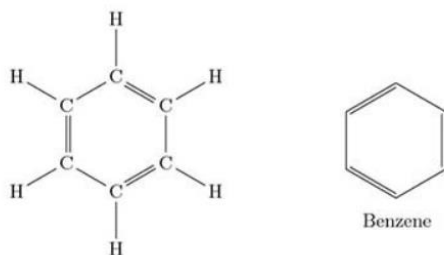


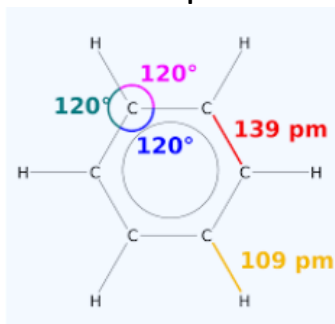
Aromatic Hydrocarbons - Benzene

aromatic molecules are flat, cyclical molecules that contain very stable delocalized double bonds.

- Benzene is an aromatic molecule that has the *equivalent* of 3 double bonds and 3 single bonds



- the electrons in the double bonds are spread out and shared equally

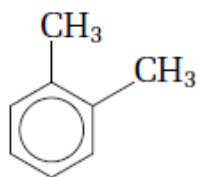


- so benzene has 6 C-C bonds, each equal in length somewhere between a single and double bond, imparting tremendous stability to the molecule.

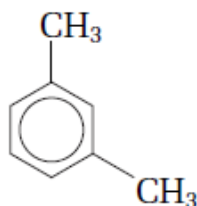
Rules for naming Aromatic Hydrocarbons

- Number carbons** in benzene ring. Priority of branches should be based on *alphabetical* order.
- Name any branches** that are attached to ring, giving them position numbers
Note: if there's only one branch, no number is written.
- place the branch numbers and names as a prefix before the root "benzene".

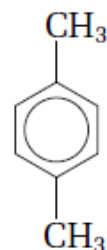
When a benzene ring has only 2 branches, prefixes ortho-, meta-, and para- are sometimes used instead of position numbers



1,2-dimethylbenzene
ortho-dimethylbenzene
(common name:
ortho-xylene)



1,3-dimethylbenzene
meta-dimethylbenzene
(common name:
meta-xylene)



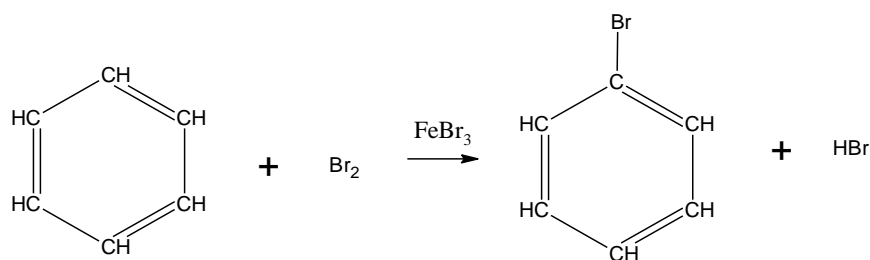
1,4-dimethylbenzene
para-dimethylbenzene
(common name:
para-xylene)

Note: Sometimes it is necessary to treat benzene as a branch, instead of the parent chain of the molecule. For example, if the branch coming off the benzene ring cannot be named using the conventions discussed so far, or if the branch is longer than the benzene ring itself (i.e. 6 or more carbons). In such cases, the name given to benzene is *phenyl*, and the usual rules for naming branches is used.

Reactions of Aromatic Compounds

A hydrogen atom or a functional group on a benzene ring may be substituted by a different functional group, if a catalyst is present.

Example:



Always assume these reactions are single substitutions, unless told otherwise.