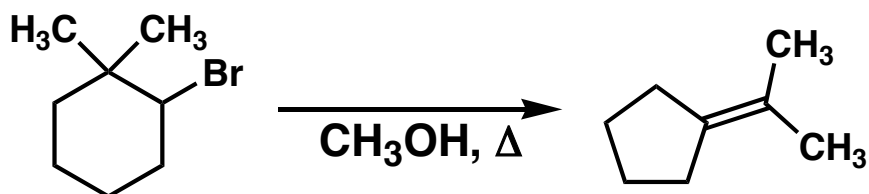
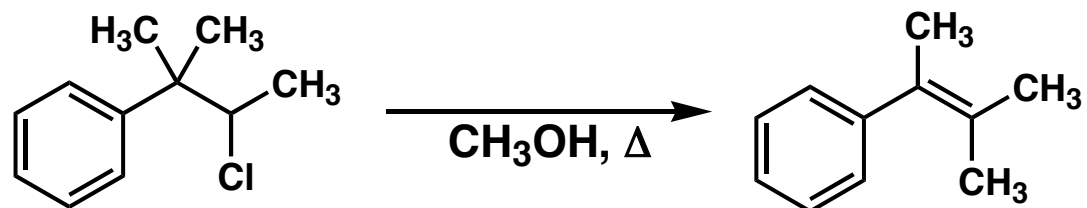


# Encountering New Chemical Reactions

Write mechanisms for the following reactions. Use clear, carefully drawn structures and precise curved arrow notation for all steps. Provide distinct structures for all intermediates. Show resonance contributors and electron lone pairs where necessary.



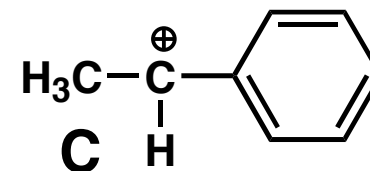
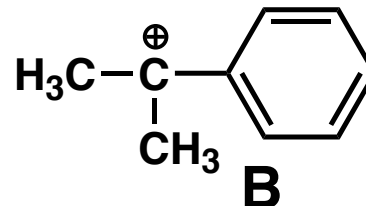
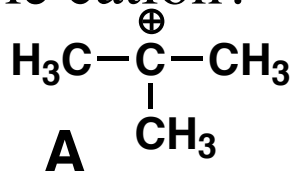
## The steps of writing reaction mechanisms

- make sure the overall stoichiometry is balanced
- draw implicit hydrogen atoms wherever they might be important (e.g., on carbon atoms of reactants and products near to where the bond changes takes place)
- list the bonds made and broken
- identify nucleophiles, bases, electrophiles and acids; repeat for each step of the mechanism
- draw curved arrows to show the flow of electrons
- make sure charge is balanced for each step of the mechanism
- find a reasonable pathway that leads to the products
- look for hidden reactivity by drawing resonance contributors for each intermediate
- work backwards if you get stuck

# Discussion Problems

Which is the most stable cation?

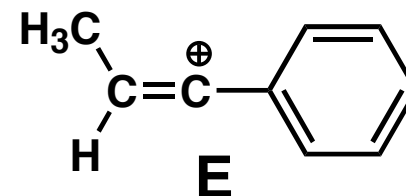
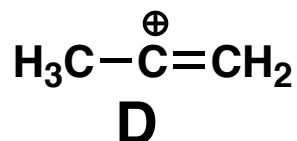
A



B

C

D

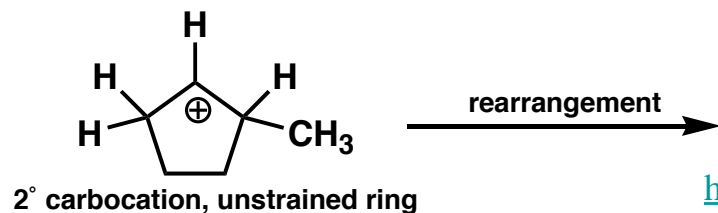
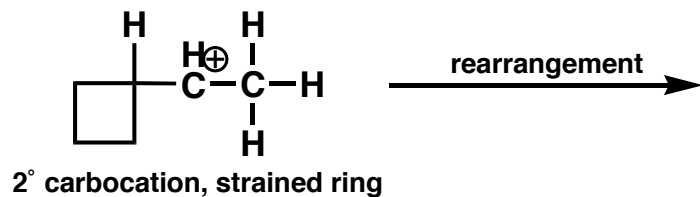
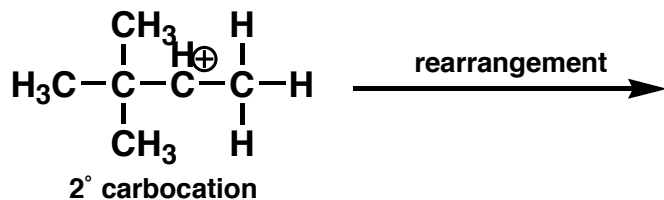


E

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## Carbocation Rearrangements

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<http://wps.prenhall.com/wps/media/objects/725/742646/AADEZVQ0.html>

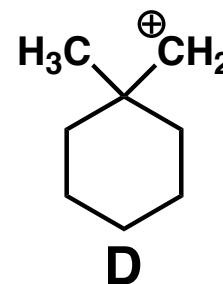
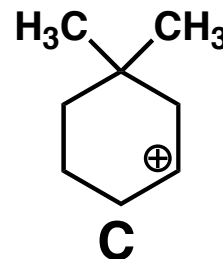
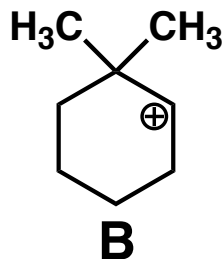
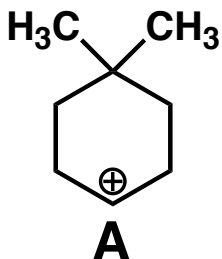
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# Discussion Problems

(1) Which of the following carbocations is likely to rearrange?

- 
- 
- 
- 
- 

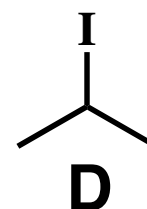
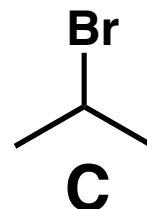
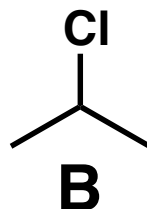
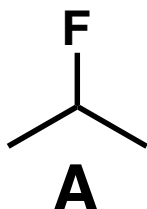
**A**  
**B**  
**C**  
**D**  
**B and D**



(2) Which alkyl halide undergoes [E1] elimination at the fastest rate?

- 
- 
- 
- 

**A**  
**B**  
**C**  
**D**



(3) Predict the two mechanisms most likely to occur when 2-iodohexane is heated in ethanol.

- 
- 
- 
- 
- 

$S_N2$  and  $S_N1$   
E1 and E2  
 $S_N2$  and E2  
E1 and  $S_N1$   
E2 and  $S_N1$

# Discussion Problem

(4) Which of these is the least likely to be found in the product mixture that results when the alkyl iodide below is heated in water?

- A
- B
- C
- D
- E

