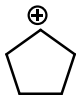
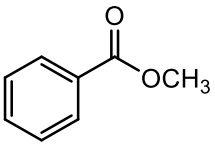
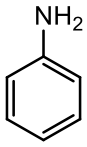
The most important thing to remember about aromatic compounds is the fact that they ARE NOT ALKENES. Aromatics do not generally produce addition products. Instead, they tend to undergo substitution reactions, preferring to keep their aromatic stability in the product molecules. The ability to form resonance structures and stabilize intermediate charges means that a benzylic position (a carbon atom connected directly to the aromatic ring) is more reactive than a standard carbon atom.

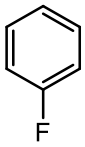
Aromatic rings can serve as electron pair donors (Lewis Bases), but they will only react with very strong (generally cationic) Lewis acids. Which species below will react with benzene under standard reaction conditions?

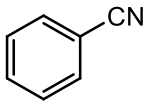


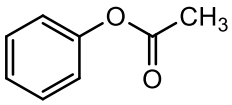

When you are adding a new substituent to an aromatic ring that already has attached substituents, the new group can attach ortho, meta or para to the one already on the ring. Determine whether the molecules below will direct substitution to the ortho/para or meta positions.



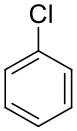


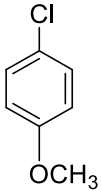


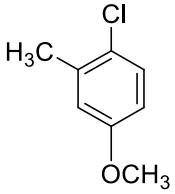


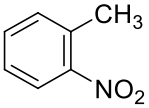


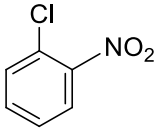
Rank the following aromatic rings from most reactive (1) to least reactive (5) in electrophilic aromatic substitutions.



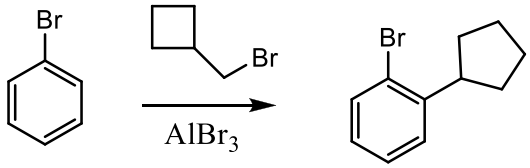




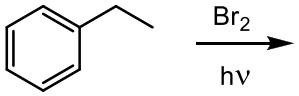


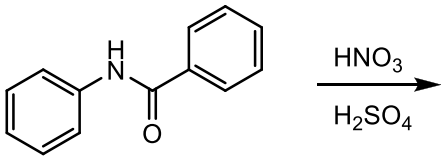


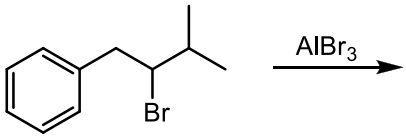
Propose a mechanism for the following reaction. Make sure you include every resonance structure, intermediate, and electron-pushing arrow.

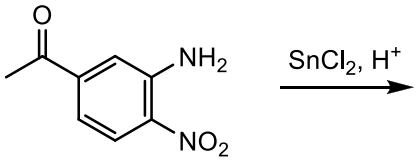


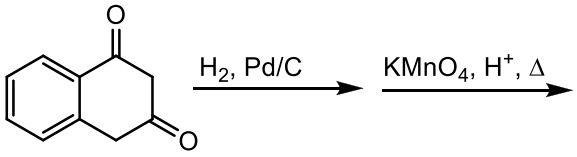
Give the products of the following reactions:

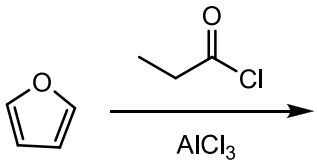


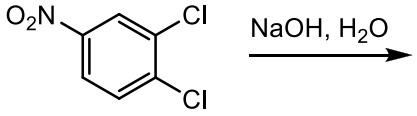


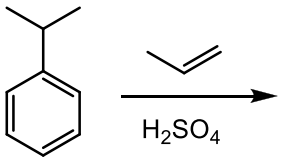












Give the reagents needed to form the indicated products: