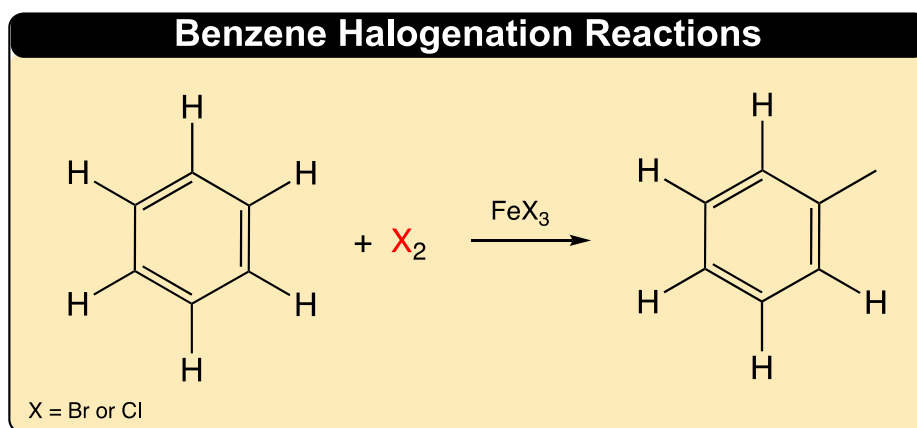


## CONCEPT: BENZENE REACTIONS

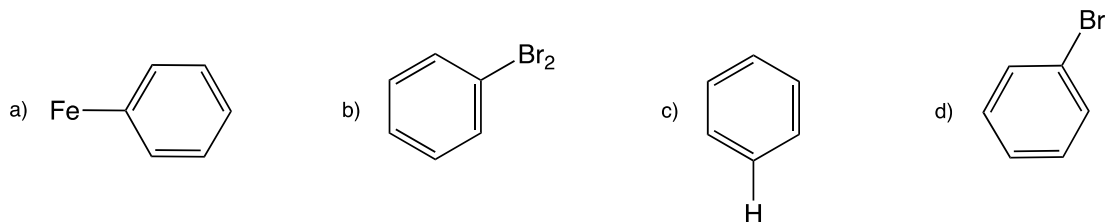
- Benzene is *aromatic* and uniquely \_\_\_\_\_.
- Benzene undergoes \_\_\_\_\_ reactions, unlike alkenes and alkynes.
  - We will cover 2 types of substitution reactions: (1) Halogenation, (2) Friedel Craft \_\_\_\_\_.

### Halogenation Reactions

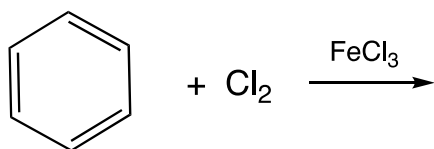
- Benzene reacts with  $\text{Br}_2$  or  $\text{Cl}_2$ .
  - One of the \_\_\_\_\_ on benzene ring is substituted with a X (Br or Cl).
  - A \_\_\_\_\_ ( $\text{FeX}_3$ ) must be used and has to contain the \_\_\_\_\_ X as the reagent.



**EXAMPLE:** Which of the following is a correct product of benzene substitution reaction with  $\text{Br}_2$ ?



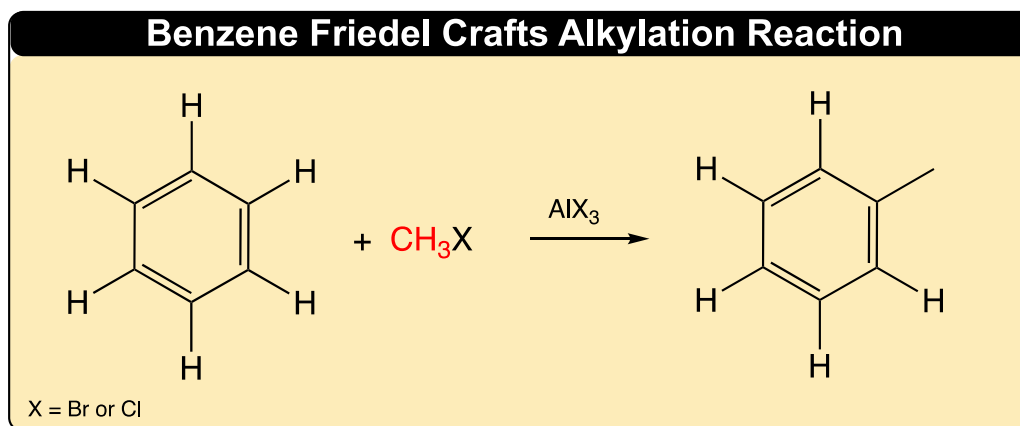
**PRACTICE:** Name the product of the following benzene halogenation reaction.



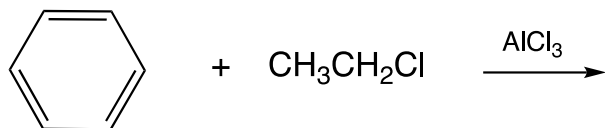
## CONCEPT: BENZENE REACTIONS

### Friedel Craft Alkylation

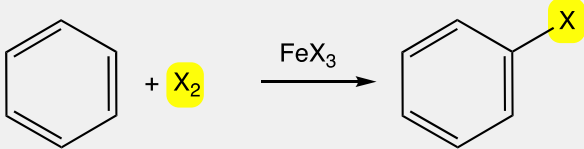
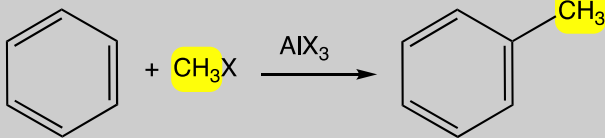
- Benzene reacts with an alkyl \_\_\_\_\_.
  - One of the \_\_\_\_\_ on benzene ring is substituted with an \_\_\_\_\_ group.
  - A \_\_\_\_\_ ( $\text{AlX}_3$ ) must be used and has to contain the \_\_\_\_\_ X as the reagent.



**EXAMPLE:** Name the major product of the following Friedel Crafts Alkylation reaction.



### Summary

Summary of Benzene Reactions			
Reaction	Reagent	Catalyst	Example
Halogenation	Halogen $\text{X}_2$	$\text{FeX}_3$	
Friedel Crafts Alkylation	Alkyl halide $\text{CH}_3\text{X}$	$\text{AlX}_3$	

**CONCEPT: BENZENE REACTIONS**

**PRACTICE:** Provide a complete reaction of benzene Friedel Crafts alkylation with 2-bromo-2-methylpropane and name the product.

**PRACTICE:** Fill in the missing reagent for the provided reaction.

