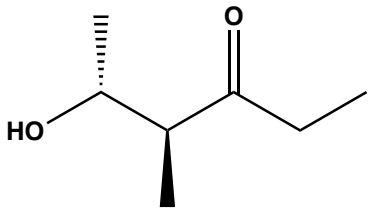
NAME (Print): _____

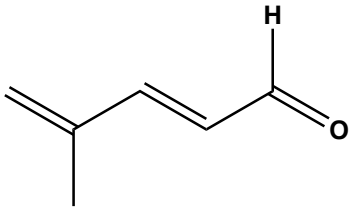
SIGNATURE: _____

Chemistry 320N
Dr. Brent Iverson
2nd Homework
January 21, 2026

Please print the first three letters of your last name in the three boxes

(3 pts each) Write an accurate IUPAC name for the following molecules.



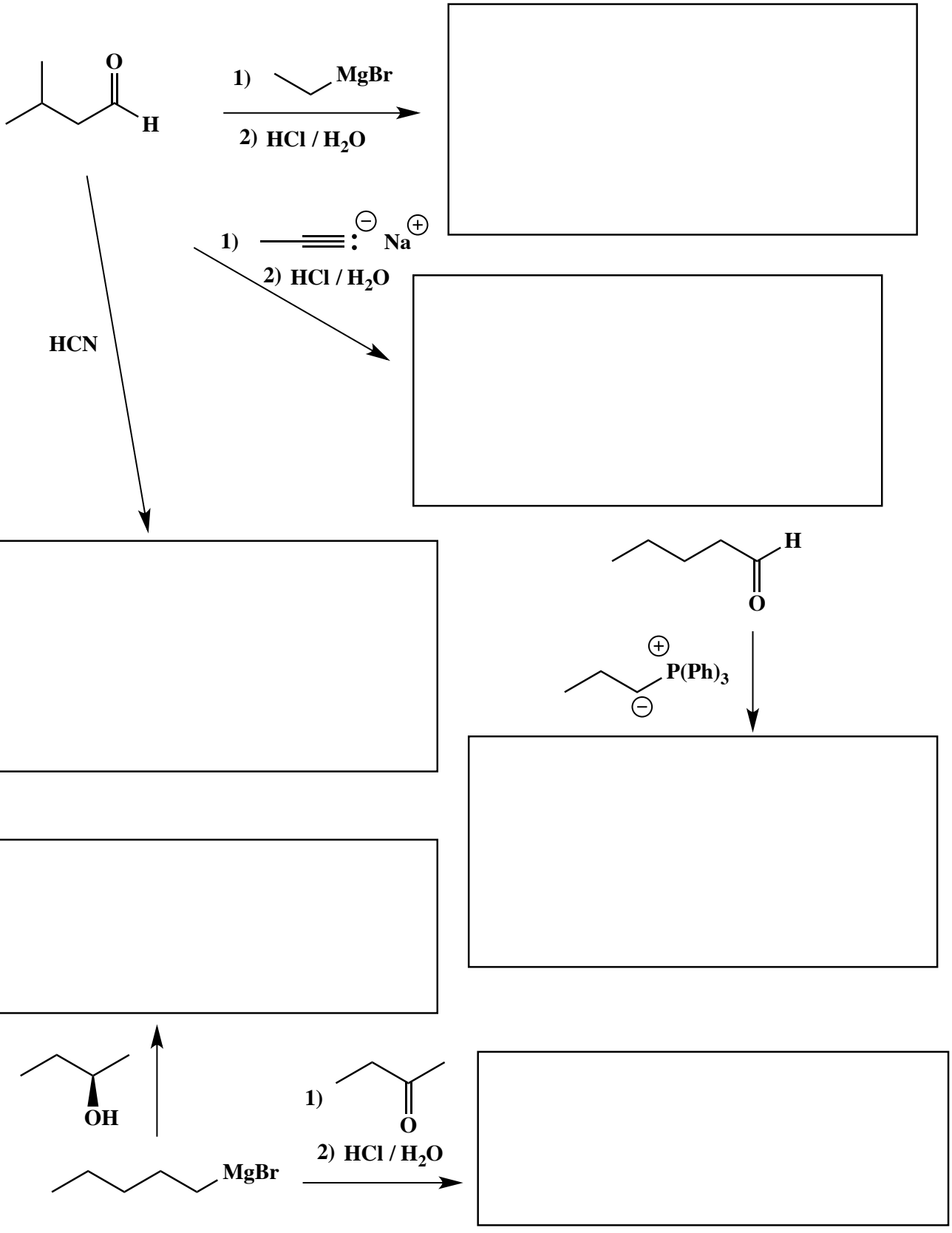


(3 pts each) Draw the correct structure for the given IUPAC name. Use wedges and dashes to show the appropriate stereochemistry where appropriate.

(*S*)-3-hydroxy-4-propyl-2-heptanone

(2R,4R)-2-bromo-4-methylpentanedial

(3 or 5 pts each) Fill in the boxes with the structures that complete the reactions. Use wedges and dashes to indicate stereochemistry when appropriate. If a racemic mixture is formed, you must draw both enantiomers and write "racemic" next to the two structures.



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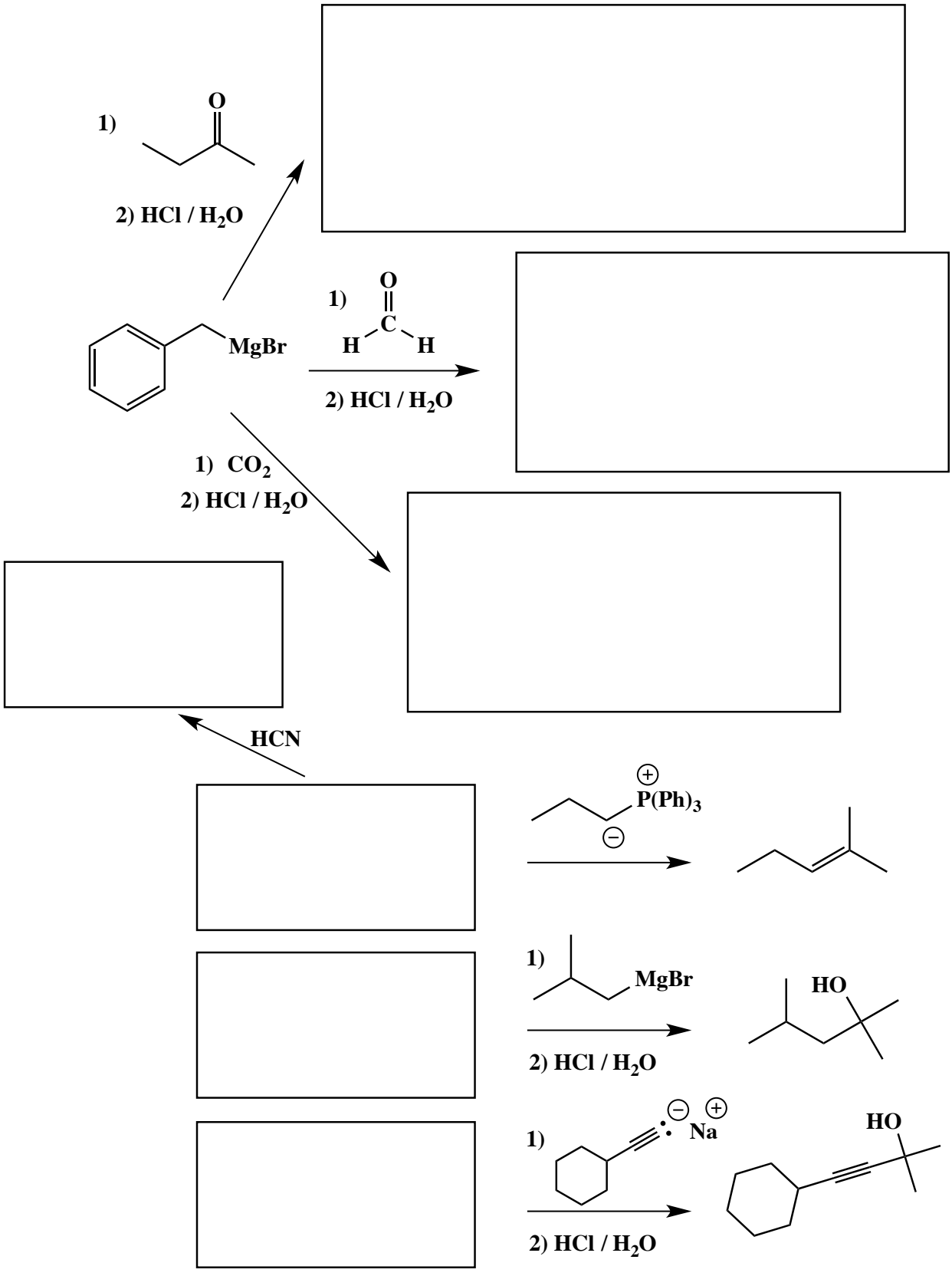

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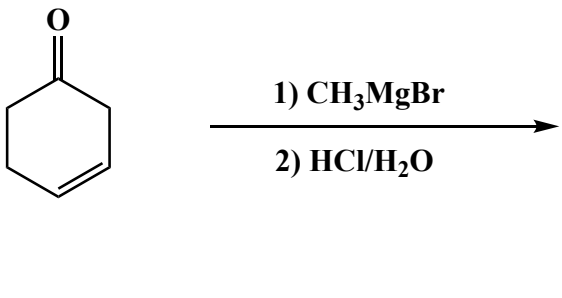
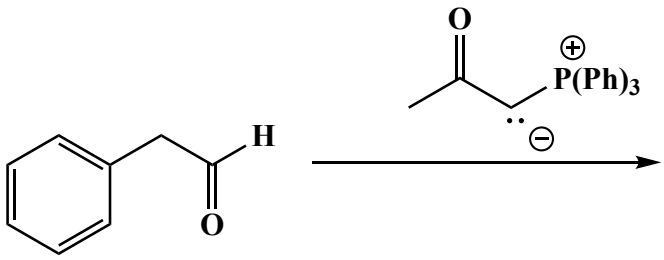
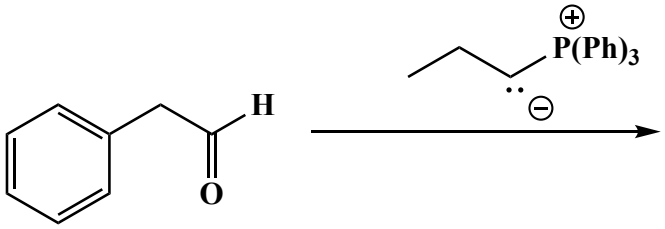
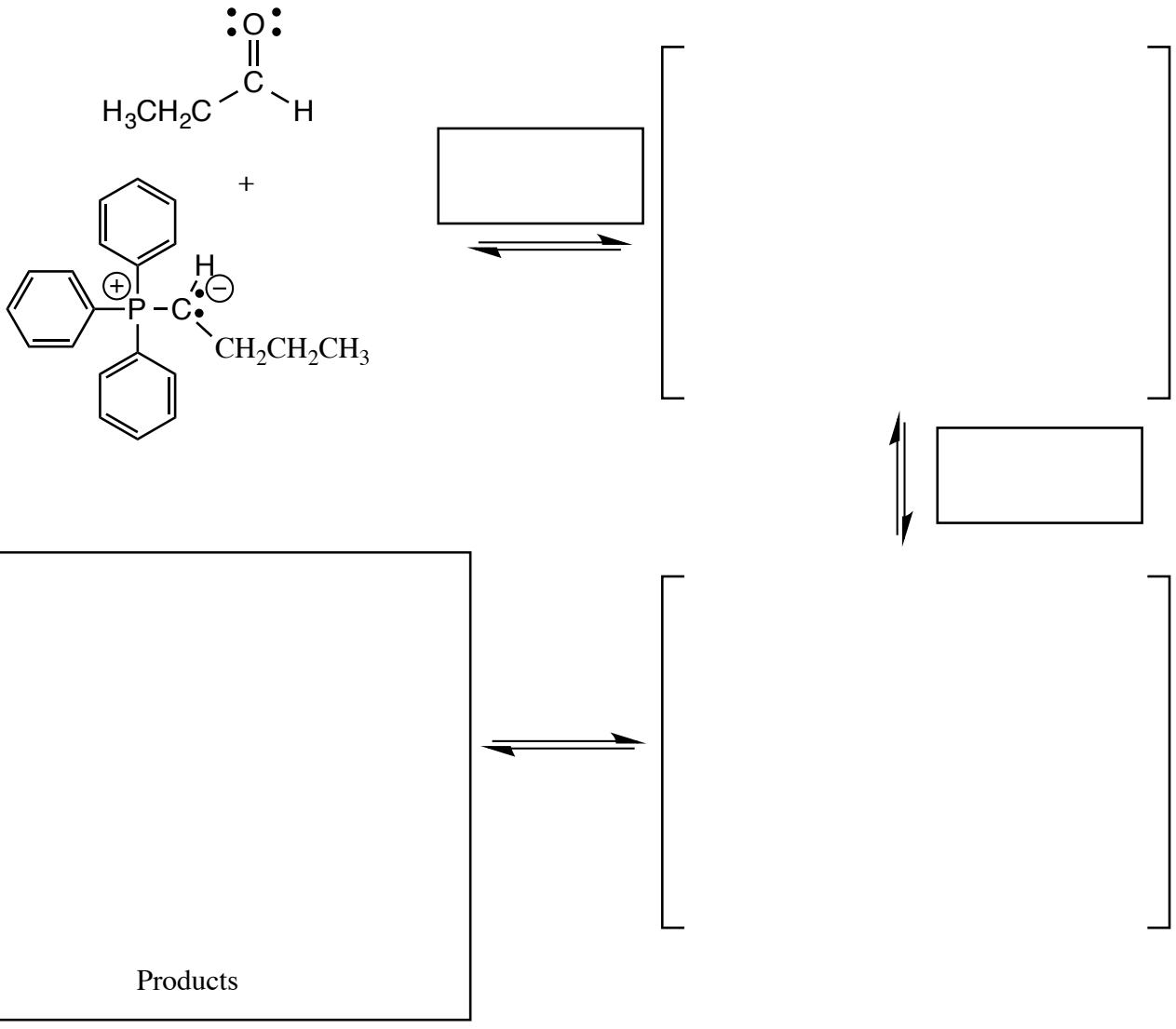






(18 pts. total) Complete the mechanism for the following Wittig reaction. **Be sure to show arrows to indicate movement of <u>all</u> electrons, write <u>all</u> lone pairs, <u>all</u> formal charges, and <u>all</u> the products for each step.** Remember, I said <u>all</u> the products for each step. **IF A RACEMIC MIXTURE IS CREATED IN AN INTERMEDIATE, MARK ALL CHIRAL CENTERS WITH AN ASTERISK AND WRITE RACEMIC. IF A RACEMIC MIXTURE IS CREATED IN THE FINAL PRODUCTS, YOU NEED TO DRAW BOTH ENANTIONMERS, AND WRITE RACEMIC.** I realize these directions are complex, so please read them again to make sure you know what we want.

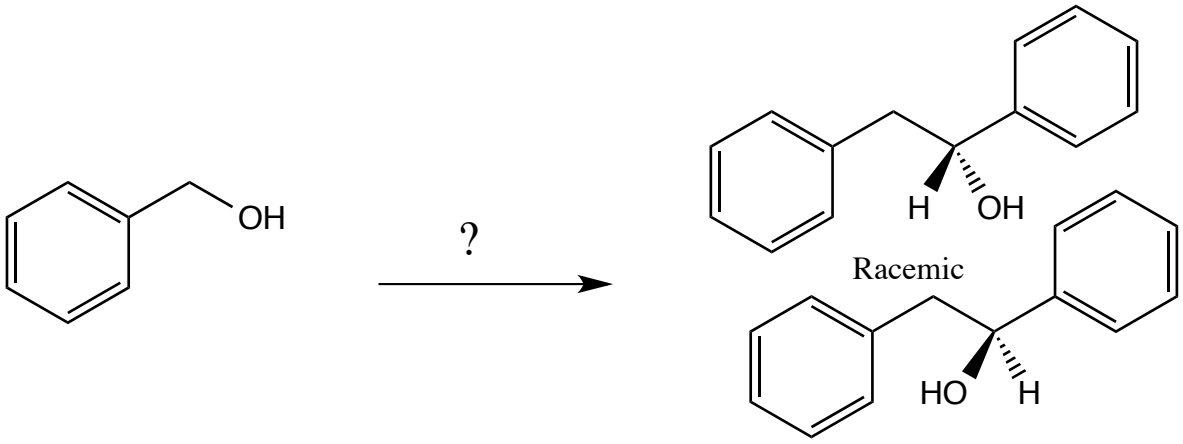


2 pts In the boxes provided adjacent to the first two sets of arrows, write which of the four basic mechanistic elements are involved (i.e. "Make a bond", "Add a proton", etc.

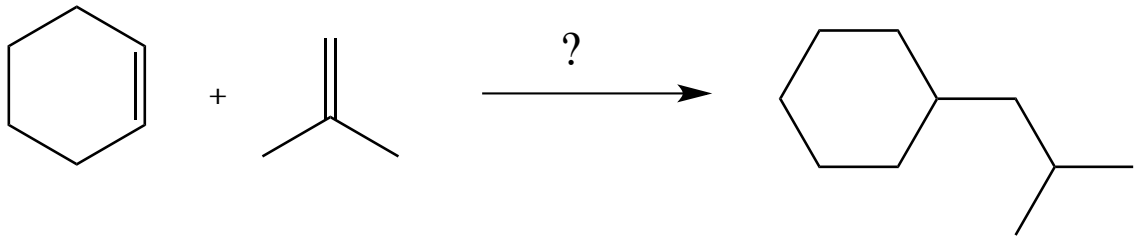
NOTICE THIS

These are synthesis questions. You need to show how the starting material can be converted into the product(s) shown. You may use any reactions we have learned. Show all the reagents you need. Show each molecule synthesized along the way and be sure to pay attention to the regiochemistry and stereochemistry preferences for each reaction.

(10 pts) **All of the carbon atoms of the products must come from the starting material for this one!**



(12 pts) **All of the carbon atoms of the products must come from the starting materials for this one!**



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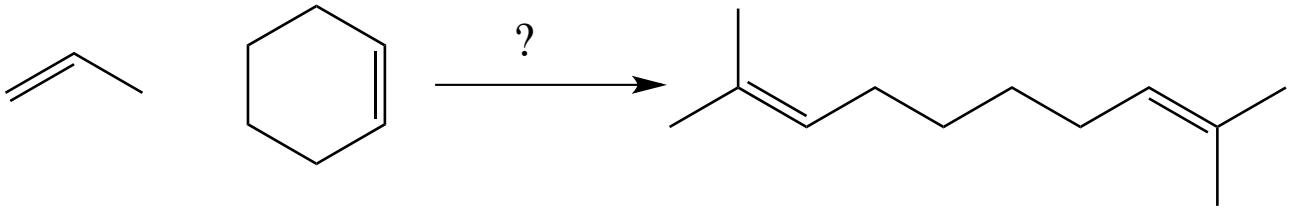

(15 pts) **All of the carbon atoms of the products must come from the starting material for this one!**