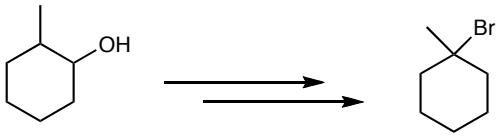
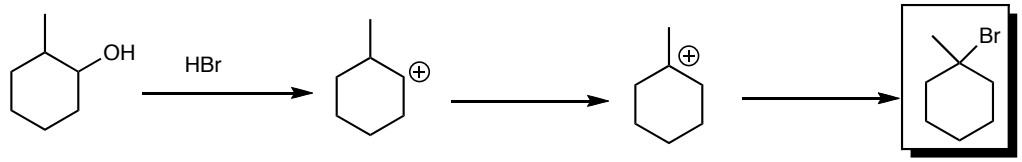
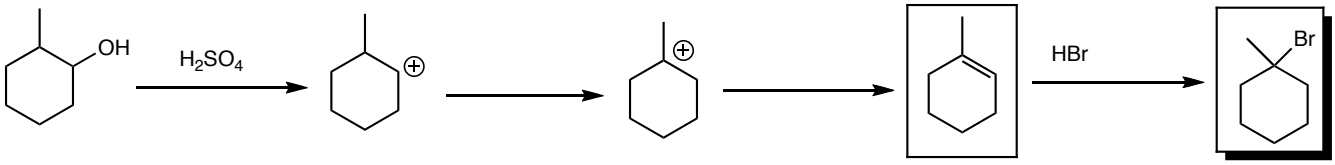
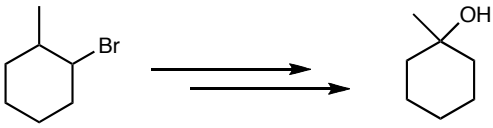


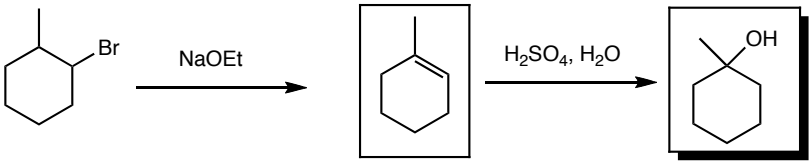
Two options: either treat with HBr, and brominate with a cation shift.
Or, dehydrate first with H_2SO_4, then hydrohalogenate with HBr

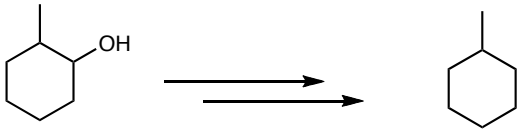




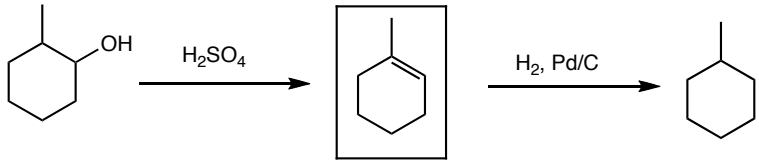


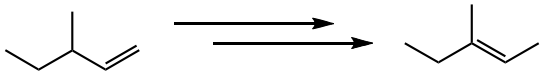
Cannot use S_N1 because 2° would be too slow. Must eliminate by dehydrohalogenation then hydrate thealkene.



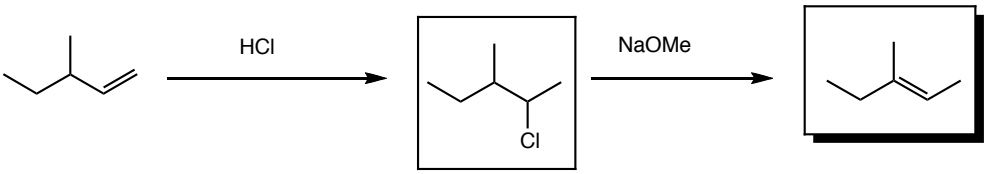


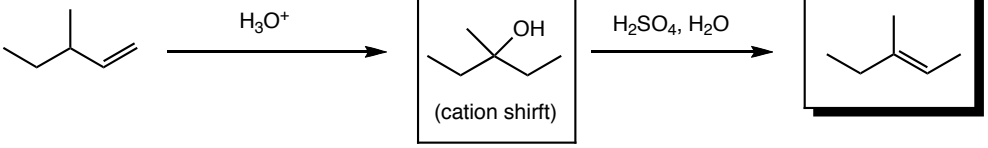
The only method you have seen so far to form C-H bonds by hydrogenation of an alkene. To get to the alkene, dehydrate the alcohol. Do not try to form a carbocation and an H. <u>It will not work.</u>

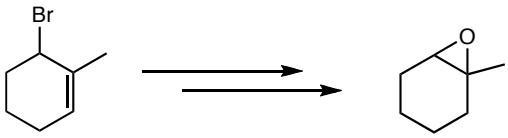




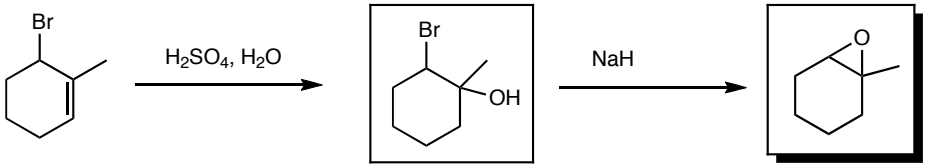
In the first step, do an addition to the alkene, and then eliminatte it in the second step. THere are two ways to do this: either with a halogen or with water.

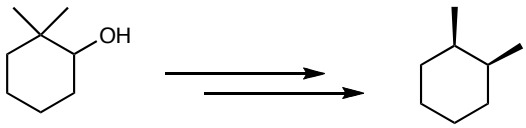




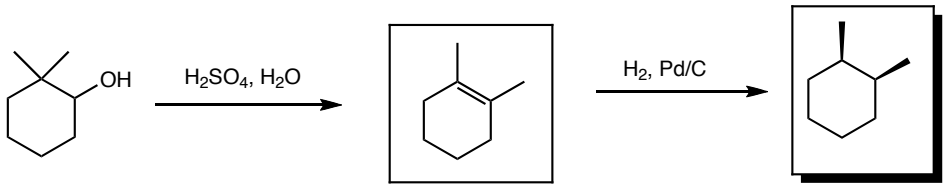


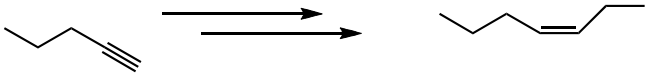
Use Williamson ether synthesis from the hydroxy bromide to make the epoxide. Hydrate teh alkene to make the hydroxy bromide.



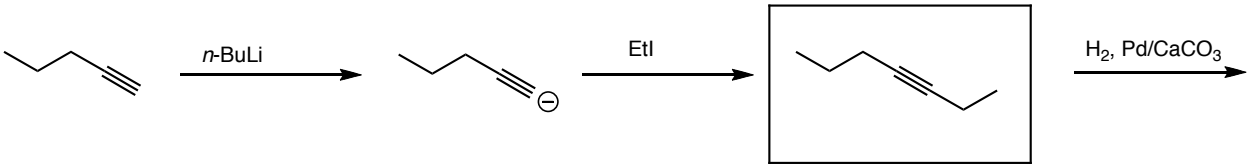


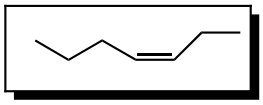
Again, the only way you know how to make C-H bonds is by hydrogenation of and alkene. Dehydration of the alcohol is the result of a cation shift, which puts the methyl groups in the correct positions.

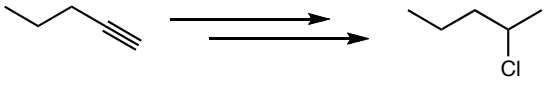




The only way you know how to makeC-C bonds is by forming a carbanioanion, and using it in an S_N2 reaction with an alkyl halide. It is better to do this before the hydrogenation, because the alkyne is acidic and can be easily deprotonated with a very strong base.







Partially hydrogenate to the alkene, then hydrohalogenate to the chloride