

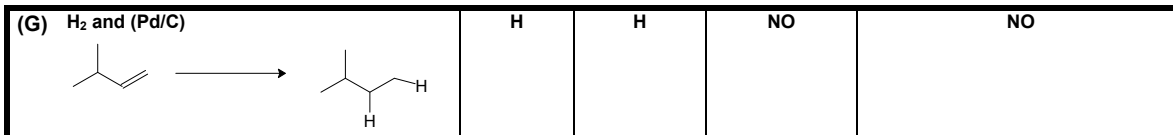
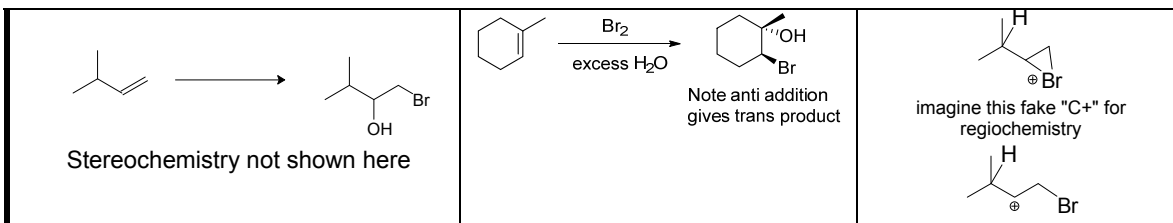
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(adds to sp^2 C with most H to generate most stable C^+)

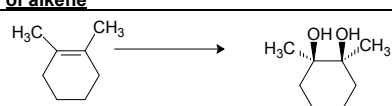
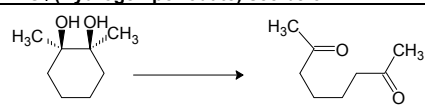
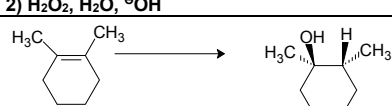
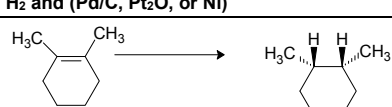
(adds to position where C^+ initially forms or where it ends up when rearrangement is possible)

What you see above/below reaction arrow	Electrophile	Nucleophile	Is C^+ formed ?	Is rearrangement possible ?
(A) HBr	H	Br	YES	YES (only if more stable)
				similar to above except CH_3 shift
(B) H_3O^+ (OR H^+/H_2O OR H_2SO_4/H_2O)	H	OH	YES	YES
				similar to above except CH_3 shift
(C) 1) BH_3 , THF 2) H_2O_2 , H_2O , HO^{\ominus}	B	H	NO	NO
syn addition 1 of 2 enantiomers	"Intermediate" 	"B" to HO or OH make sure "O" of OH is on top of bond		No H or CH_3 shift
(D) 1) $Hg(OAc)_2$, H_2O (or CH_3OH) 2) $NaBH_4$	Hg	OH	NO	NO
	Intermediate 1 			Intermediate 2 (this is NOT the product)
(E) Br_2 (or Cl_2)	Br	Br	NO	NO
Note: where Br and Br ended up 				
1 of 2 enantiomers Note: Anti addn gives trans product				
(F) Br_2 (or Cl_2) in excess H_2O	Br	OH	NO	NO

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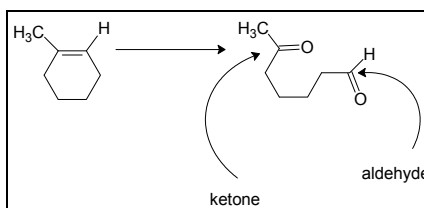
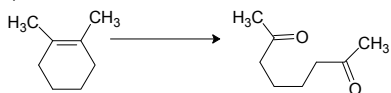
Cycloalkene addition reactions

What you see above/below reaction arrow	Electrophile	Nucleophile	Is C+ formed ?	Is rearrangement possible ?
(I) 1) OsO ₄ 2) NaHSO ₃ , H ₂ O or NMO (see text) Cleavage of Diols made by OsO₄ treatment of alkene	"OH"	"OH"	NO	NO
 <p>syn addition (Note how product is drawn)</p>				
HIO₄ (Hydrogen periodate) see below				
				
(J) 1) BH ₃ , THF 2) H ₂ O ₂ , H ₂ O, °OH	B	H	NO	NO
 <p>syn addition (Note how product is drawn) 1 of 2 enantiomers is shown</p>				
(K) H ₂ and (Pd/C, Pt ₂ O, or Ni)	H	H	NO	NO
 <p>syn addition (Note how product is drawn)</p>				

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Cleavage of Alkenes

- (L) 1) O₃ (ozone) at -78 °C
2) Zn, acetic acid, H₂O



- (M) KMnO₄, H₃O⁺

