

## How to Answer a Synthesis Problem

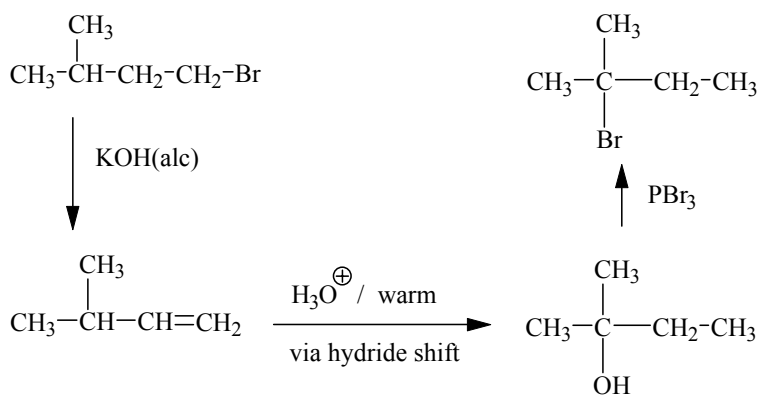
When you are asked to solve a synthesis problem, there is a standard format you should follow. This format includes several rules by which you should abide. Here are the rules and some examples. Remember, there is usually more than one way to make a compound. You just need to make sure the reactions you propose will work and produce reasonable amounts of product.

Rules:

1. Unless otherwise stated in the problem, you may use simple alkanes, alkyl halides, and alcohols as reactants or reagents. You must show the synthesis of specialized compounds such as acids, acid chlorides, tosylates, etc. You may also use any inorganic reagents and reaction conditions needed for any reaction.
2. You must show all products of reactions and, if you need only one of the products, indicate the isolation of that compound by writing the word "Purify" under the compound's structure.
3. You may not leave out steps in a multi-step process.
4. You must show the reaction conditions necessary to carry out the step you propose. There should always be something written above or below the reaction arrow.

Samples:

1. Synthesize 2-bromo-2-methylbutane from 3-methyl-1-bromobutane



2. Synthesize *cis*-1,2-cyclopentanediol from cyclohexane

