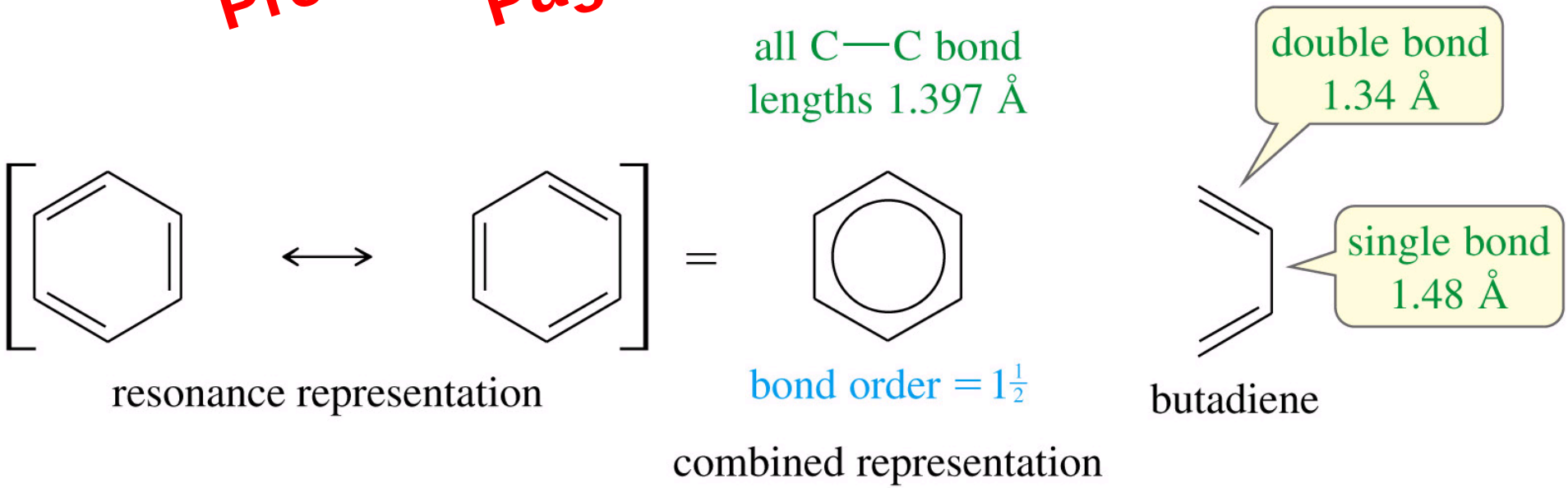
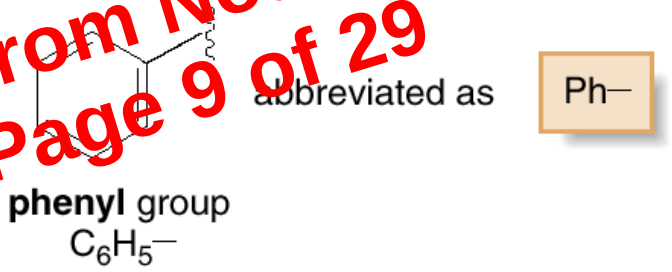
Bonding in Benzene

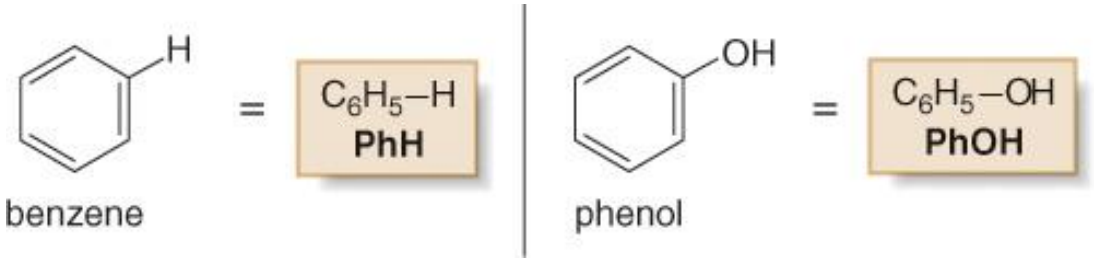


- **A benzene substituent is called a phenyl group, and it can be abbreviated in a structure as "Ph-".**

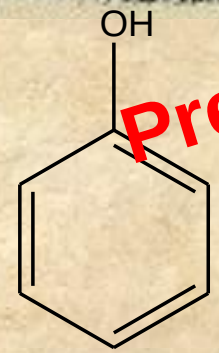


- A phenyl group (C_6H_5–) is formed by removing one hydrogen from benzene (C_6H_6).

- **Therefore, benzene can be represented as PhH, and phenol would be PhOH.**

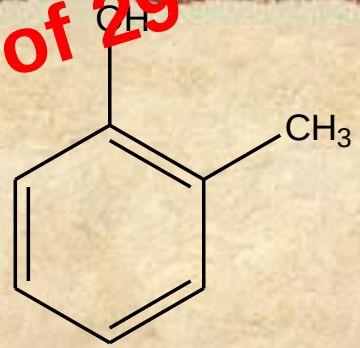


Phenols

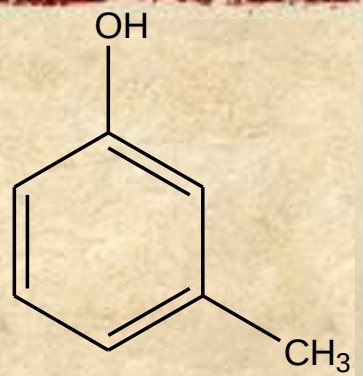


Phenol

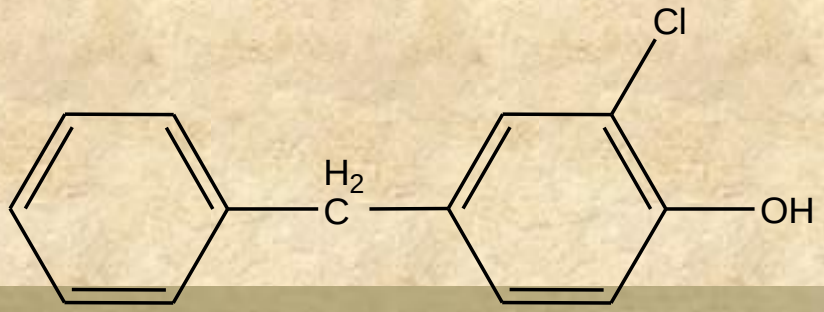
p-Cresol



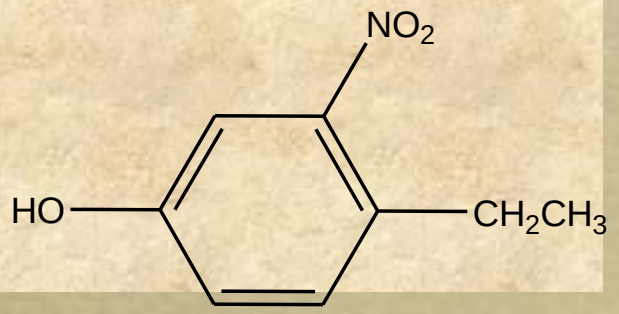
o-Cresol



m-Cresol



4-Benzyl-2-chlorophenol



4-Ethyl-3-nitrophenol

Phenol Acidity

- Phenols (pK_a ~ 10) are much more acidic than alcohols (pK_a ~ 16) due to resonance stabilization of the phenoxide ion
- Phenols react with NaOH solutions (but alcohols do not), forming salts that are soluble in dilute aqueous solution
- A phenolic component can be separated from an organic solution by extraction into basic aqueous solution and is isolated after acid is added to the solution