

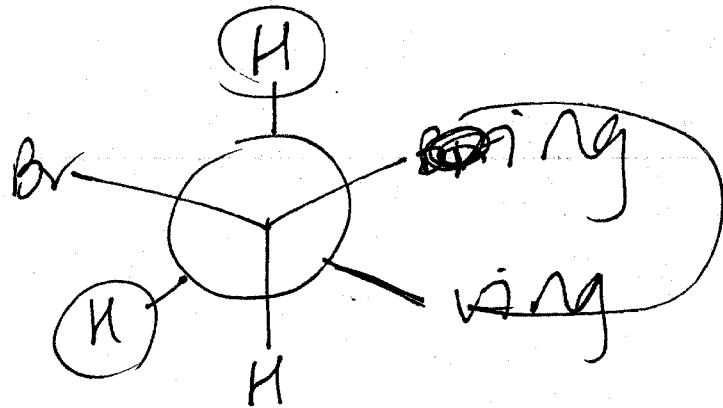
most stable  
conformation

most stable  
conformation  
has the anti  
arrangement  
of H + Br

⇒ fast

↓  
molecule  
must  
undergo an  
unfavorable

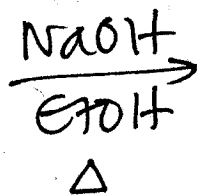
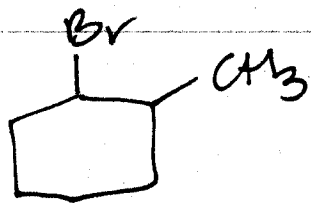
conformational  
change before



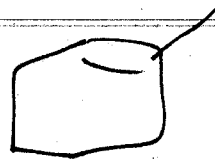
Neither H is  
anti to the Br.

it can react, elimination  
⇒ v. slow won't go.

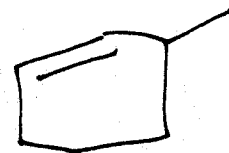
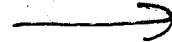
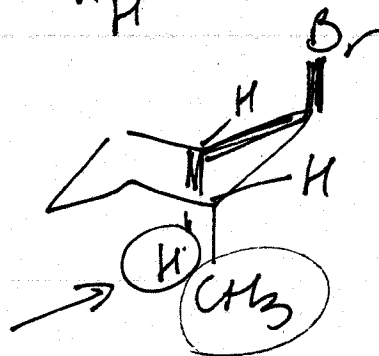
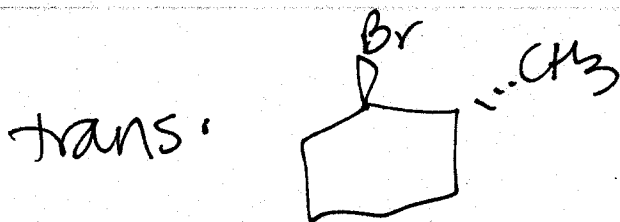
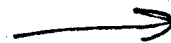
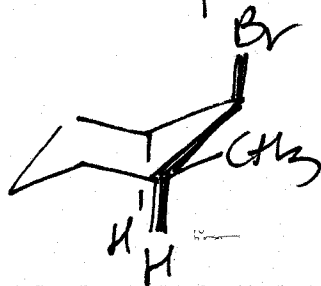
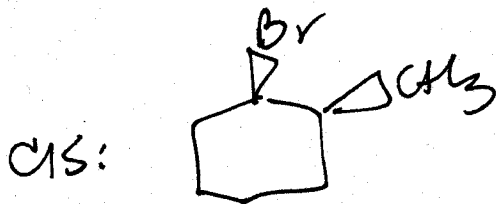
Consider: cis + trans 2-methyl-1-bromo  
cyclohexane



expect



Add in stereochemistry

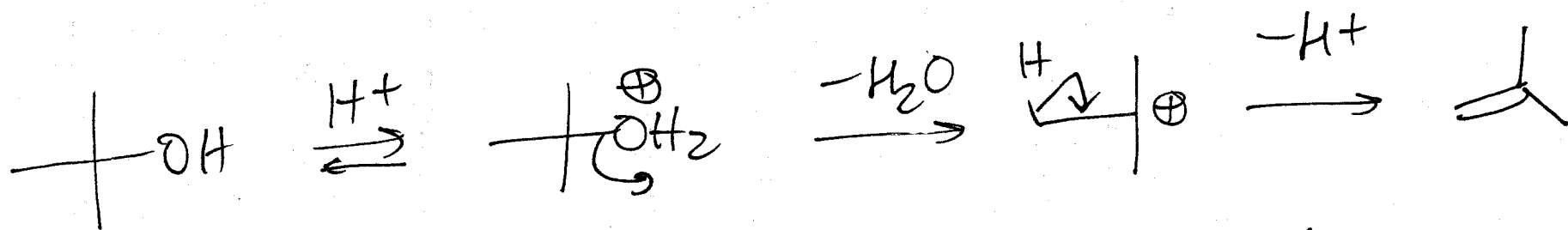


# Acid-Catalyzed Dehydration of Alcohols (loss of $H_2O$ )

Ease of dehydration:  $3^\circ > 2^\circ > 1^\circ$   
(85°) (180°)

Mechanism: E1

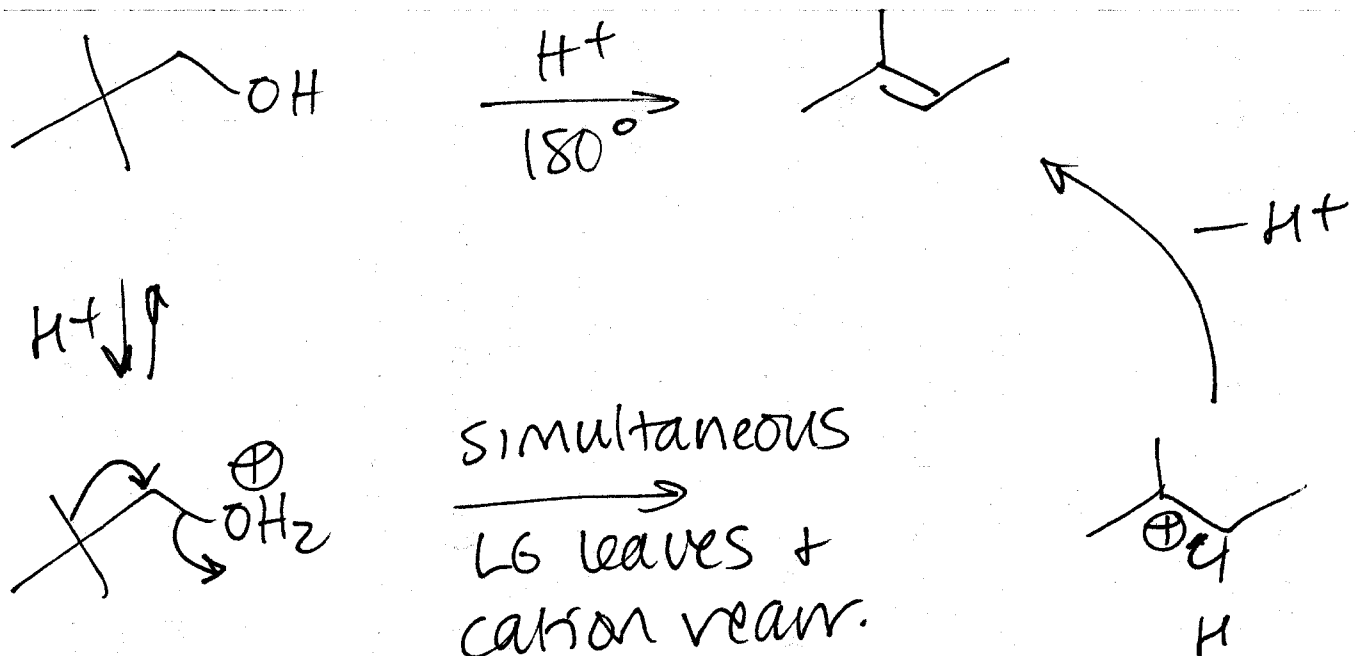
1. protonate OH (need a good LG)
2.  $H_2O$  leaves  $\rightarrow$  cation
3. lose  $\beta$  H  $\rightarrow$  alkene



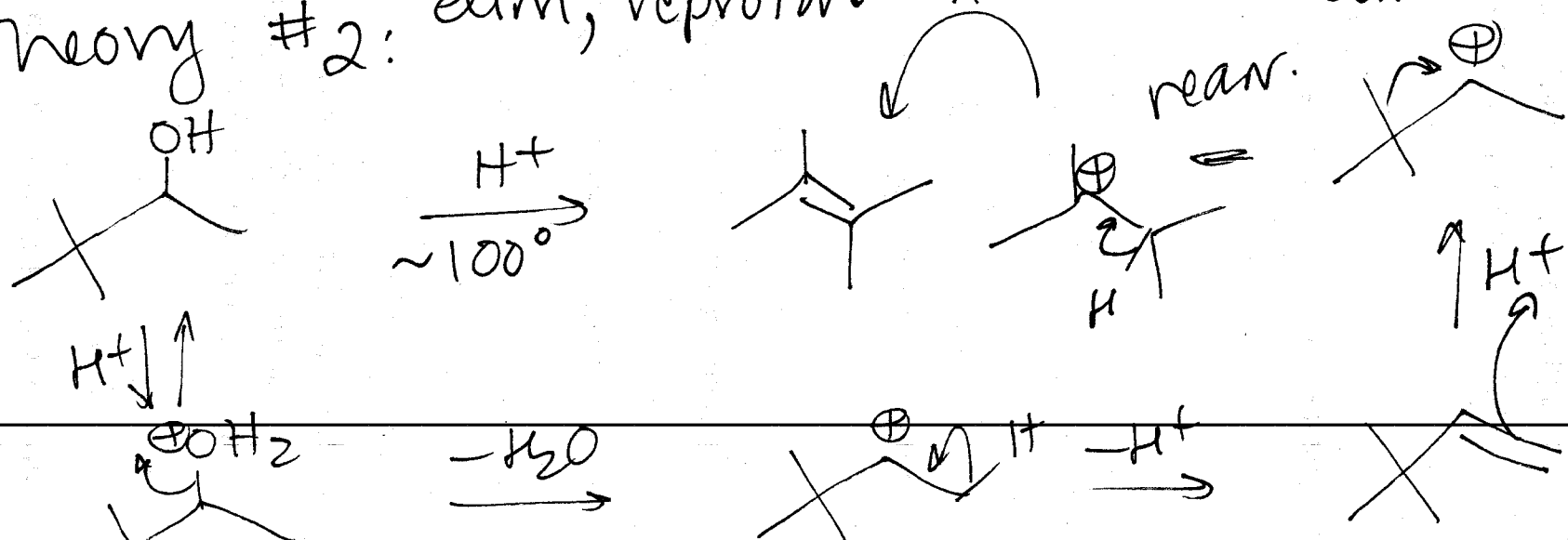
\* this is the way  
that  $3^\circ + 2^\circ$  alcohols  
react.

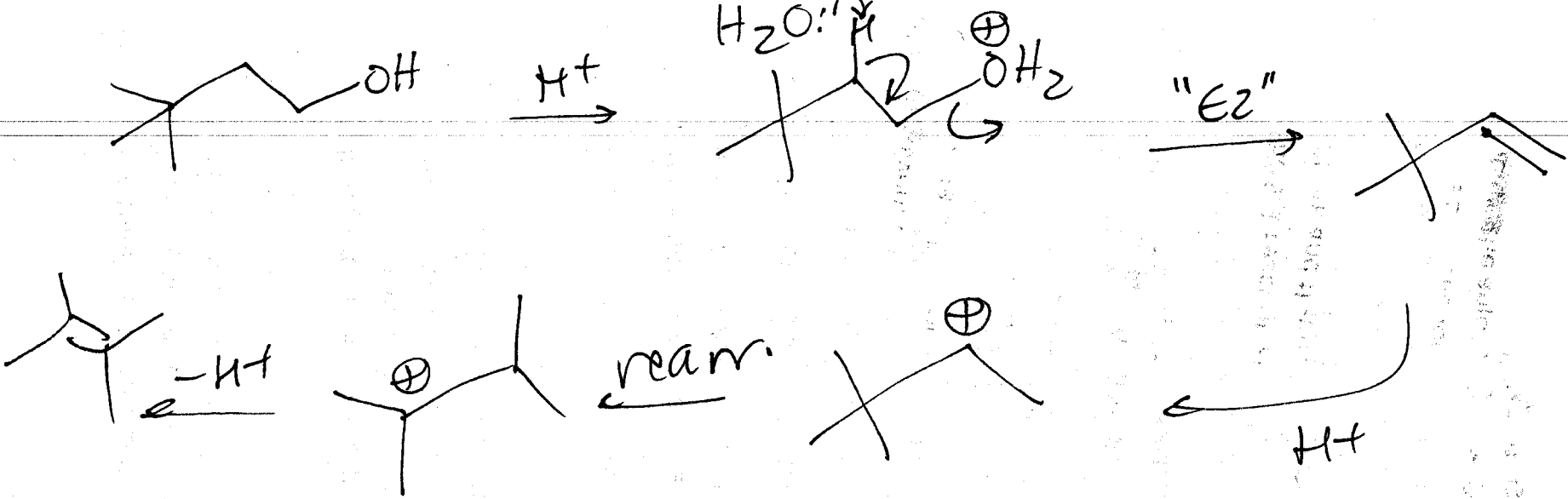
(don't forget  
about rearrangement)

What about 1° alcohols? Theory #1: modified E1



Theory #2: elim, reprotonation, another elimination





For alcohols:

$3^\circ + 2^\circ$  - use E1 - cation intermediates rearr. possible.

$1^\circ$  - often call it E2 but then reprotorate alkene. Alternative - modified E1

For alkyl halides: Prefer E2 - need strong base

- concerted rxn
- anti elimination

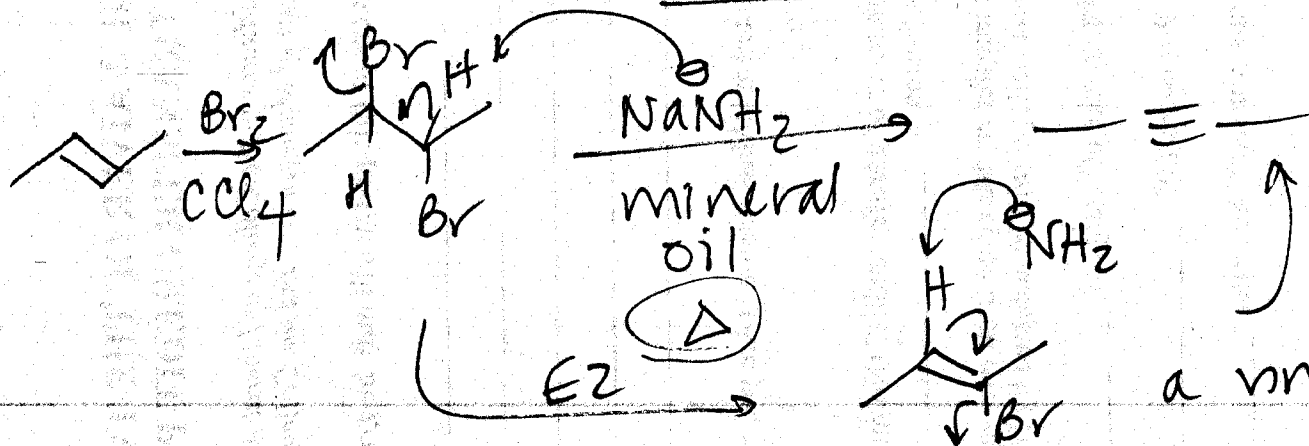
# Syntheses of Alkynes:

1. Double dehydrohalogenation

(loss of two equiv. of HX)

a. from a vicinal dibromide

vic = adjacent



b. from a geminal dichloride

gem - "twins"  
- on same C