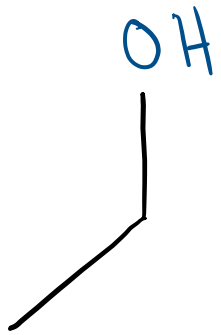
Alcohols:
Naming, Preparation, and Reactivity

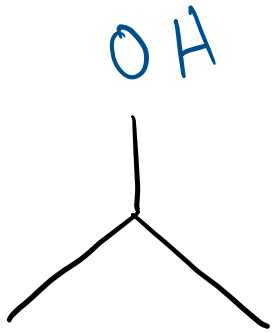
1/30/2023

Chapter 12: Alcohols

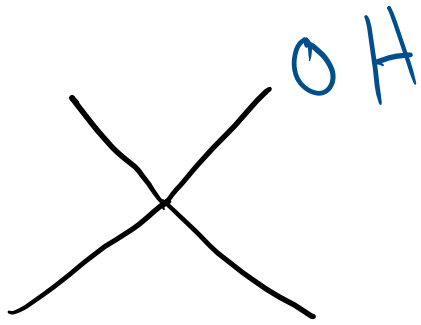
R – OH ★ water is pretty much an alcohol ★



1° primary

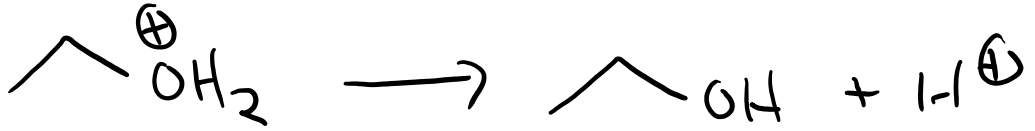


2° secondary



3° tertiary

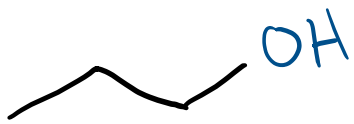
- weak acids $pKa \sim 16$ 

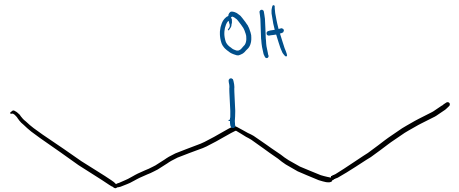
- weak bases $pKa_H \sim -2$ 

- weak nucleophile, unless deprotonate first (use NaH, $pKa_H \sim 35$)
- OH is poor leaving group, unless modified

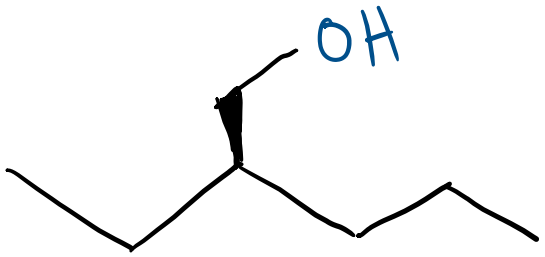
Alcohols: Naming (12.1)

- Identify the **parent chain** – the longest carbon chain containing the –OH group as a substituent, and change the **suffix** from –ane to **-anol**





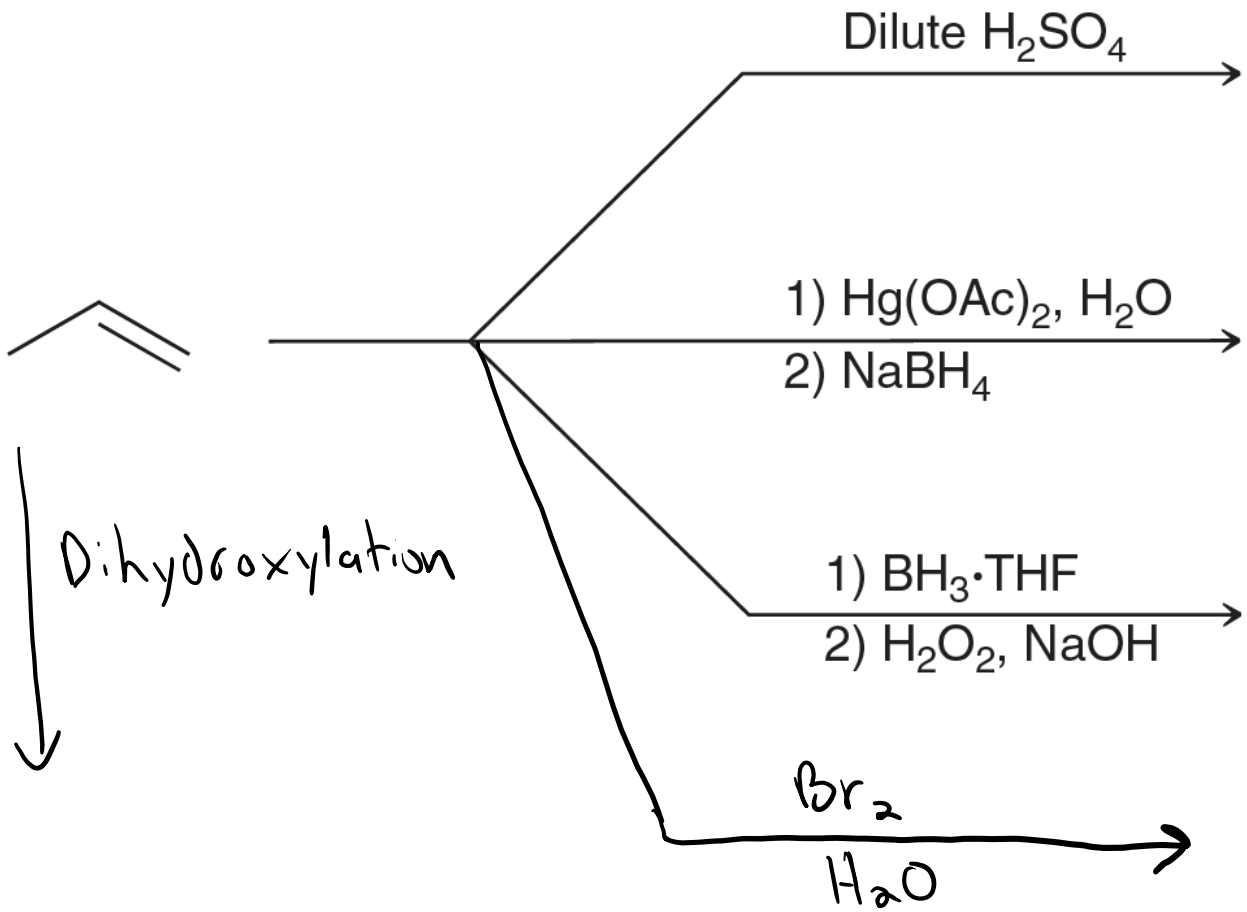
- Add the **locant #** of the carbon bearing the -OH before the **parent chain** name. Number the **chain** so that the **-OH locant # is as small as possible.**



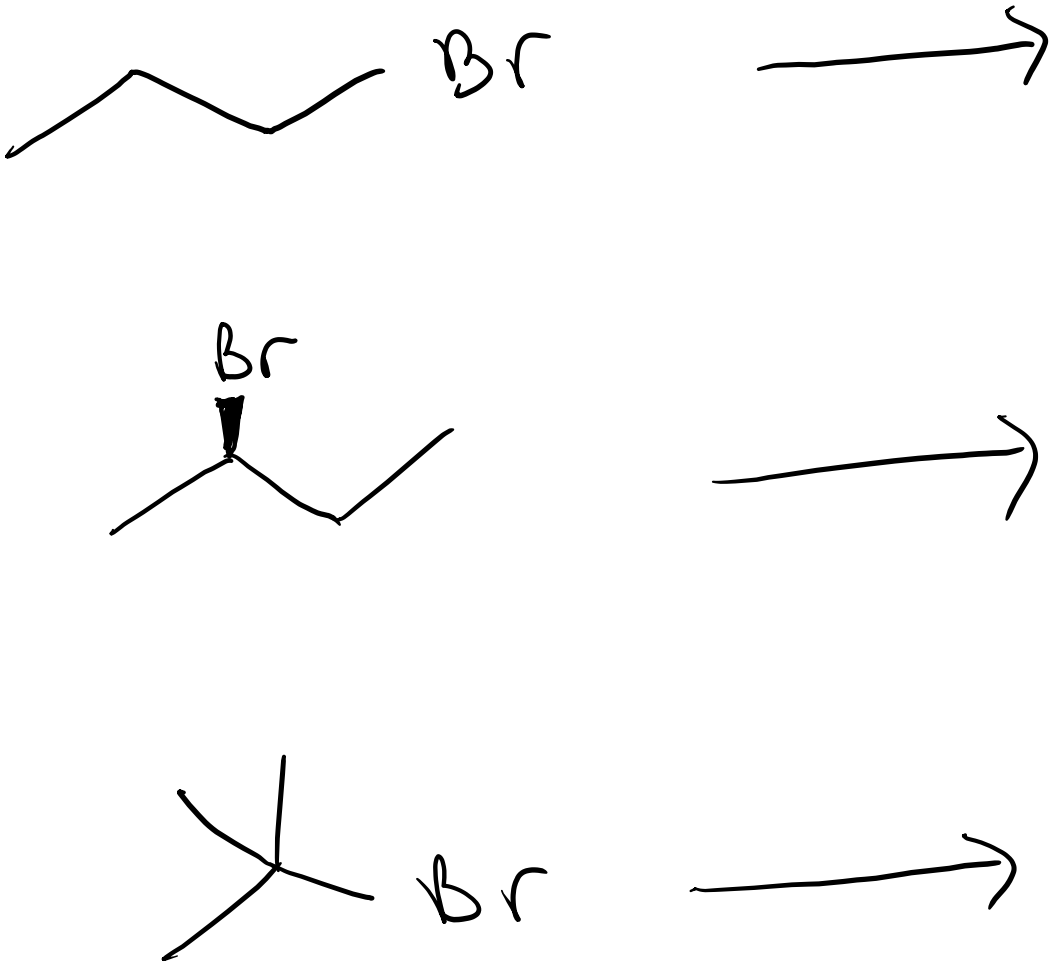
- Name the rest of the substituents, chiral centers, etc. as usual.

Preparation of Alcohols (Chapter 8, Che 211) (12.3)

via alkene addition:

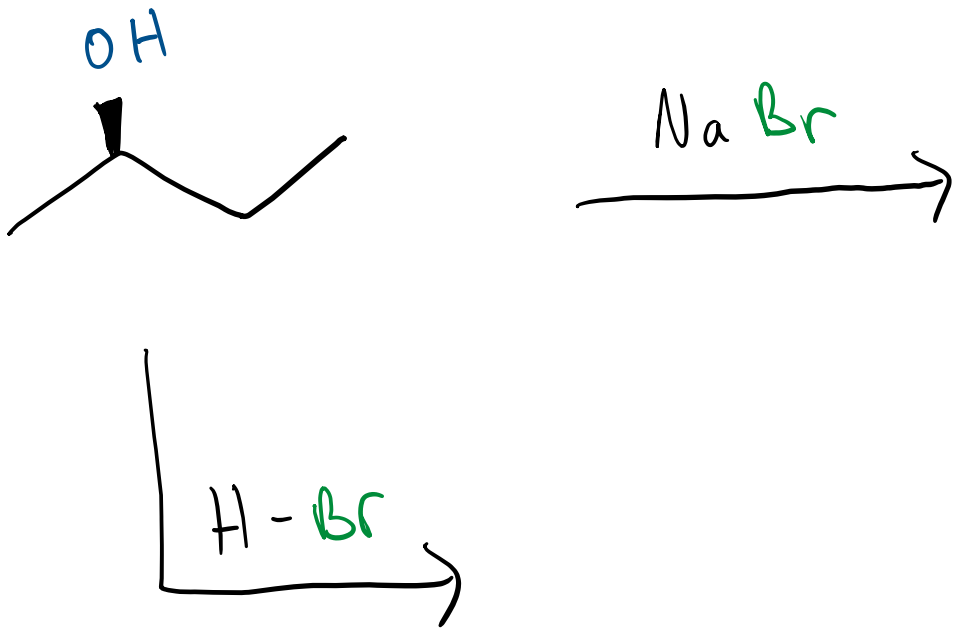


Or, via substitution:



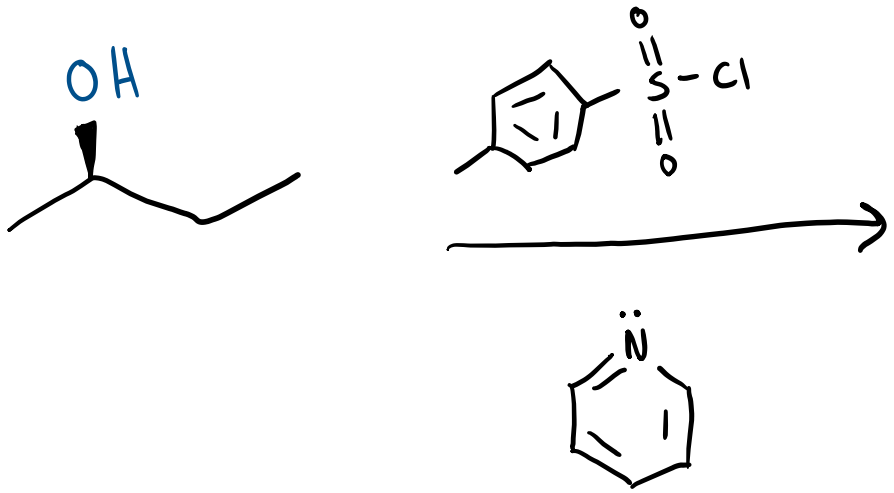
Converting –OH to a leaving group

(12.9)



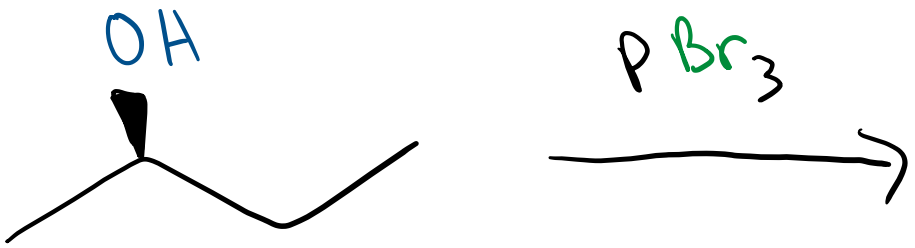
Converting –OH to a leaving group

(12.9)



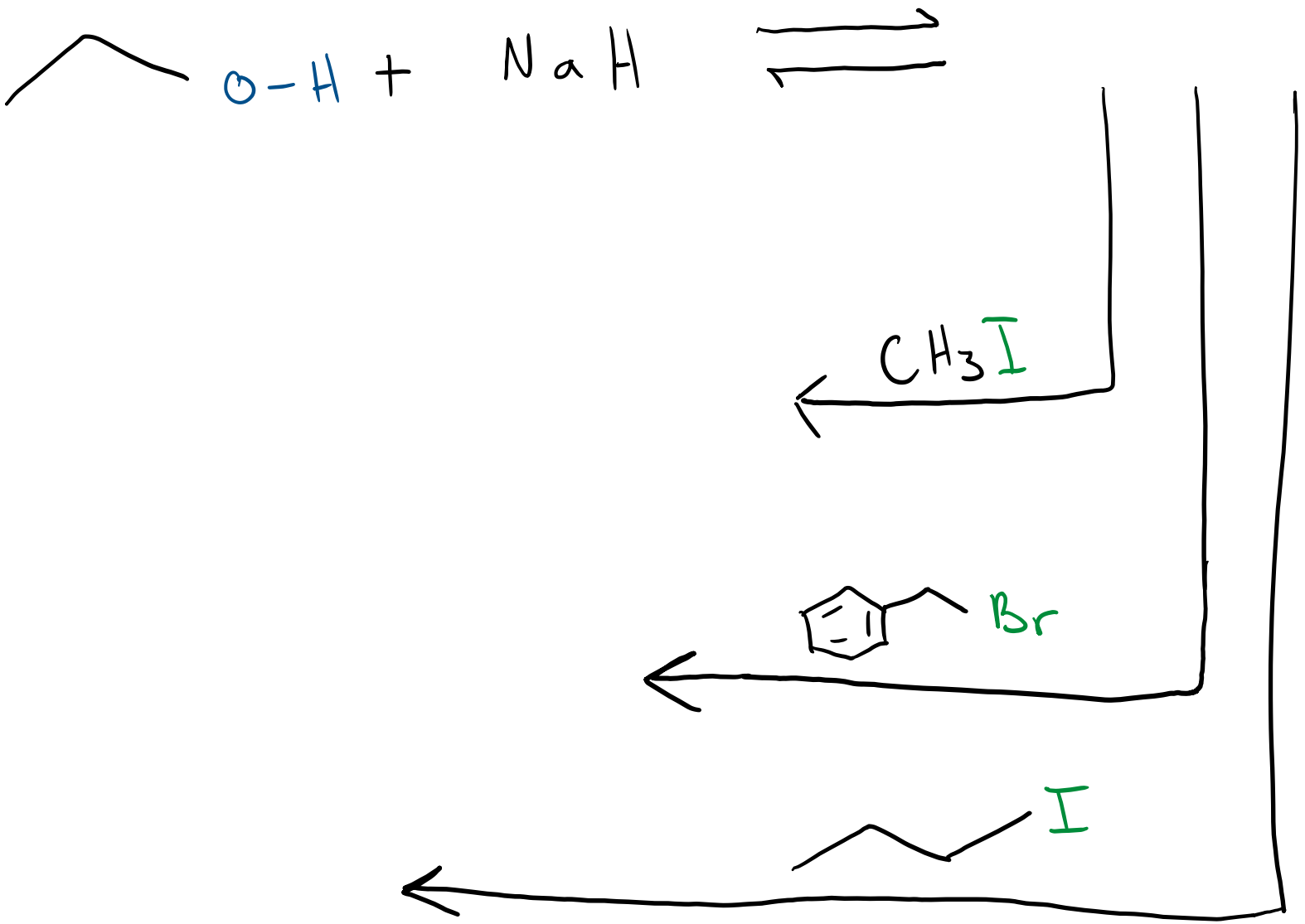
Converting –OH to a leaving group

(12.9)



Converting –OH to a nucleophile

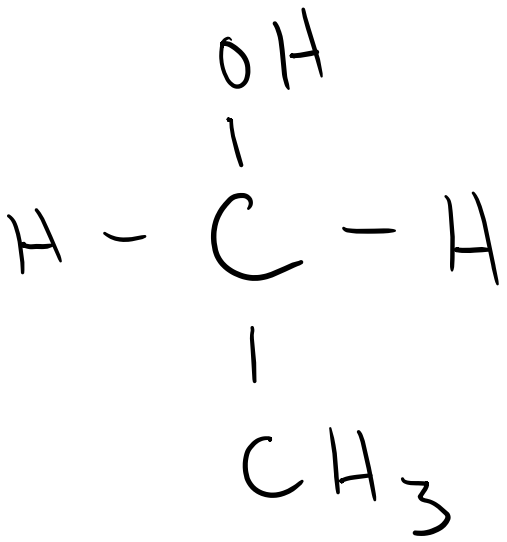
(13.5)



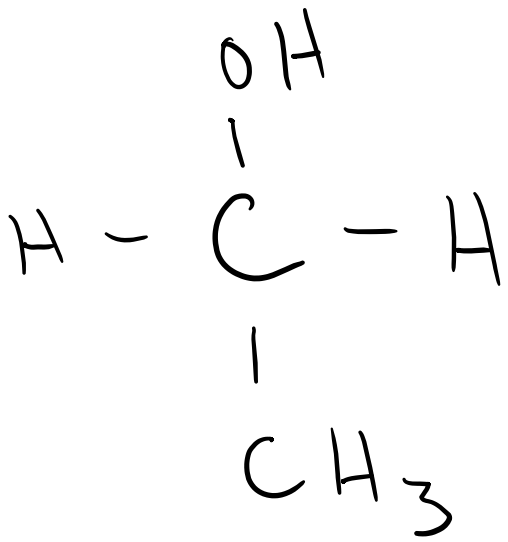
Calculating Oxidation States (12.4)

Formal charge:

Oxidation state:



Calculating Oxidation States (12.4)



1) Bonds to atoms w/ same EN can be ignored.

2) +1 for each <u>bond</u> to more EN atom

3) −1 for each bond to less EN atom

4) add formal charge of atom (if it has one)