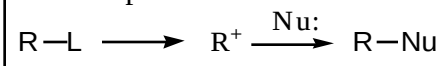
Summary of Nucelophilic Substitution Reactions

	S_N1	S_N2
Mechanism	Two Steps 	One Step
Kinetics	1st order (unimolecular) rate= k[R-L] Ionization= rate determining step (1st step), 2nd step does not effect the rate	2nd Order (bimolecular) rate= k[R-L] [Nu:]
Stereochemistry	Racemization	Inversion
Carbon (sp^3) Electrophile	Favored by electrophiles which can best stabilize a carbocation. 3°> benzylic ~ allylic ~ 2°>> 1°	Steric hinderance controlled CH_3 > 1°> 2 (3°= no reaction)
Nucleophile	Nature of the nucleophile has no effect on rate	Favored by better nucleophiles RS^- > NC^- > I^- > RO^- > HO^- > Cl^-
Leaving Groups	Favored by better leaving groups -N_2 > -OTos > -I > -Br > -Cl > -OH_2	Favored by better leaving groups -N_2 > -OTos > -I >- Br > -Cl >
Solvent Effect	Favored by polar, ionizing solvents. Solvolysis: polar protic (H-bonding) solvents act as the nucleophile H_2O > H_2O/ROH (mixed solvent) > ROH	Favored by polar aprotic solvents. HMPA > CH_3CN > DMF > DMSO > THF Disfavored by polar protic (H-bonding) solvents
Competative Reactions	Elimination (E1) Rearrangements	Elimination (E2) by strongly basic nucleophiles