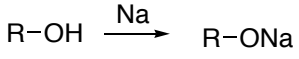
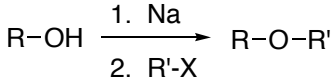
Summary of Alcohol Syntheses, Ch. 10 (and Review of Old Ones).

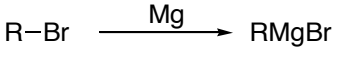
1 

- Potassium (K) analogous.
- Key way to convert alcohol to alkoxide, reactive as S_N2 nucleophile and E2 base.

2 

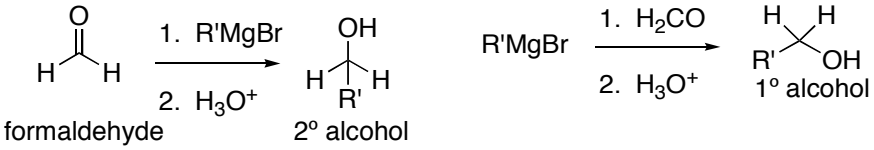
- Alkoxide formation-S_N2 route to ether
- The electrophile R'-X must be S_N2 reactive, preferably 1º with a good leaving group

Mech?

3 

-Li is analogous for making RLi, which also act analogously.

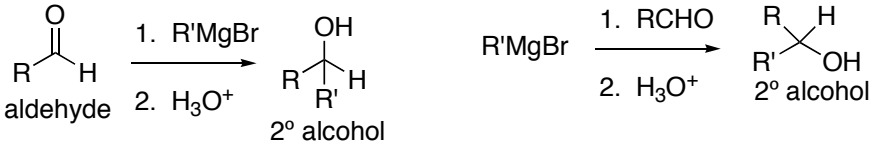
-MgBr is spectator: $R^{\ominus}$ is key.

4 

formaldehyde — 2º alcohol

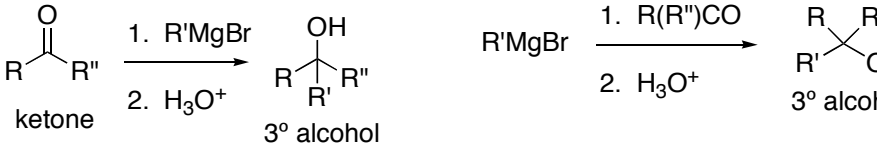
1 carbon chain extension

Mech

5 

aldehyde — 2º alcohol

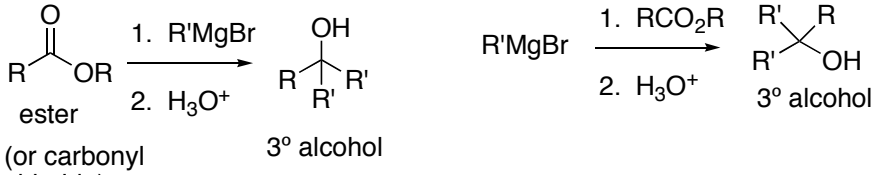
Mech

6 

ketone — 3º alcohol

All three R groups can be different.

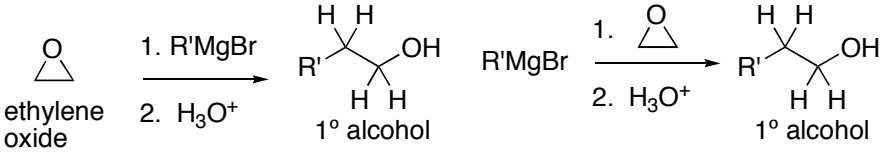
Mech

7 

ester (or carbonyl chloride) — 3º alcohol

At least 2 R groups must be the same

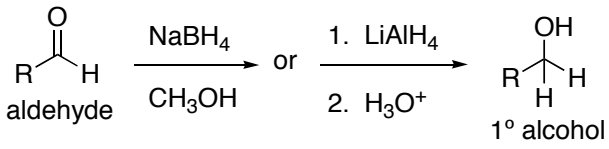
Mech

8 

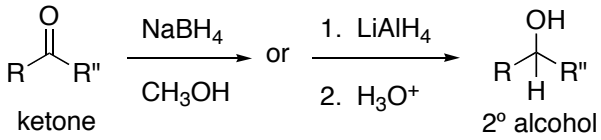
ethylene oxide — 1º alcohol

2-Carbon chain extension

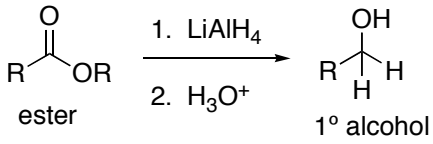
Mech

9 

Mech

10 

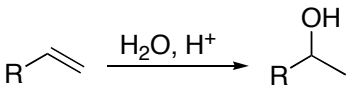
Mech

11 

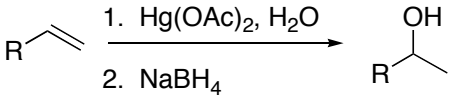
$NaBH_4$ will not react with esters

Mech

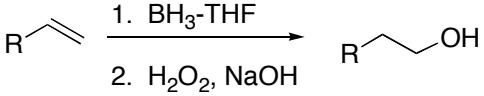
Review Routes to Alcohols

10 

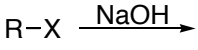
Markovnikov

11 

Markovnikov

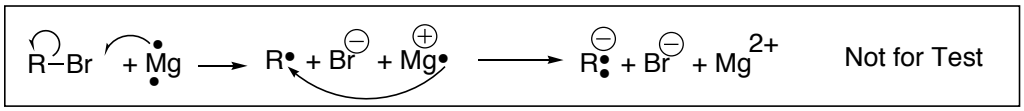
12 

anti-Markovnikov

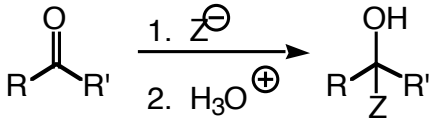
13 

S_N2 mech, needs 1° or 2° system and an excellent leaving group

Summary of Mechanisms, Ch. 10

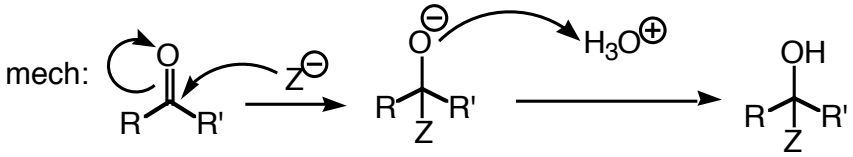


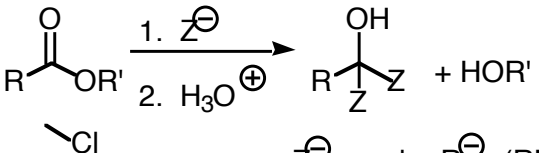
For Test:

1. 

aldehyde
or ketone
or formaldehyde

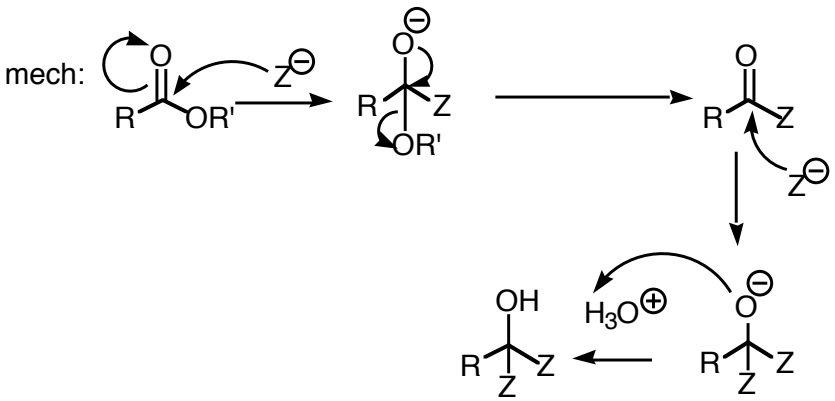
$Z^{\ominus}$ may be $R^{\ominus}$ (RMgBr)
or $H^{\ominus}$ ($NaBH_4$ or $LiAlH_4$)

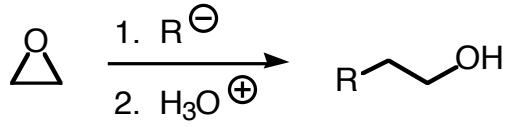
mech: 

2. 

esters
or
acid chlorides

$Z^{\ominus}$ may be $R^{\ominus}$ (RMgBr)
or $H^{\ominus}$ ($LiAlH_4$)

mech: 

3. 

mech: