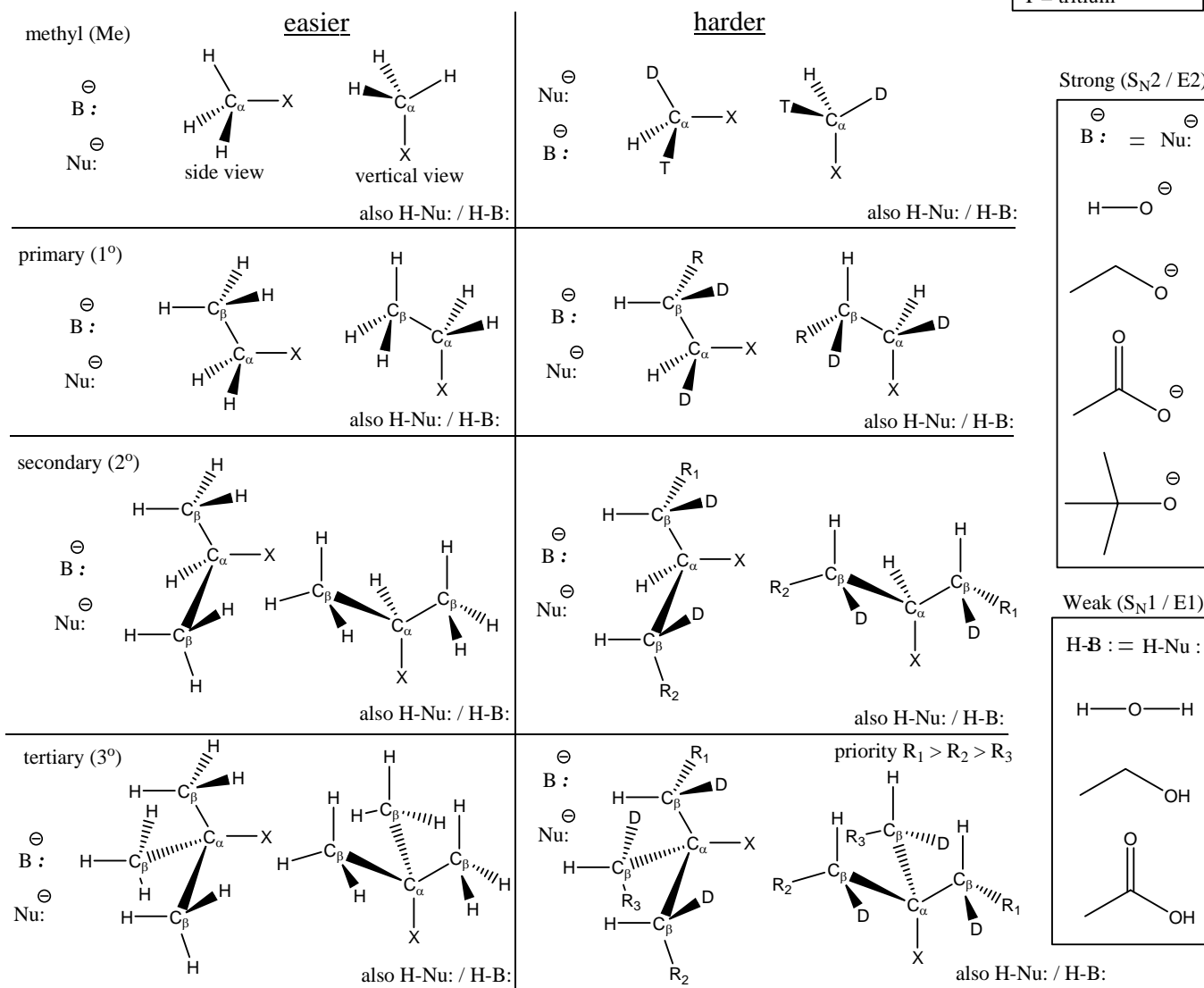
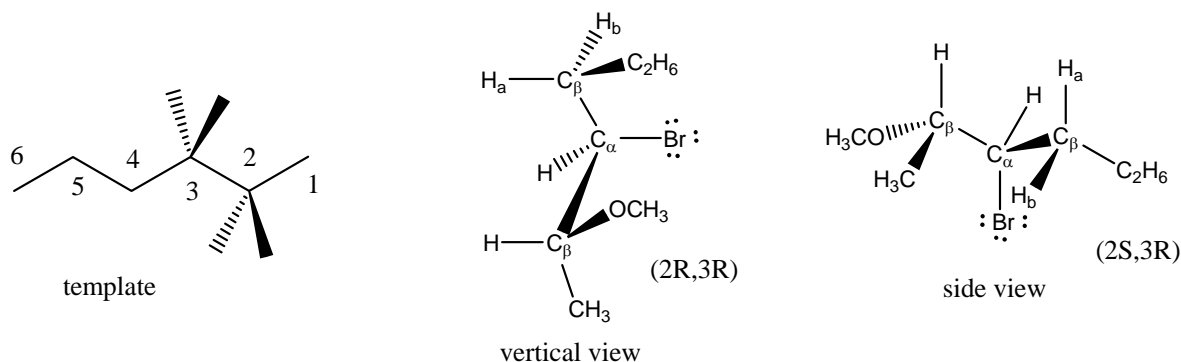


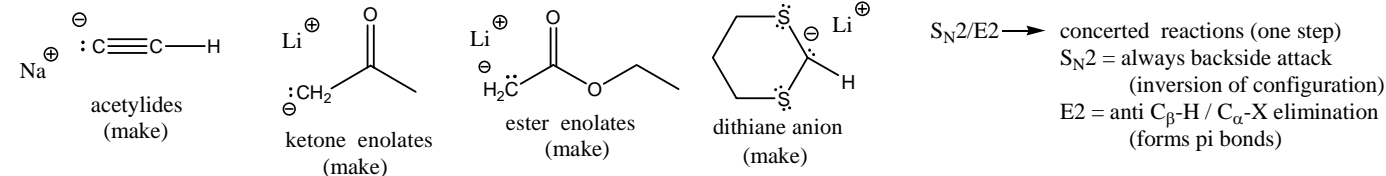
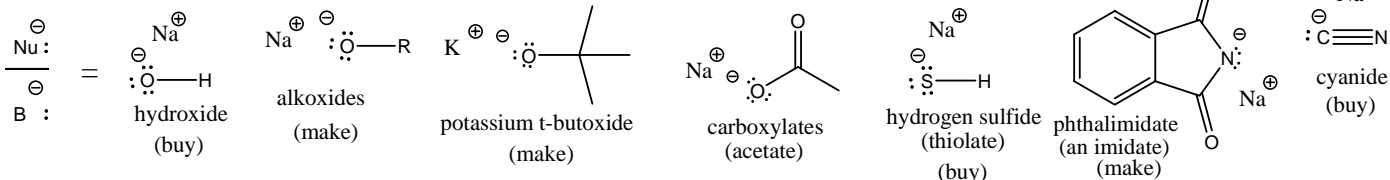
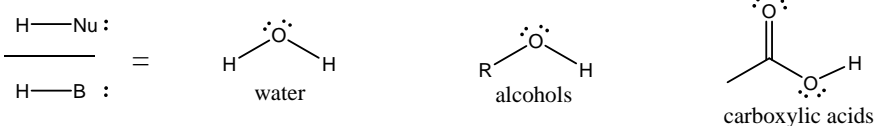
Reaction Templates - sideways and vertical perspectives (either one will work) **$S_N2/E2$ ($\text{Nu}^\ominus / \text{B}^\ominus$) always backside and usually anti $\text{C}_\alpha\text{-H}/\text{C}_\beta\text{-X}$ attack** **$S_N1/E1$ ($\text{H-Nu} / \text{H-B}$) - attack from either face of R^+ for both reactions**

isotopes of hydrogen
 H = protium (proton)
 D = deuterium
 T = tritium

Example: 3-bromo-2-methoxyhexane (R,R), (S,S), (R,S), (S,R)

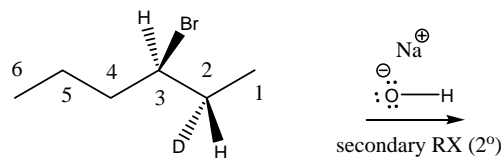
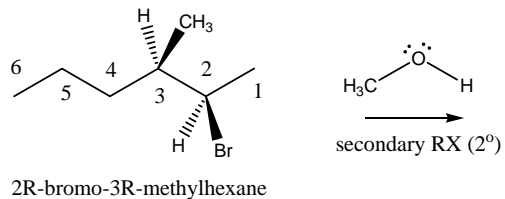
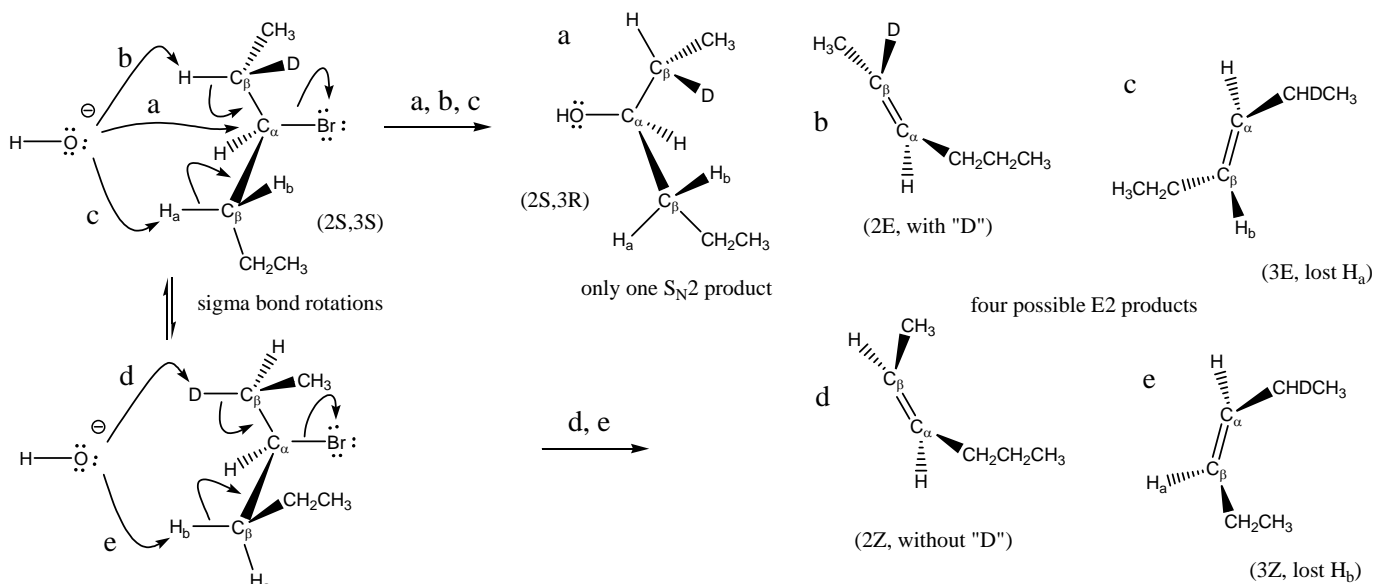
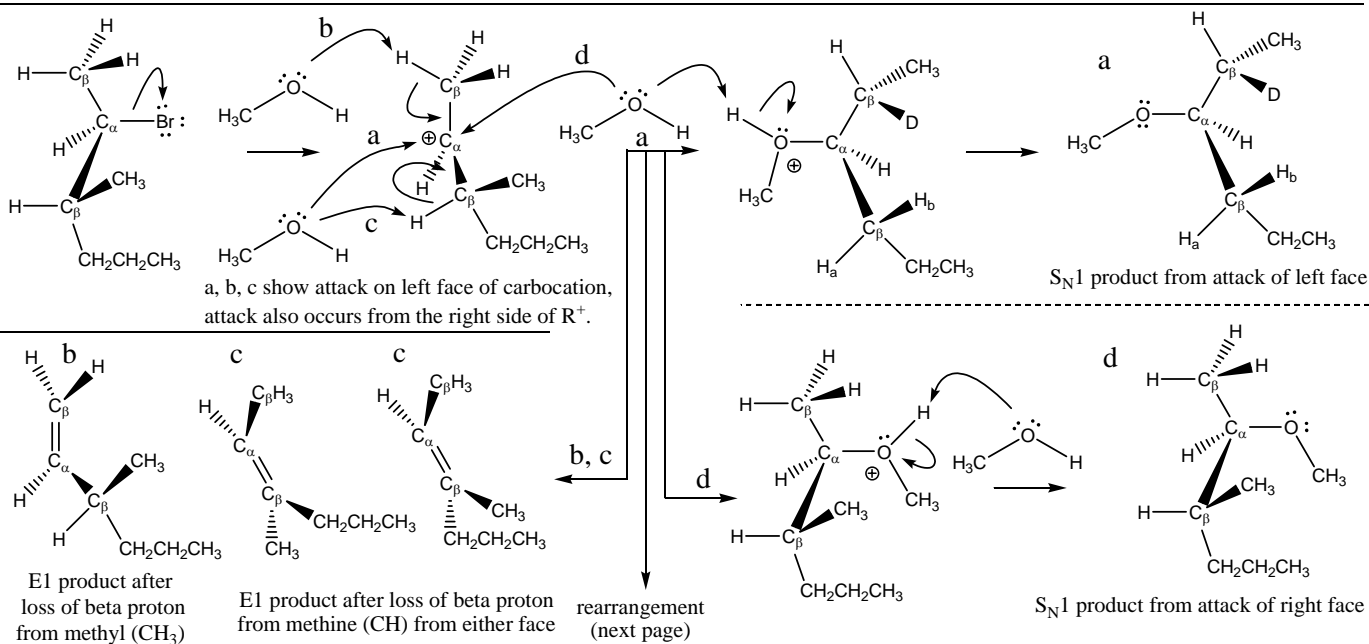
Examples - you can use the vertical views or side views presented above.

	2-bromo-3-deuteriobutane (R,R) (S,S) (R,S) (S,R)	2-bromo-3-methylbutane (R or S)		
	2-bromo-3-deuteriopentane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-deuteriopentane (R,R) (S,S) (R,S) (S,R)	2-bromo-3-methylpentane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-methylpentane (R or S)
	2-bromo-3-deuteriohexane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-deuteriohexane (R,R) (S,S) (R,S) (S,R)	2-bromo-3-methylhexane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-methylhexane (R or S)
	3-bromo-4-deuteriohexane (R,R) (S,S) (R,S) (S,R)		3-bromo-4-methylhexane (R,R) (S,S) (R,S) (S,R)	
	2-bromo-3-deuterioheptane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-deuterioheptane (R,R) (S,S) (R,S) (S,R)	2-bromo-3-methylheptane (R,R) (S,S) (R,S) (S,R)	3-bromo-2-methylheptane (R or S)
	3-bromo-4-deuteriopentane (R,R) (S,S) (R,S) (S,R)	4-bromo-3-deuteriopentane (R,R) (S,S) (R,S) (S,R)	3-bromo-4-methylpentane (R,R) (S,S) (R,S) (S,R)	4-bromo-3-methylpentane (R,R) (S,S) (R,S) (S,R)

S_N2 / E2**S_N1 / E1**

$$\text{S}_{\text{N}}1/\text{E}1 \rightarrow \text{form carbocation (R}^{\oplus}) \text{ in first step, R}^{\oplus} \text{ has three common choices}$$

1. rearrange to similar or more stable R⁺
2. add nucleophile (top/bottom)
3. lose any beta proton (top/bottom) (forms pi bonds)

Example Mechanisms shown below.One S_N2 product and four E2 products.1. The first $2^\circ R^+$ forms two S_N1 products and three E1 products2. the rearranged $3^\circ R^+$ forms two S_N1 products and five E1 products

Example Mechanisms (continued with rearrangement)

