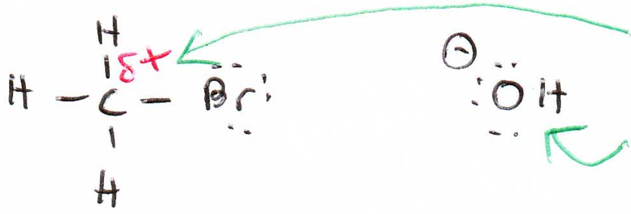
10/19/11

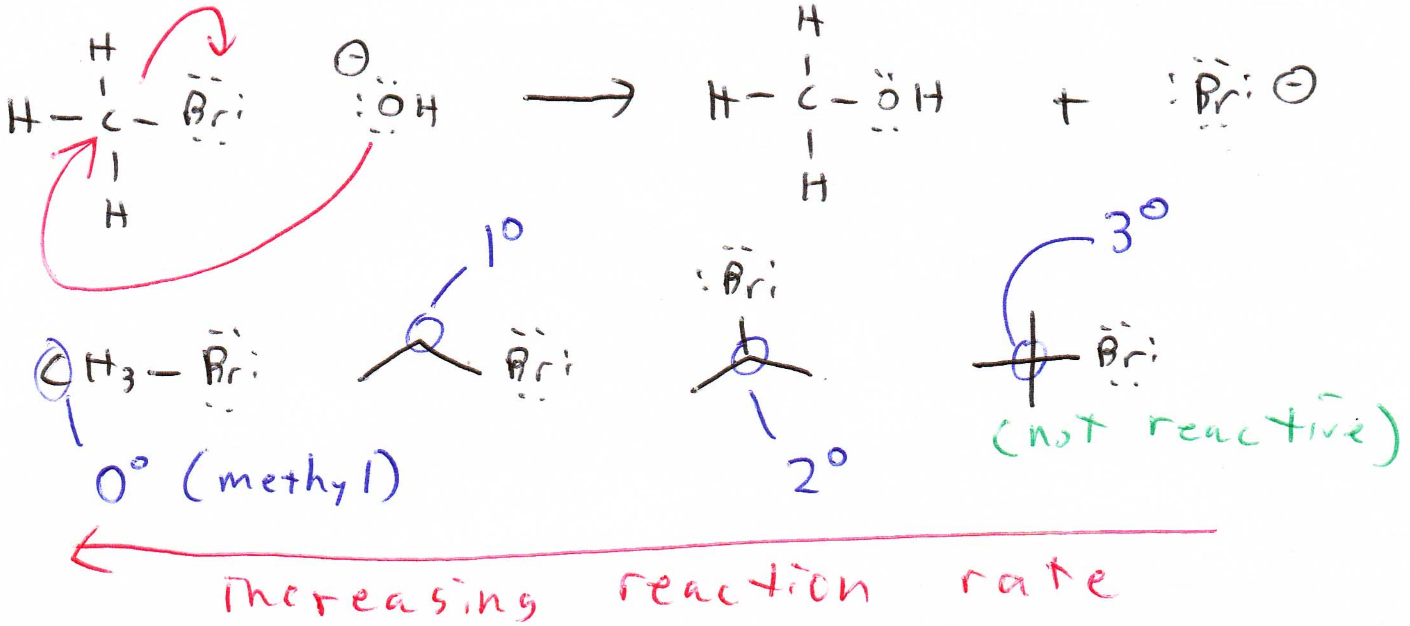
CH_3-Br + $NaOH$

bromomethane	haloalkane	systematic
methyl bromide	alkyl halide	common

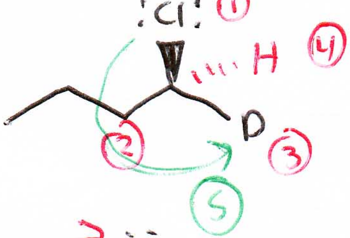


electrophile- seeking ⊖ charge

nucleophile - seeking ⊕ charge



Methyl and primary alkyl halides react more quickly by this mechanism than 2° or 3° alkyl halides because there is less steric hinderance around the reaction site.



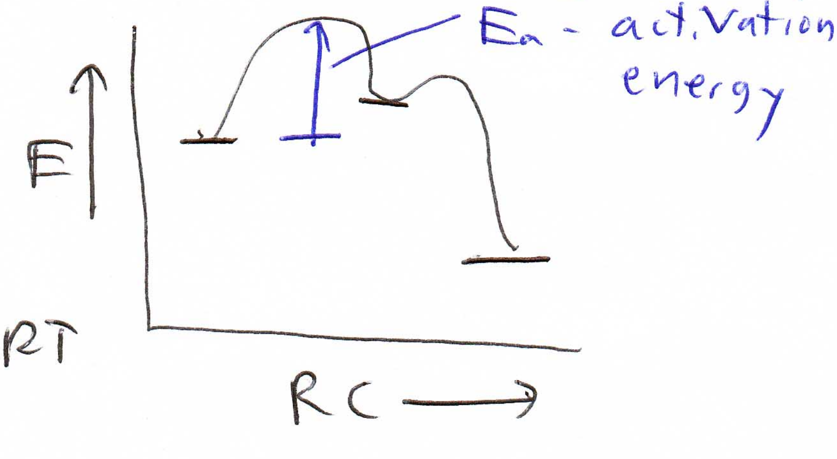
(S) - 1-chloro-1-deuterobutane

Inversion of configuration- geometry @ a stereocenter is inverted during a rxn regiochemistry - refers to whether a rxn occurs at only one site or @ multiple sites

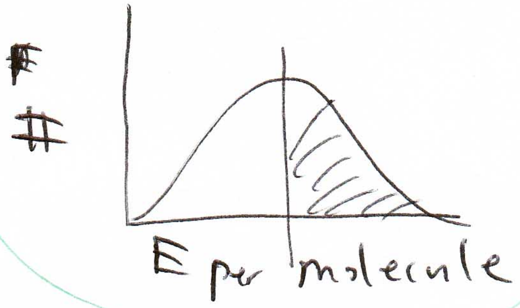
Bimolecular nucleophilic substitution (SN2)

$R = k[\ ][\ ]$

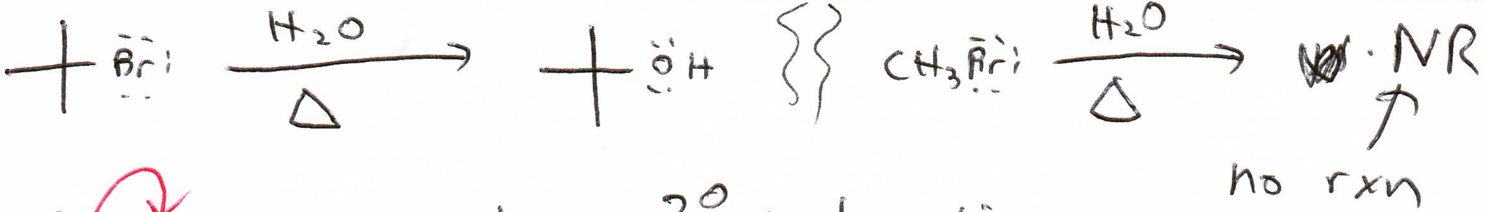
RLS - rate-limiting step - individual step with the largest activation energy



$$k = Ae^{-E_a/RT}$$



Both the nucleophile and the substrate react simultaneously in the RLS.



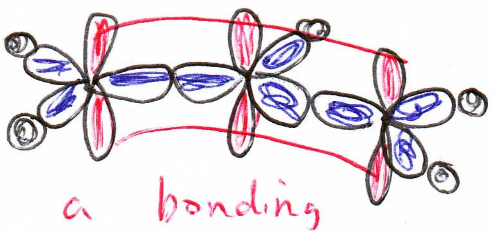
3° carbocation

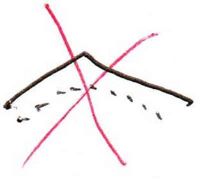
conjugation

allyl alcohol

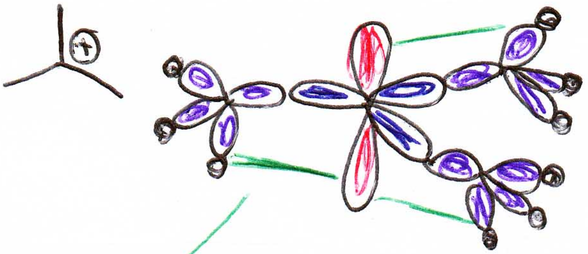
allyl cation

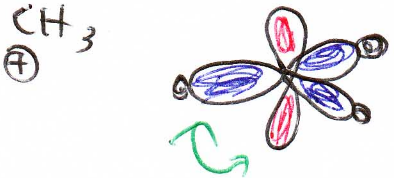
= =





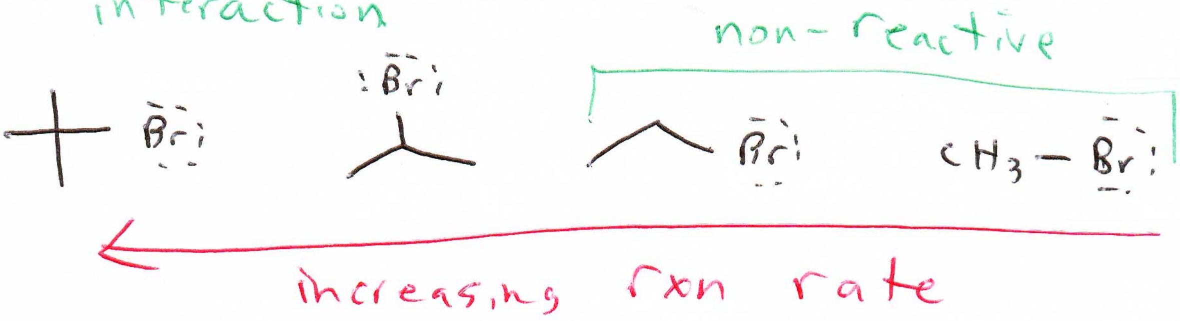
conjugation - a bonding interaction that involves more than two atoms.



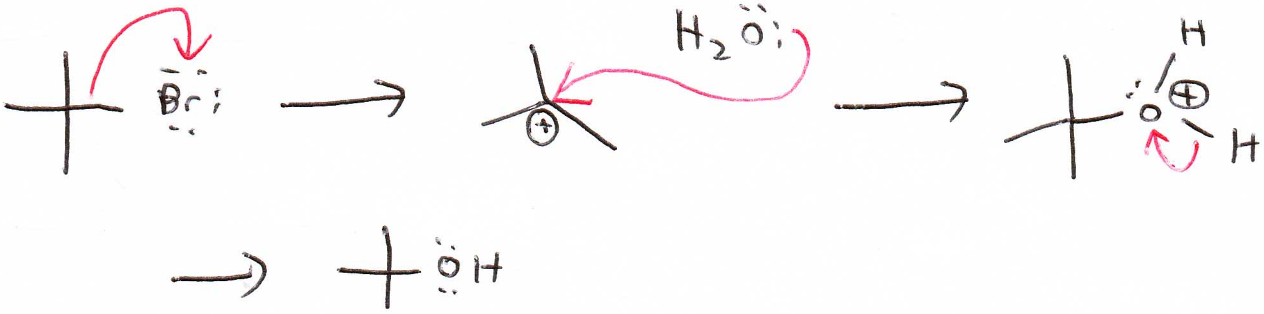


90° → no hyperconj.

hyperconjugation — a non-bonding orbital interaction

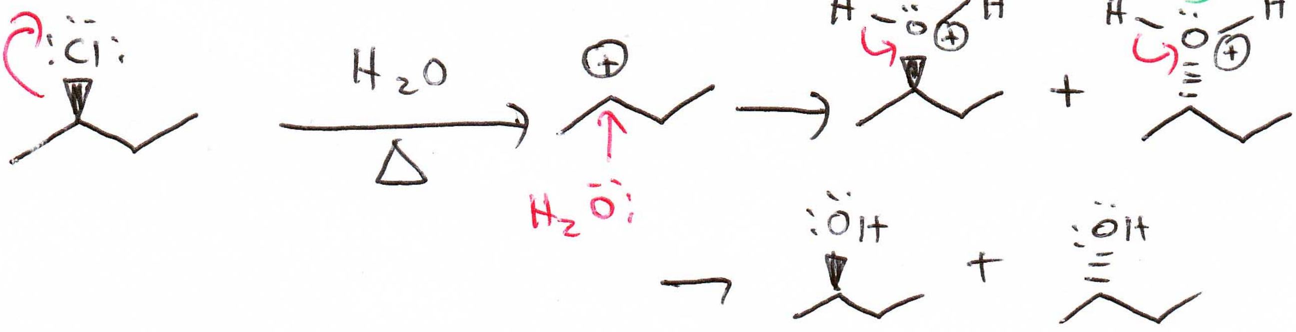


In this type of rxn, 3° alkyl halides are much more reactive than methyl or 1° alkyl halides because the carbocation formed during the reaction is more stable

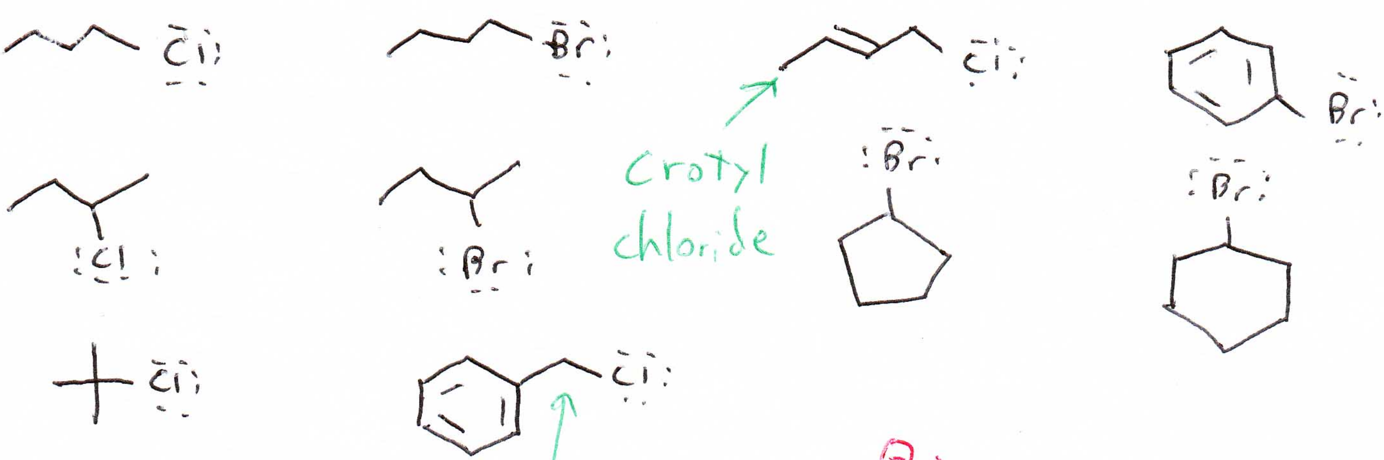


Unimolecular Nucleophilic Substitution (S_N1)

↳ Only one molecule is involved in the RLS (formation of the carbocation)

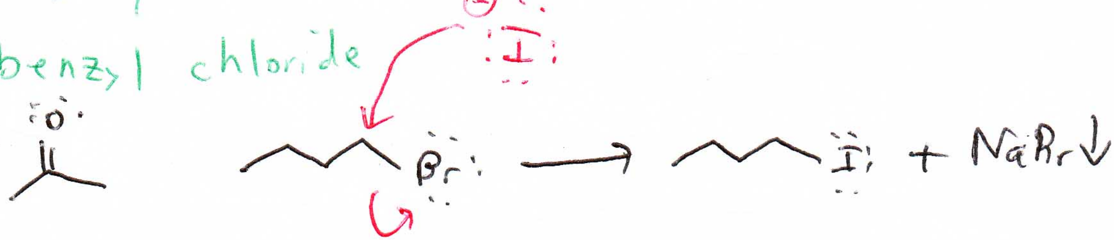


#4



benzyl chloride

S_N2 : NaI /



S_N1 ! $AgNO_3$ /