

Comparison and Contrast of S_N1 and S_N2 Reactions

	<u>S_N1</u>	<u>S_N2</u>
1. kinetic order	first order	second order
2. stereochemistry	partial racemization	100% inversion
3. transition state(s)?	yes	yes
4. intermediates?	yes	no
5. carbocation intermediates?	yes	no
6. rearrangements (1,2-shifts)	possible (to form an equally or more stable carbocation intermediate)	none
7. substrate effects		
relative reactivity <i>vs.</i> substitution	3 ^o R-L > 2 ^o R-L > 1 ^o R-L > Me-L	Me-L > 1 ^o R-L > 2 ^o R-L > 3 ^o R-L
better leaving group	increased reaction rate	increased reaction rate
8. nucleophile		
more nucleophilic reagent	no effect	increased reaction rate
increased [nucleophile]	no effect	increased reaction rate
9. solvent		
polar, protic	faster reaction rate	slower reaction rate
polar, aprotic	slower reaction rate	faster reaction rate