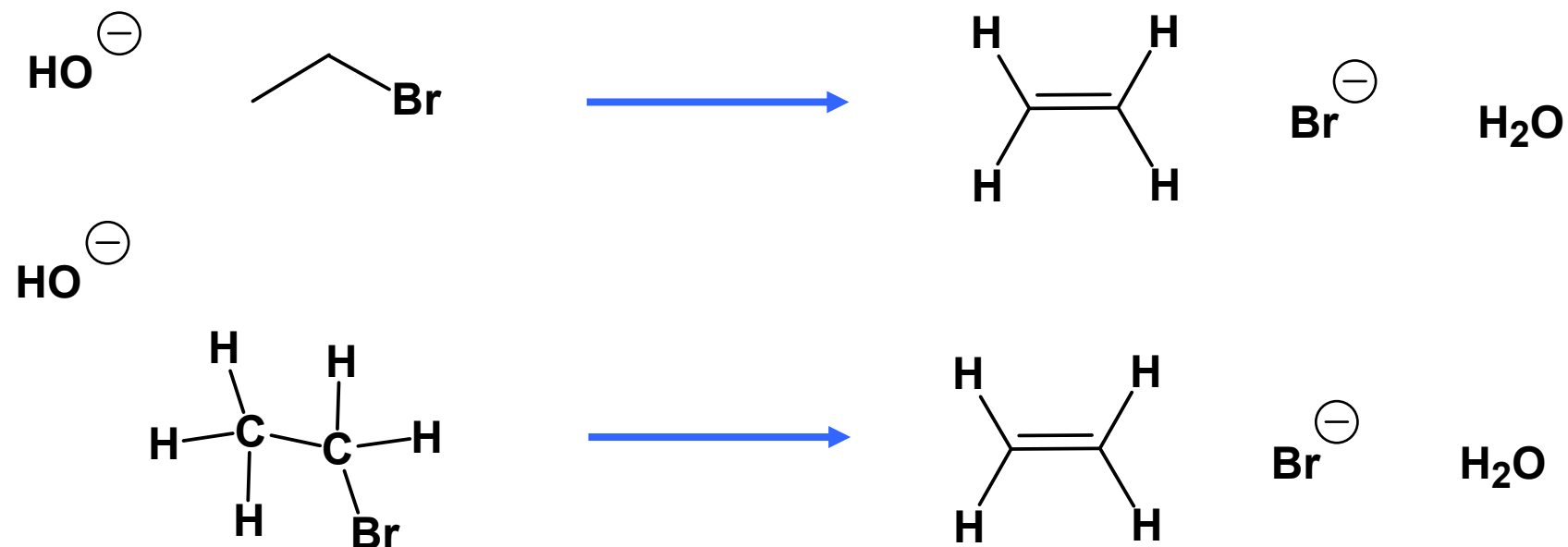


Chapter 7:

Part 4: E2 & E1 Reactions

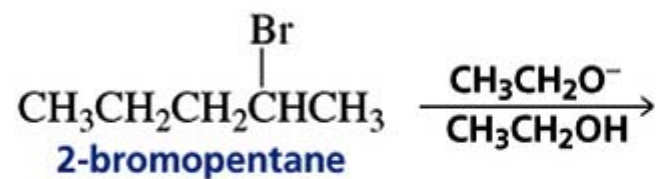
1. Stereochemistry of the E2 Mechanism
2. The E1 Mechanism
3. The Stereochemistry of the E1 Mechanism
4. The E1cb Mechanism

The E2 Reaction



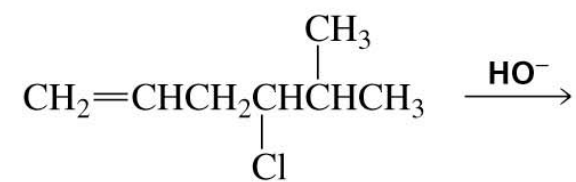
The presence of a leaving group creates a slight positive charge at the electrophilic carbon and at the protons on the α carbon.

Consider the regioselectivity of the E2 reaction



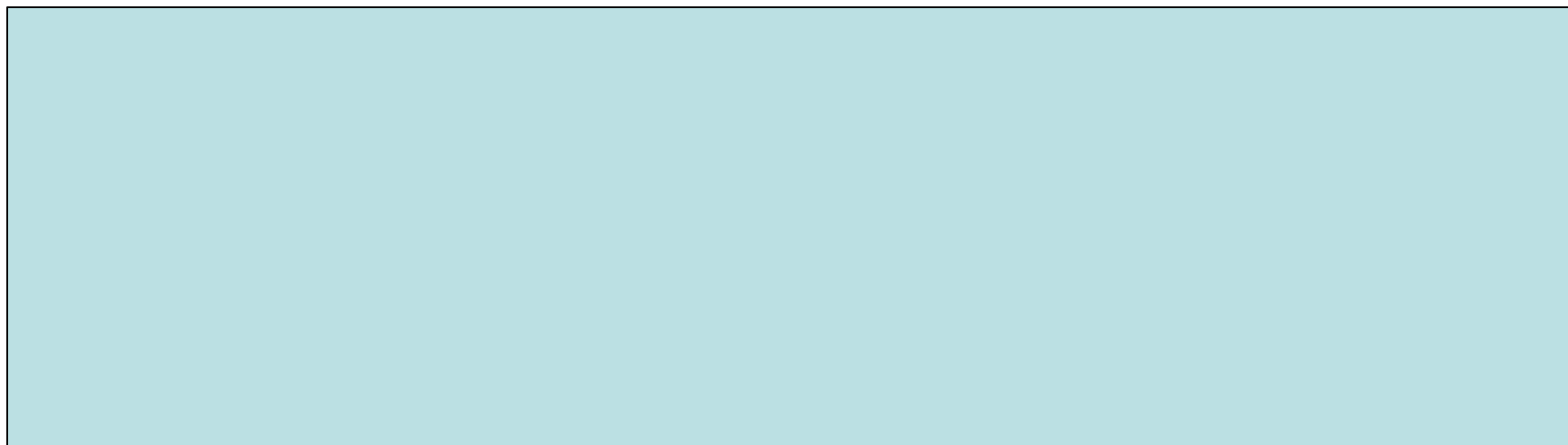
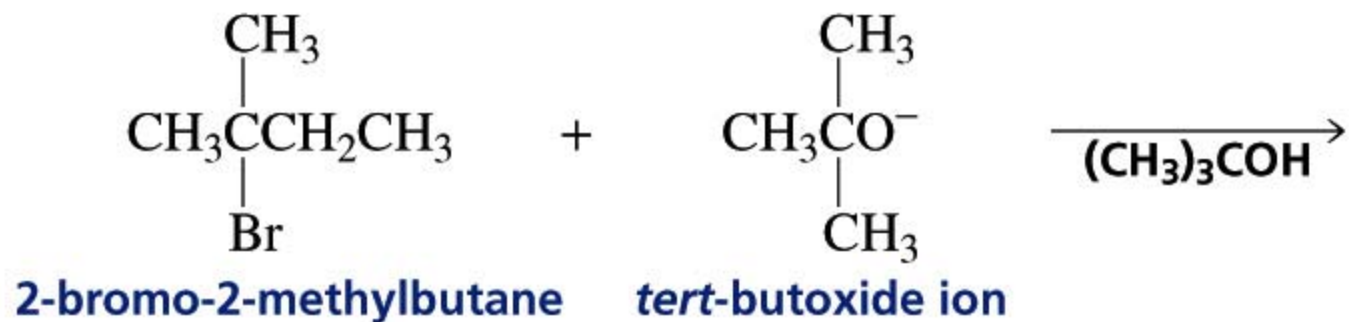
Zaitsev's Rule -

Conjugated alkene products are preferred over the more substituted alkene product



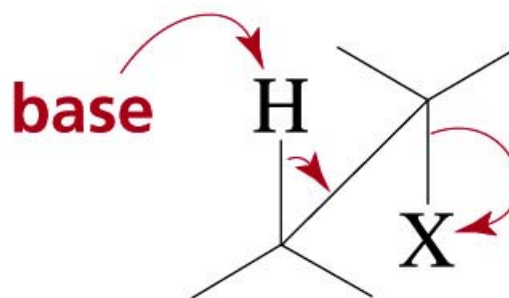
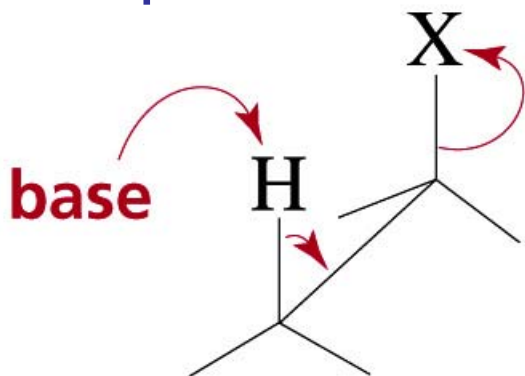
4-chloro-5-methyl-1-hexene

Steric hindrance also affects the product distribution



Stereochemistry of the E2 Reaction

The bonds to the eliminated groups (H and X) must be in the same plane



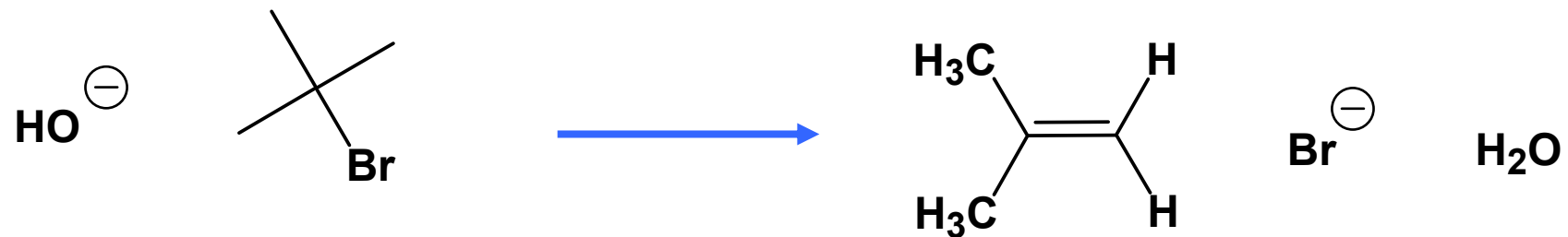
Characteristics of the E2 mechanism

- Second order kinetics: $\text{rate} = k[\text{RX}][\text{B}]$
 - bimolecular rate-determining step

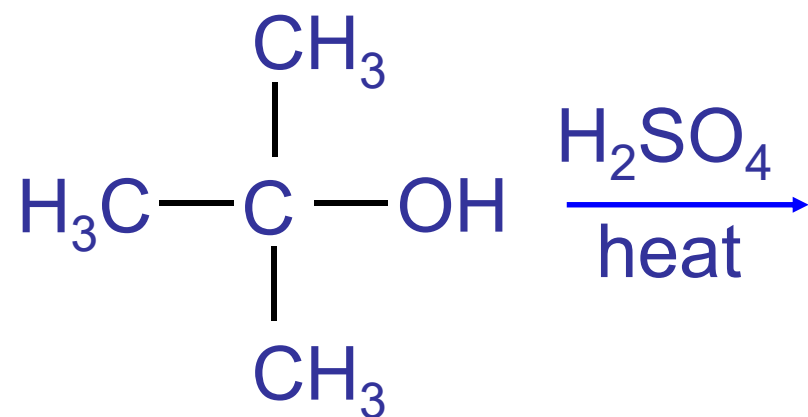
The E1 Mechanism

- 1. We CAN have elimination in the absence of base.
- 2.
- 3.
.

The E1 Reaction

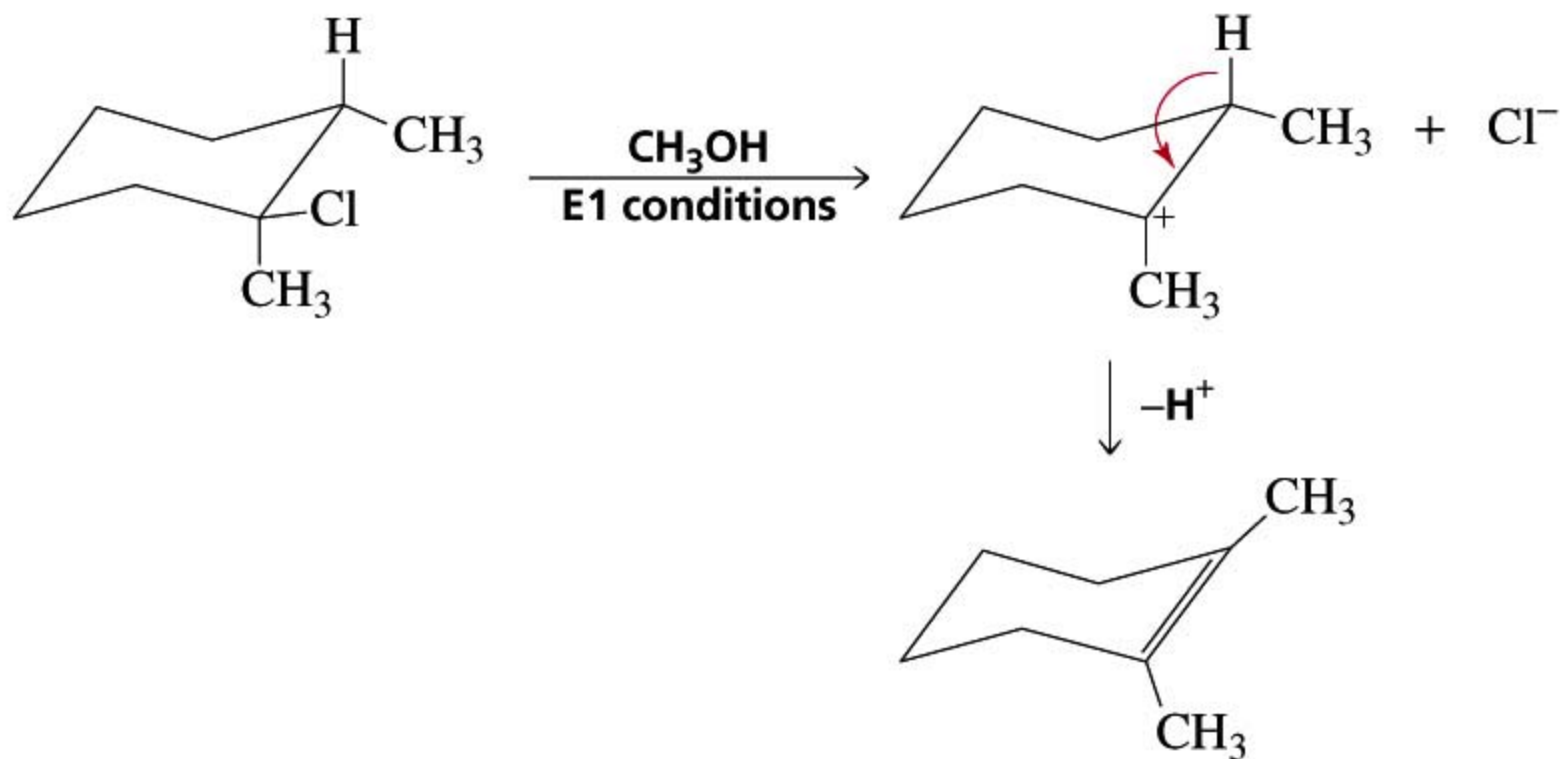


Dehydration of tert-Butyl Alcohol



Carbocations can...

E1 Elimination from Cyclic Compounds



An E1 reaction involves both syn and anti elimination

Characteristics of the E1 mechanism

- First order kinetics: $\text{rate} = k[\text{RX}]$
 - unimolecular rate-determining step
- carbocation intermediate
 - rate follows carbocation stability
 - rearrangements sometimes observed
- Reaction is regiospecific
 - more substituted alkene is still preferred product
 - reaction is not stereospecific

Competition Between E2 and E1 Reactions

- Primary Alkyl Halides –
- Secondary Alkyl Halides–
- Tertiary Alkyl Halides –

For Next Time....

Suggested Homework Problems Chapter 7

#1,14,21,26, 31, 36,38,41,44,50,52,53,59,64,65

Exam#2 → Wednesday OCTOBER 25th!