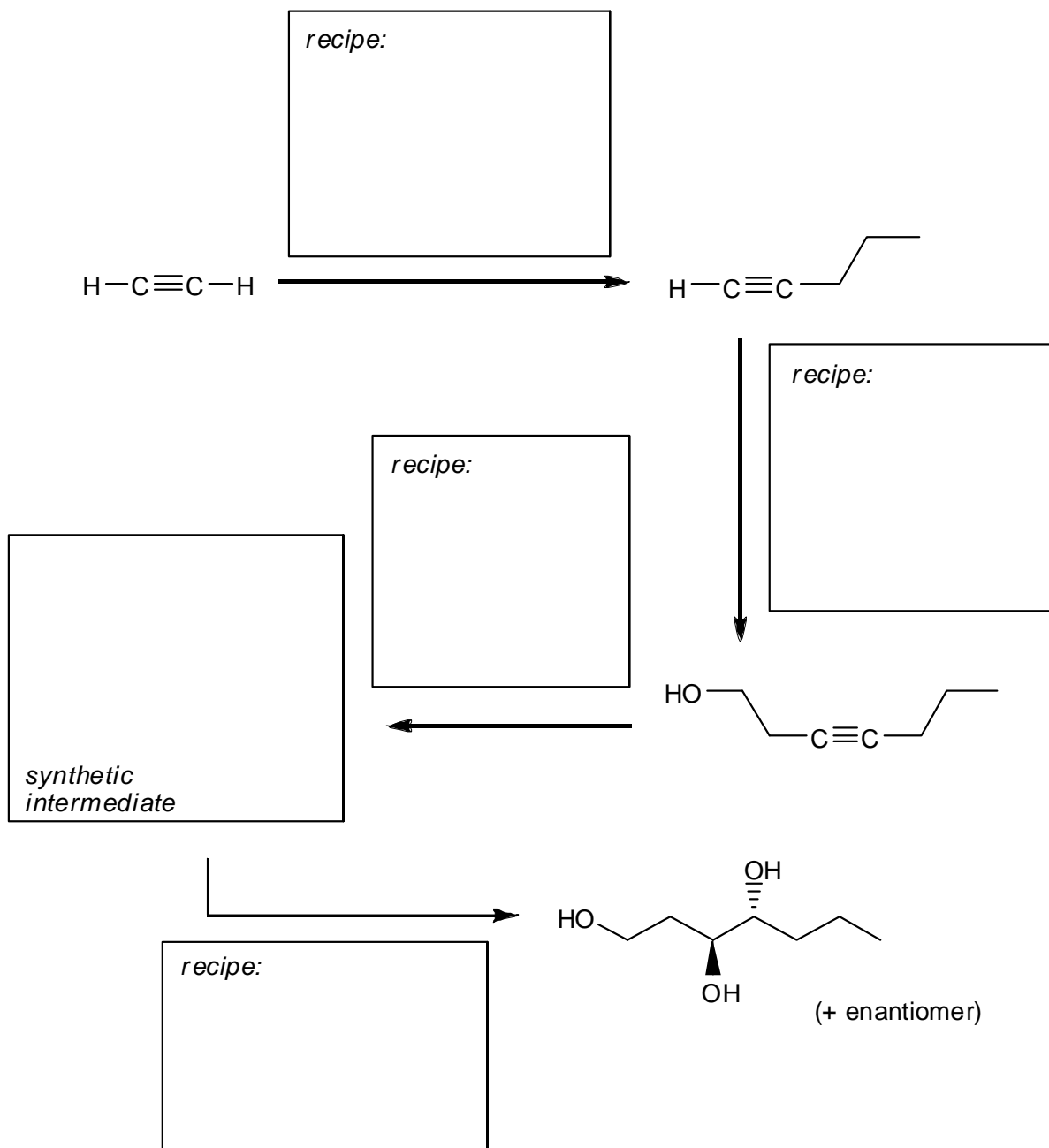


**In-Class Exercise:
Alkynes in Synthesis**

Alkynes are useful building blocks for organic chemists because different molecular “parts” can be attached to them by nucleophilic addition reactions. The synthesis below illustrates how, starting with acetylene, a complex product can be assembled in just a few steps. Fill in the blanks in this synthesis, and then answer the questions about the synthesis on the next page.



- a. Two different groups were added sequentially to the acetylene in the first two stages of the synthesis. Could the order of these two additions have been reversed? What problems might have been encountered in this case?
- b. There are a few ways that the alkyne-alcohol could be converted into the product triol. Propose two, and then critically evaluate them. Are there any side reactions, and side products, that you might expect for either of your routes?