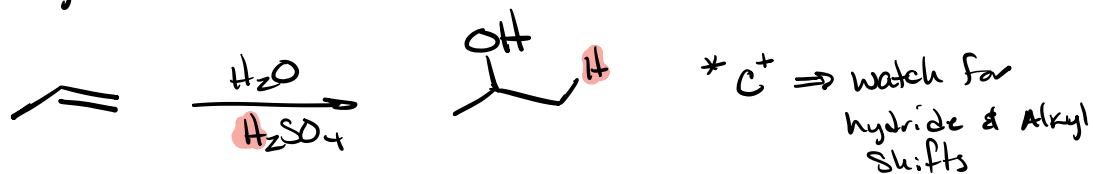
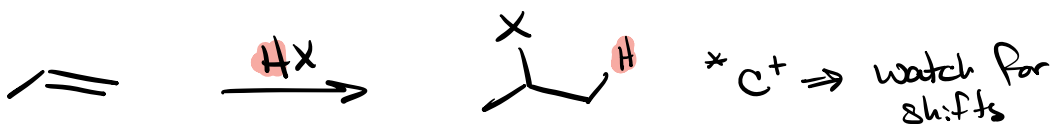


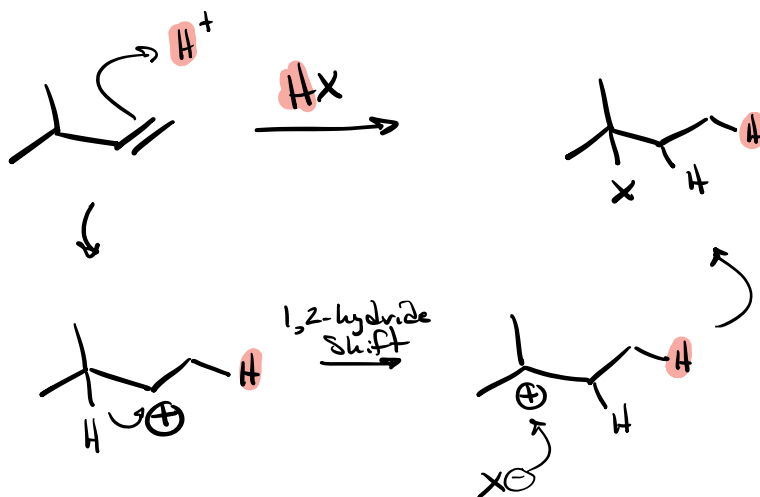
Hydration



Halogenation

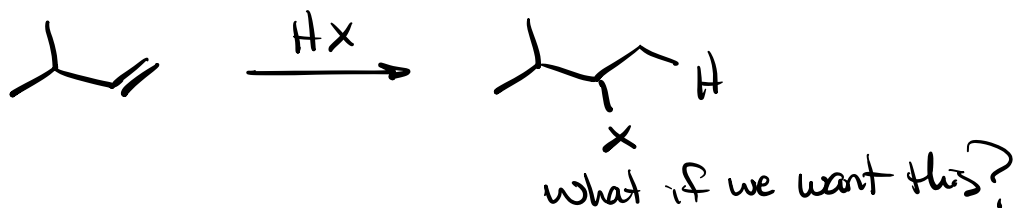


Ex



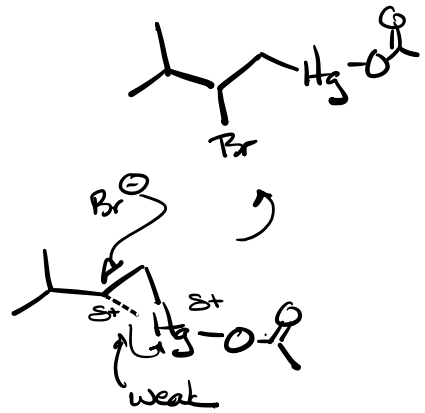
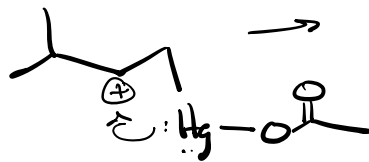
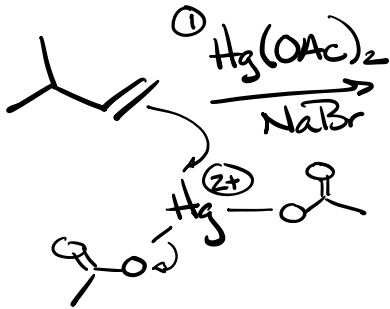
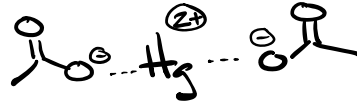
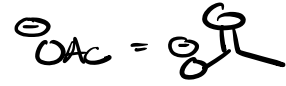
Question \rightarrow How do we prevent the shift?

How do we do this

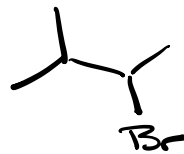
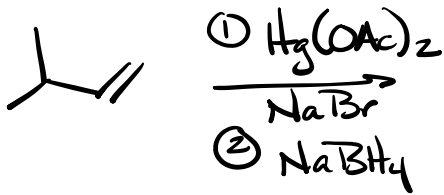
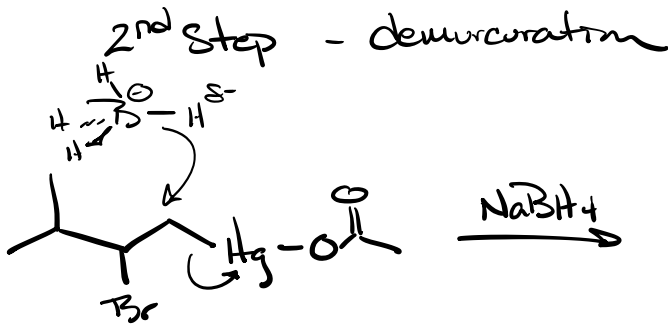


Oxymercuration - Demercuration

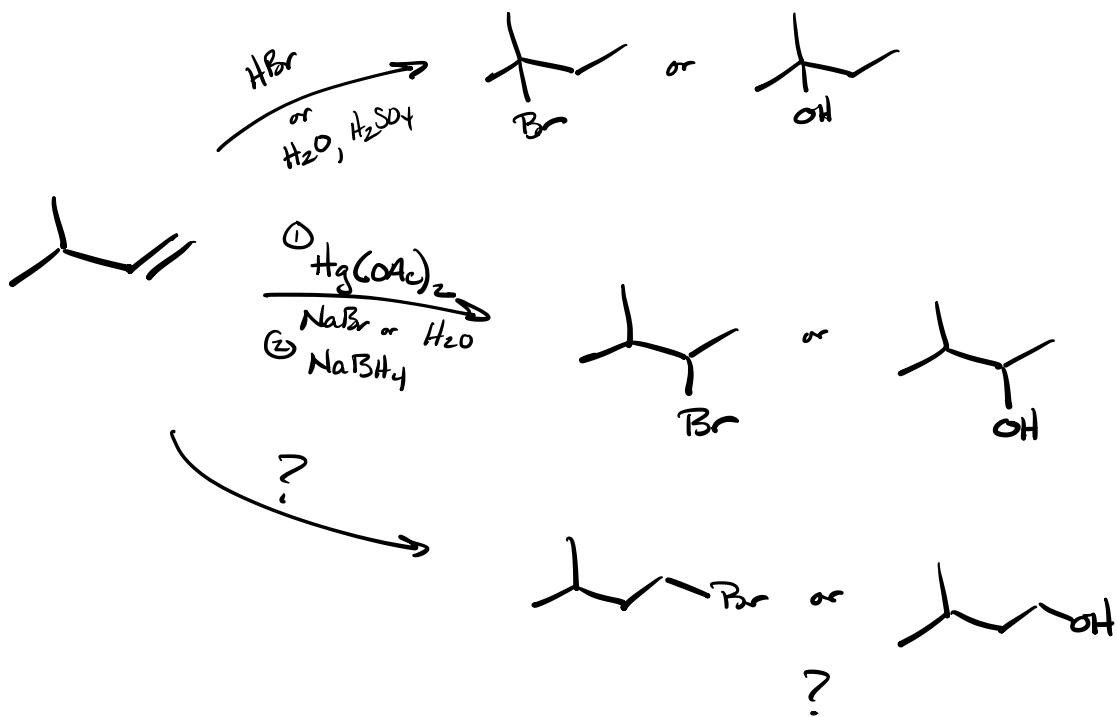
Mercury (II) acetate



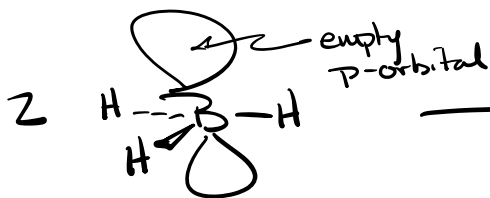
Cyclic Mercurinium Ion prevents hydride & Alkyl Shifts.



Standard Markovnikov addition w/o shifts

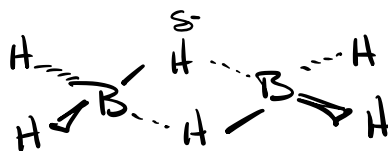
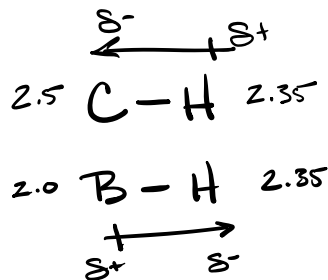


Diborane



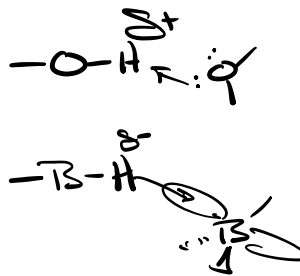
Borane (gas)

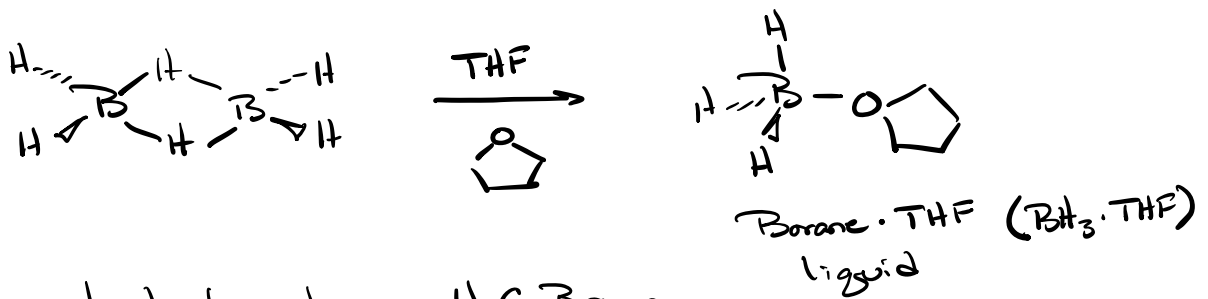
Isoelectronic with a Carbocation



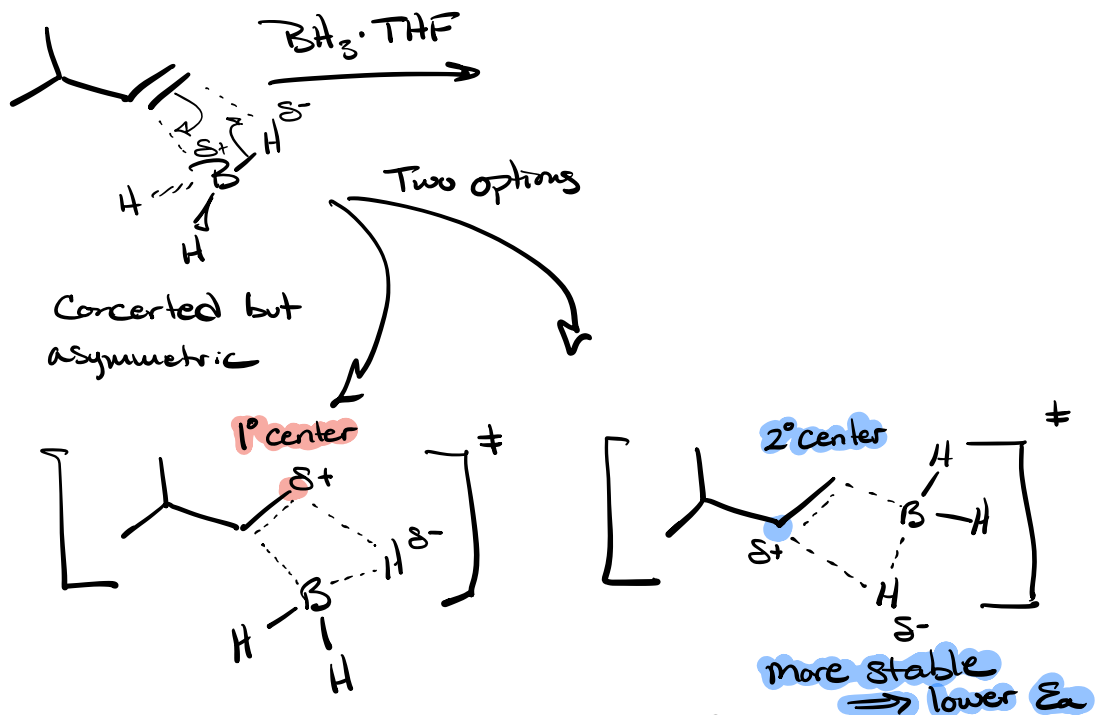
Diborane (gas)

H-bond in reverse





Hydroboration H.C. Brown

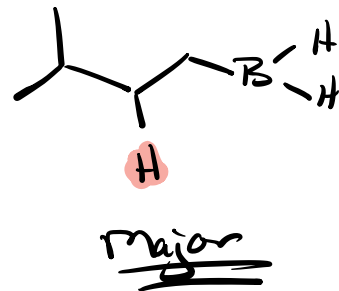


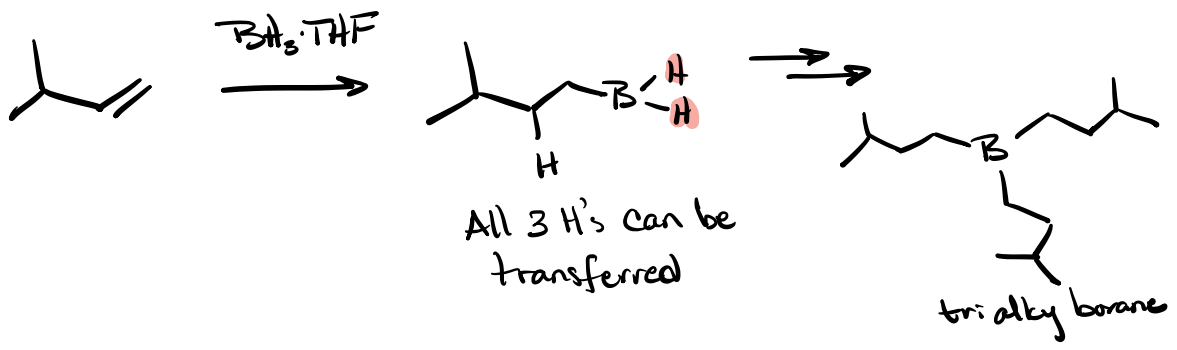
* Boron adds slightly ahead of hydride \Rightarrow gives selectivity

no shifts

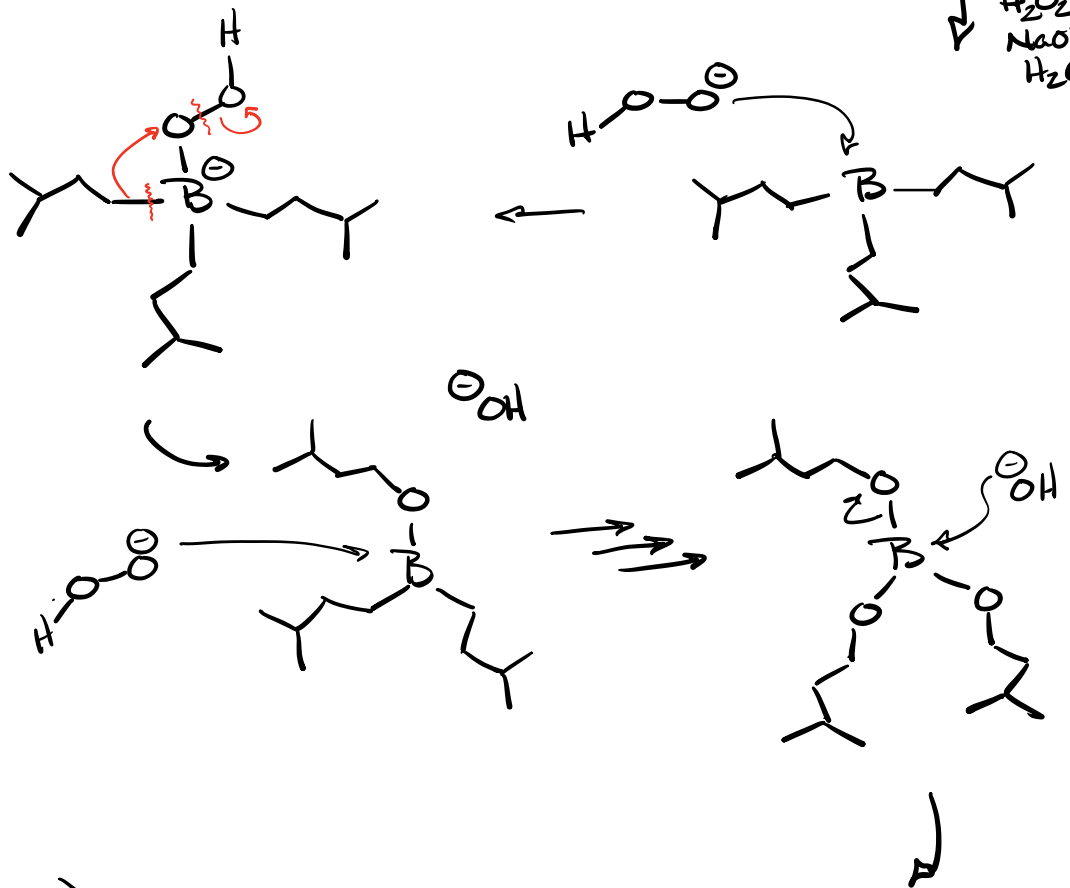
no Resonance

$3^\circ > 2^\circ > 1^\circ$ for the δ^+
 \Rightarrow hydride placement



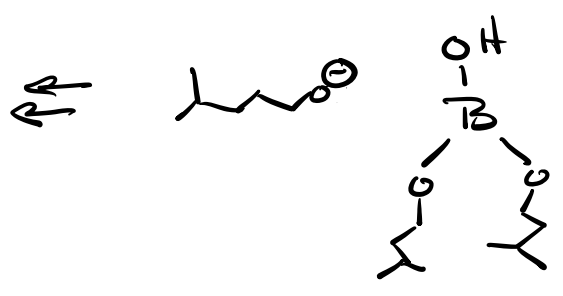


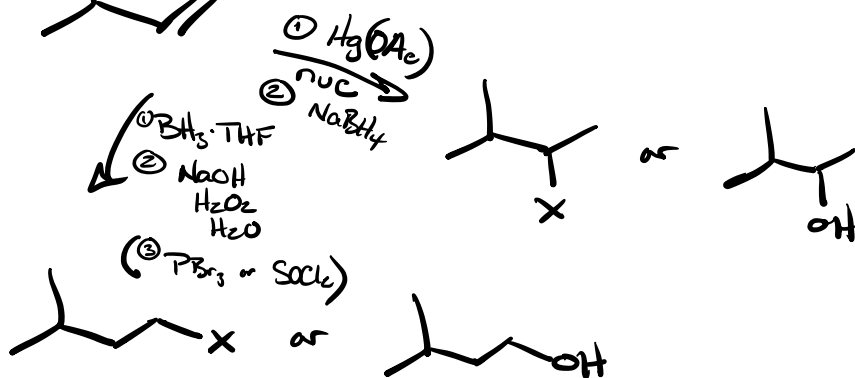
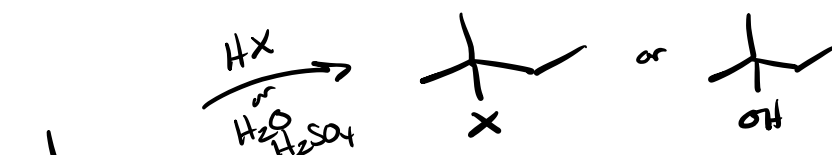
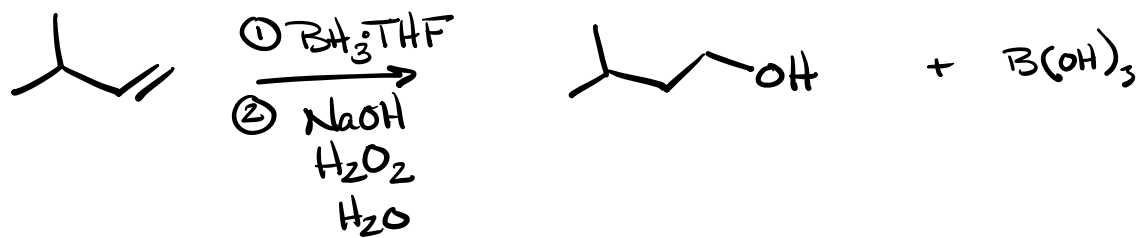
2nd step
 oxidation
 H_2O_2
 $NaOH$
 H_2O

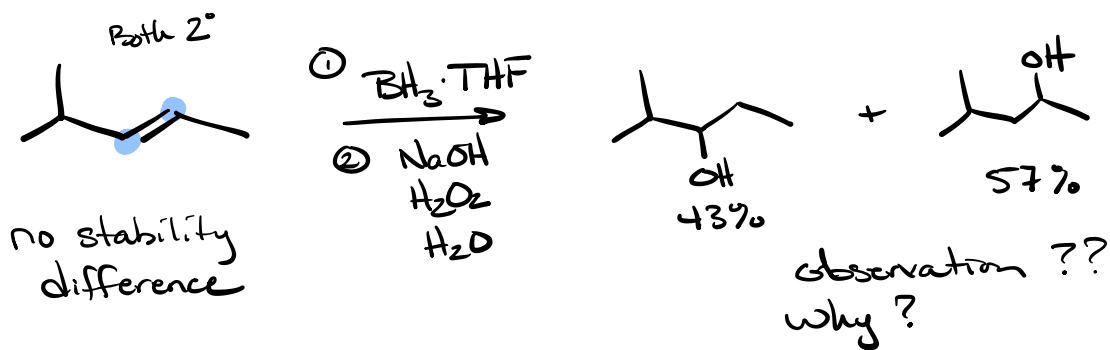


$B(OH)_3$ Boric Acid
 Non-toxic

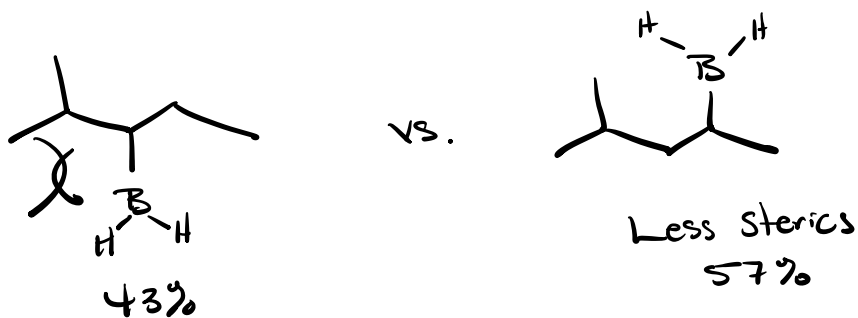
3 eq CC(C)CC(O)H



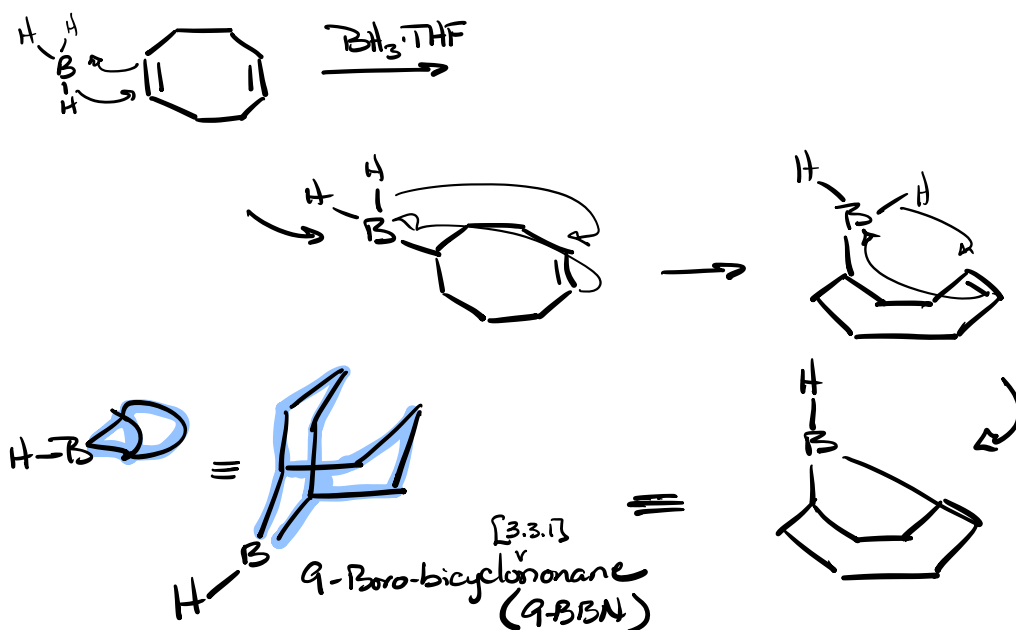


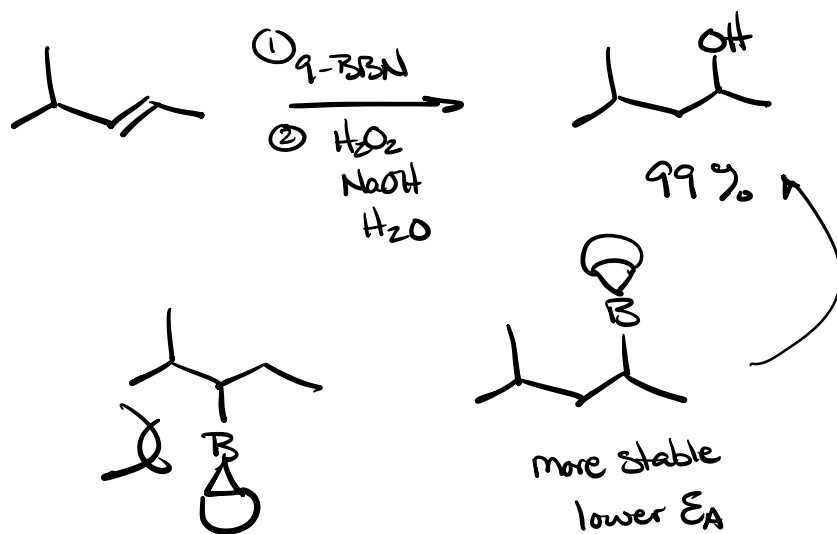


H.C. Brown

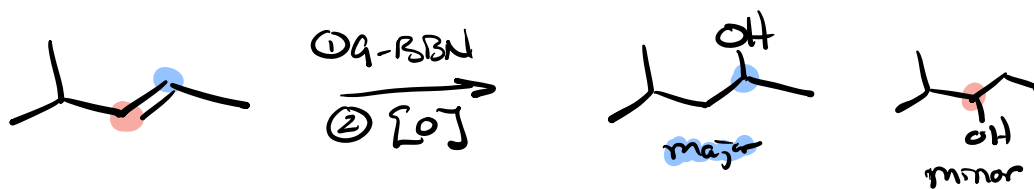


How can we make the % 99%?

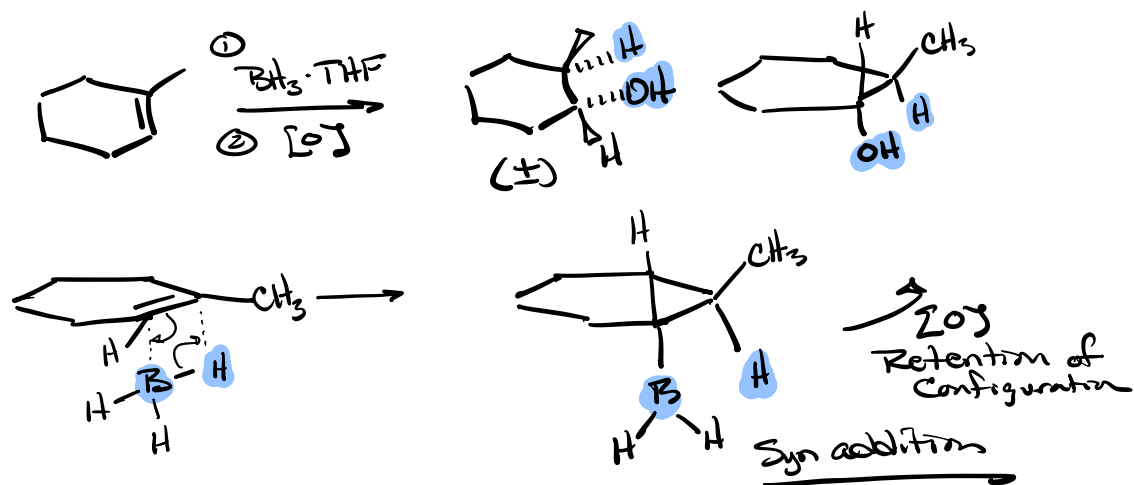


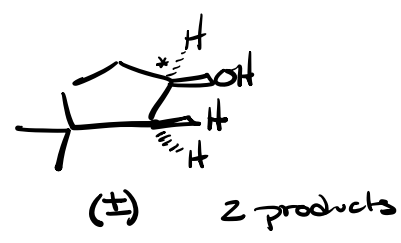
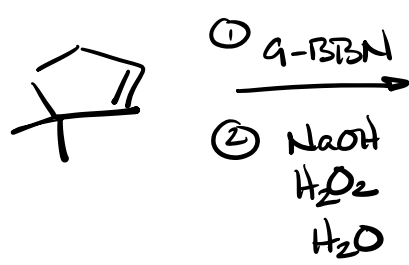


Regioselectivity = Region where R_{ox} takes place



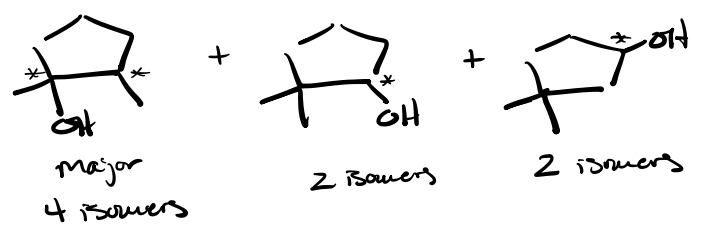
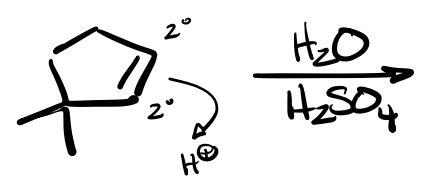
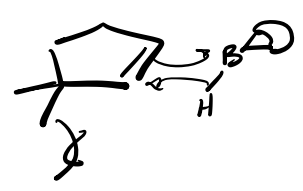
Reaction is both Regioselective & Stereoselective
(Sterics & δ^+) (Concerted Addition)



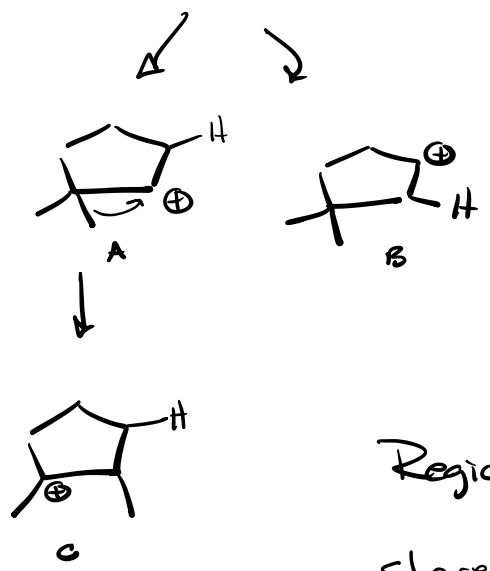


Chiral center
 Center of Chirality } poor terms
 * Stereo Center
 ** Stereogenic Center

Both regio & stereoselective



8 products
 mess
 not regio or Stereo selective





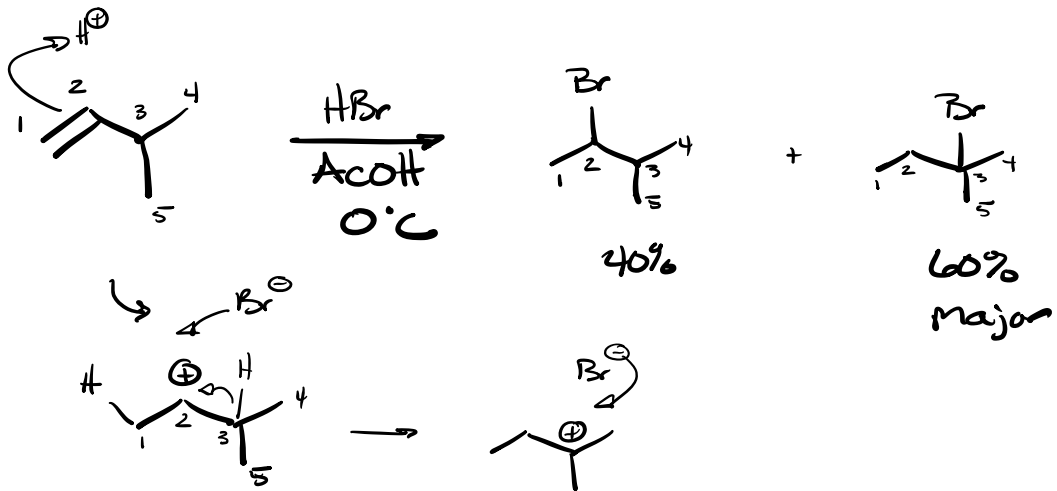
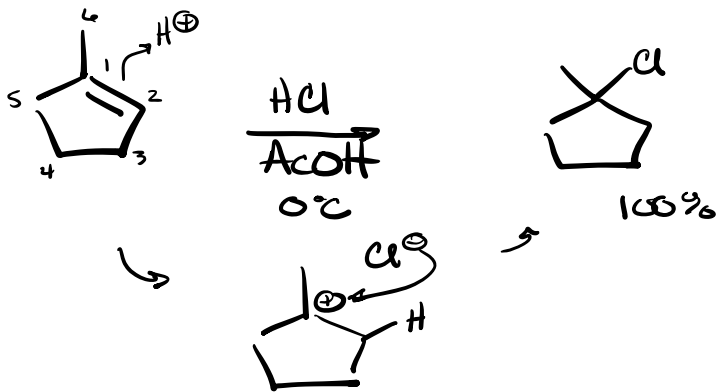
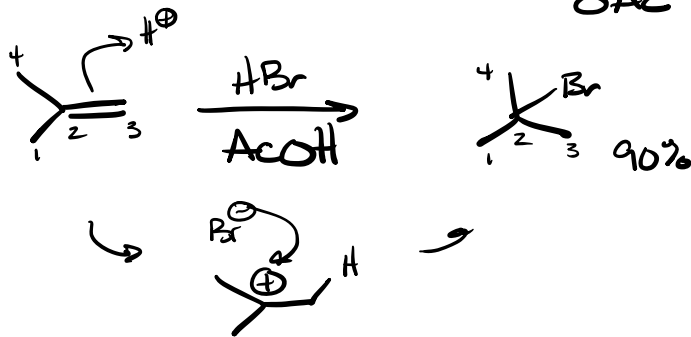
Regioselective → Selective for location

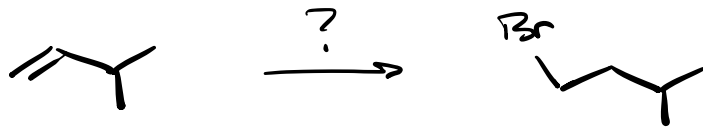
Stereoselective → Selective for enantiomers

* Enantioselective → Selective for a single enantiomer

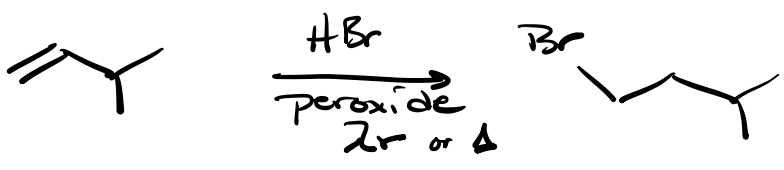
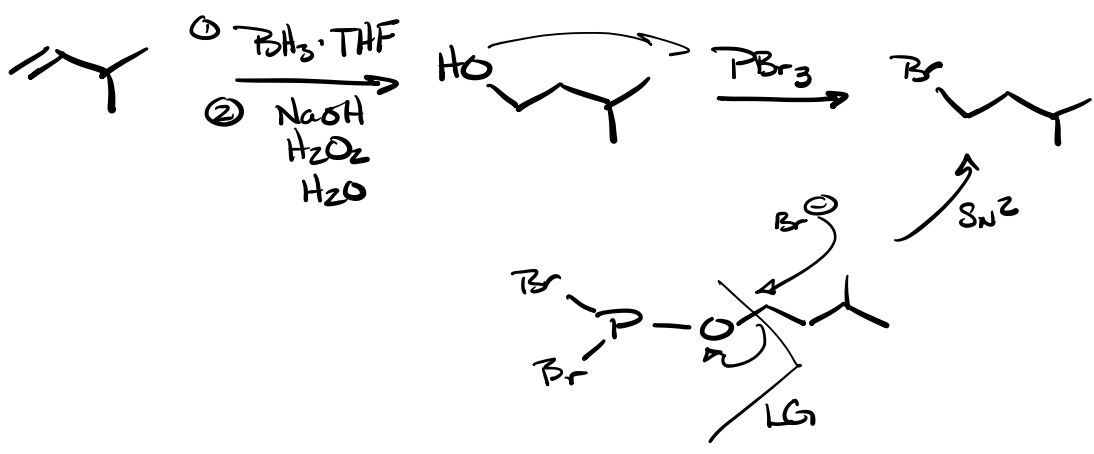
Halogenation

AcOH =  acetic acid
 \ominus OAc =  acetate

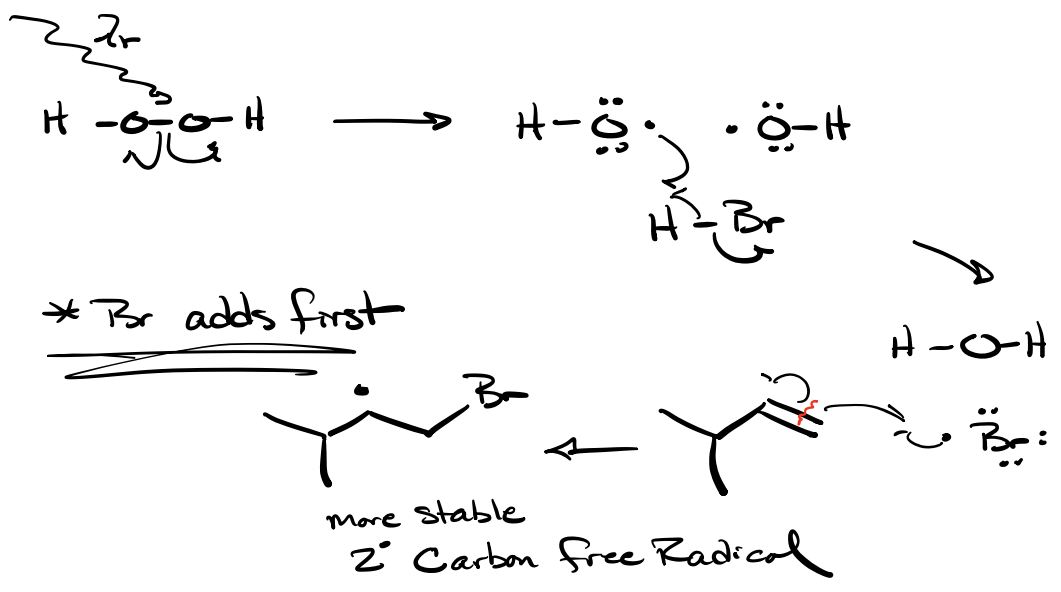


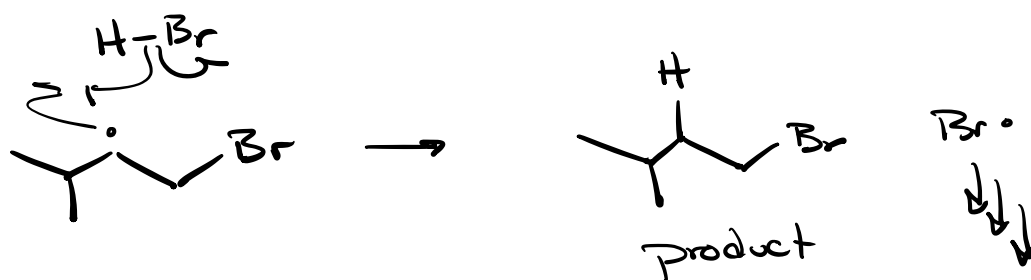


How to make this major



Mechanism \Rightarrow Free Radical





pick it up on monday



free
Radical



Carbocation