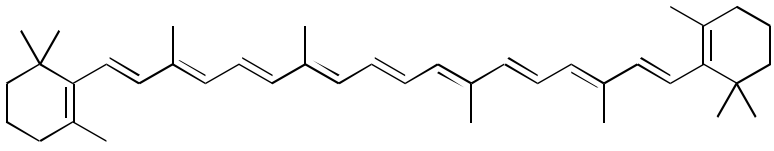


Farnesol (sesquiterpene)

Note - Each dotted circle identifies a C_5 unit

E.g.

beta-Carotene



Chemical Formula: $C_{40}H_{56}$
Molecular Weight: 536.8880