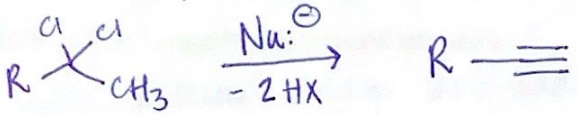
Key

Session 17 - Alkyne Reactions

1) Add the new reactions we have learned to our running list.

2) What reaction will produce an alkyne from a dihalide?



3) What is an amide anion and what do we use it for?

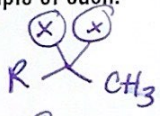
$^{\ominus}:\ddot{N}H_2$ → strong nucleophile/base

↳ deprotonate a terminal alkyne, forming a carbanion

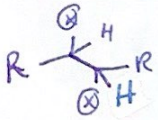
↳ $R{\equiv}:^{\ominus}$

4) What is the difference between geminal and vicinal dihalides? Provide an example of each.

Geminal → halides on the same carbon



Vicinal → halides on neighboring carbons



5) Of alkanes, alkenes, and alkynes, which would be the most basic?

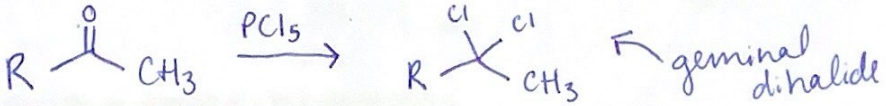
Basicity: alkynes > alkenes > alkanes

6) What is a terminal alkyne?

An alkyne w/ the triple bond at the end of the chain.

or $R-C{\equiv}C-H$

7) Show the reaction where a ketone produces a dihalide.



8) What can we use a carbanion for?

A carbanion is a strong base/nucleophile that can react w/ methyl or 1° alkyl halides by S_N2. 2° or 3° would undergo E2.

↑ essentially lengthens chain

9) Show a saturated and unsaturated carbon compound.

Saturated (all single bonds) Unsaturated (multiple bonds)

10) What's the difference between syn and anti addition?

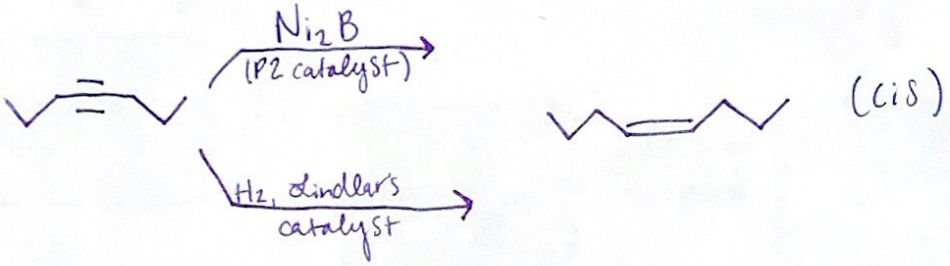
Syn addition: things are added to the same side/face of the reactant

Anti addition: things are added to opposite faces of the reactant

Hydrogenation: syn addition

11) What catalysts form cis alkenes from alkynes?

↳ syn addition

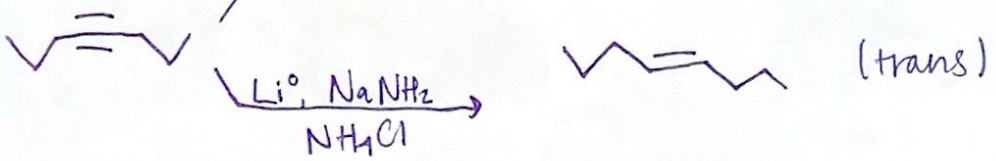


12) What reaction will produce a trans alkene from an alkyne?

↳ anti addition

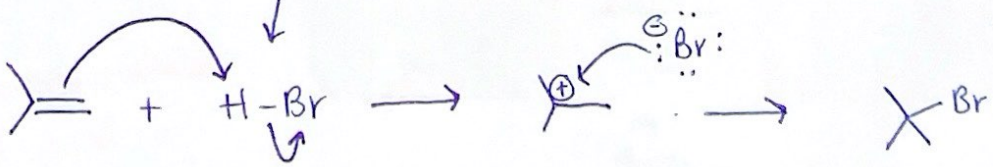
"same" reagents, different variations

$Li^{\circ} \cong Na^{\circ}$



13) Show the mechanism of a hydrohalogenation.

HCl, HBr or HI → Reverse E1



14) Complete the following scheme.