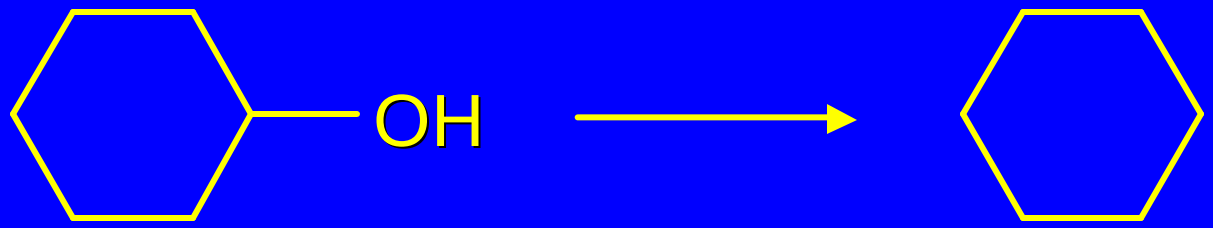
6.20
Introduction to Organic Chemical Synthesis

Prepare cyclohexane from cyclohexanol

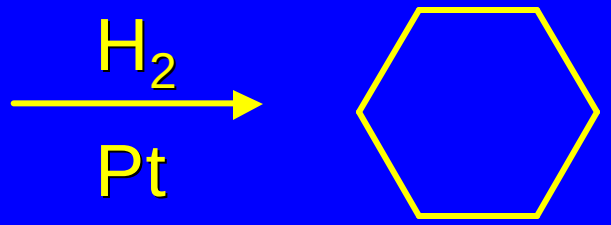


devise a synthetic plan

reason backward from the target molecule

always use reactions that you are sure will work

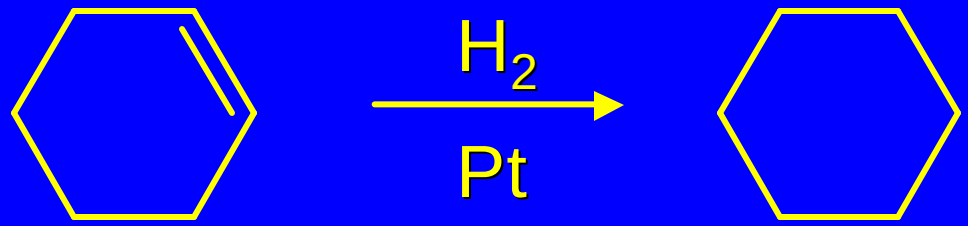
Prepare cyclohexane from cyclohexanol



ask yourself the key question

"Starting with anything, how can I make cyclohexane in a single step by a reaction I am sure will work?"

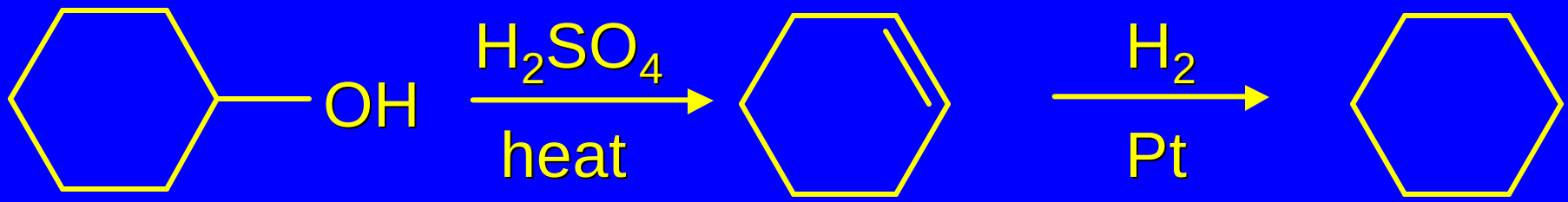
Prepare cyclohexane from cyclohexanol



The only reaction covered so far for preparing alkanes is catalytic hydrogenation of alkenes.

This leads to a new question. "Starting with anything, how can I prepare cyclohexene in a single step by a reaction I am sure will work?"

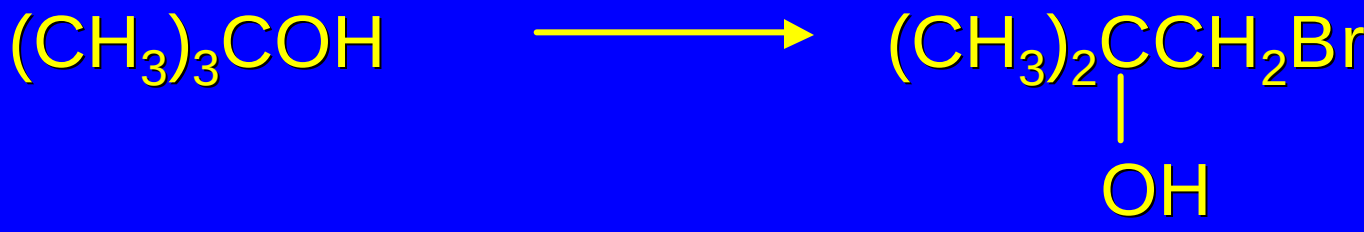
Prepare cyclohexane from cyclohexanol



Alkenes can be prepared by dehydration of alcohols.

The synthesis is complete.

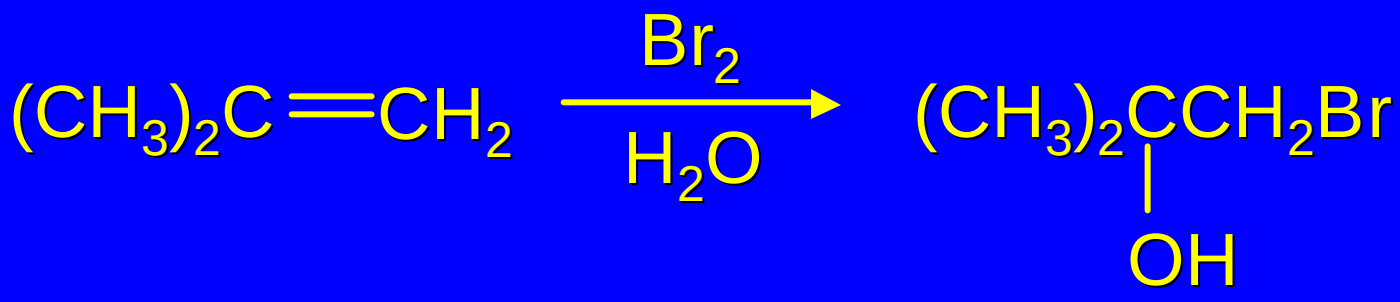
Prepare 1-bromo-2-methyl-2-propanol from tert-*butyl alcohol*



"Starting with anything, how can I make the desired compound in a single step by a reaction I am sure will work?"

The desired compound is a vicinal bromohydrin. How are vicinal bromohydrins prepared?

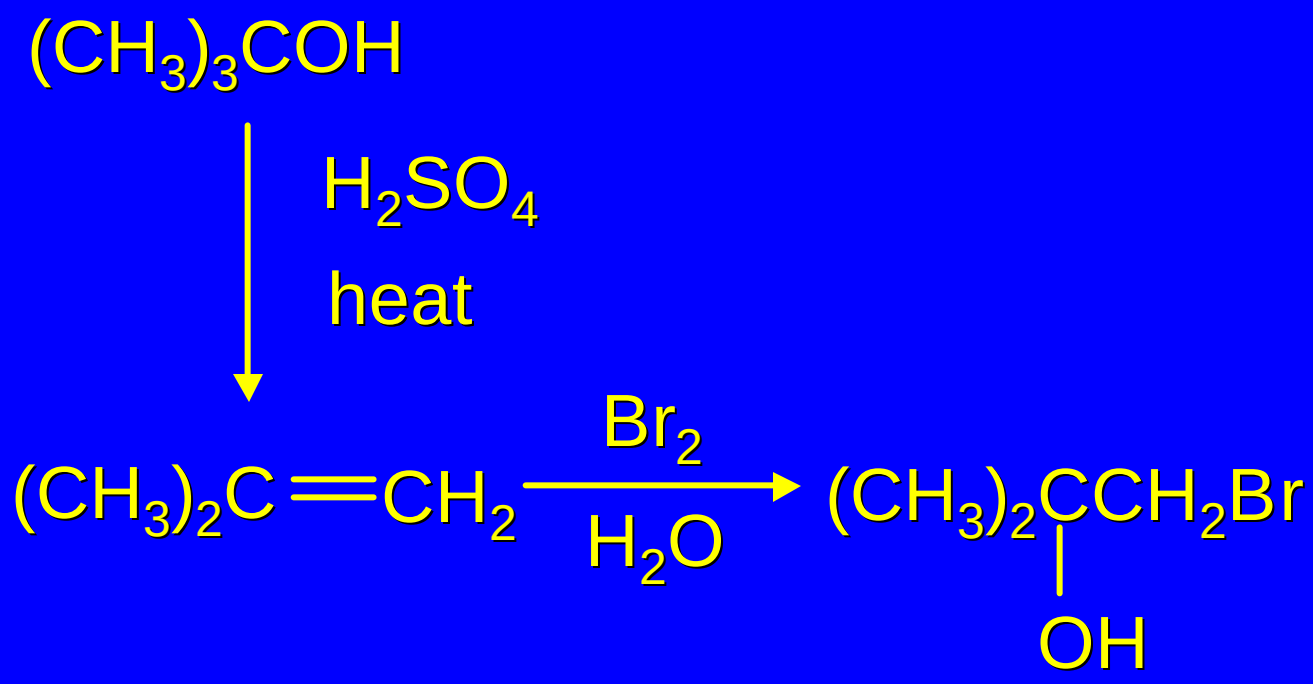
Prepare 1-bromo-2-methyl-2-propanol from tert-*butyl alcohol*



Vicinal bromohydrins are prepared by treatment of alkenes with Br_2 in water.

How is the necessary alkene prepared?

Prepare 1-bromo-2-methyl-2-propanol from tert-*butyl alcohol*



2-Methylpropene is prepared from *tert*-butyl alcohol by acid-catalyzed dehydration.

The synthesis is complete.